

THE OXFORD HANDBOOK OF

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HELLENIC STUDIES

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## CHAPTER 45

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# MEDICINE

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BROOKE HOLMES

A casual glance at an ancient Greek medical treatise or a fragment of one is likely to produce a sense of unfamiliarity. The author might be going on at length about the movement of something called phlegm in the body. He may be explaining disease as the leakage of blood *into* the arteries. Instead of promoting the benefits of fruit, he might seem inordinately worried about the dangers that it poses to his patients' health.

At the same time, the reader may feel rather comfortable with the ancient medical author's way of going about things. Rather than relying on his relationship with the gods to find out what is wrong with his patient, he quite sensibly asks where it hurts. Or he examines the patient's urine, and then makes an inference about the cause of any abnormality. His description of the nervous system may accord startlingly well with that found in a modern textbook. The care he puts into determining what a patient should eat in order to maximize his well-being might ring a bell for a reader in a culture similarly obsessed with dietetics and the ethical imperative of managing personal health.

That a piece of ancient medical writing generates a mix of recognition and alienation in a modern western reader is not in itself unusual: such a complex reaction seems a hallmark of our relationship to the ancient Greek world. Medicine is particularly interesting, however, because it raises the question of the common ground sustaining that relationship. We have bodies that are presumably much like those of the Greeks. Yet the familiarity of Galen's anatomical observations or a classical author's argument against daemonic causality cannot simply be explained by the relative stability of human anatomy and physiology. Rather, familiarity is fostered, too, by the fact that we share with the learned Greek medical writers a

way of thinking about diseased bodies in which vision is privileged and suffering is explained and treated in terms of material (bodily, environmental, dietary) causes, rather than divine ones. In dealing with Greek medicine, it is hard, then, to disentangle the body *qua* 'real' object of medical knowledge from our inherited ideas about what a body is. And it is because so much of the world we are thought to share with ancient Greek medicine is based on this objective thing, the body, and because the Greeks seem to us to have got something essentially right when they started treating it and thinking about it like a thing, that it is so difficult to figure out what to do with their apparent errors and points of divergence from us. The problem is a pressing one for the study of ancient medicine in times when its nosologies and therapies have been definitively discredited. Do we focus on those ties to the tradition that seem to endure into the present, such as the medical writers' interest in corporeal phenomena in their diagnoses of disease? Or should we explore the fissures in our shared terrain by emphasizing the radically different ways of seeing and diverse modes of healing in the ancient world?

In this short chapter I give a brief introduction to ancient Greek medicine that acknowledges our deep historical ties to Greek ways of thinking about human bodies and human suffering without sacrificing the strangeness of these ideas. Of course, under the rubric of Greek medicine one finds a range of ideas and practices, which cover a broad swathe of territory and vary in accordance with the practitioner's training and social status, the patient's gender and class, local healing traditions, political formations, and other historical, cultural, and geographical factors. Despite sharing a set of problems and questions from the fifth century BCE onwards, even writers within the tradition of learned, secular medicine were by no means unified in their outlook. Yet I have chosen to focus on this tradition as a tradition in order to situate medicine within broader constructions of Hellenism. I am also interested in how contemporary concerns about the relationship between the biological and the human can offer us a new angle on the old story of how Greek medicine freed itself from divine causality to describe bodies and diseases in natural terms. I wager that by denaturalizing natural causality and the body it assumes, we can get a better grip on the kinds of implication secular medicine had for the imagination of the self, the power of *tekhnē*, and the meaning of suffering from the fifth century onwards.

In the first section I offer a brief history of the history of Greek medicine and a look at the state of the field. I pay particular attention to a question that has been of great significance in this history, namely the role of the divine in Greek medicine. The second part of the chapter sketches an overview of the learned, secular tradition by focusing on the role played by the inside of the body in some major ideas about disease and health in this tradition. But before beginning, something must be said about the nature of our evidence.

Our direct evidence for the formation of a secular medical tradition lies in the sixty-odd extant treatises that have come down to us under the name of

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Hippocrates. Many of these treatises date from the late fifth and early fourth centuries BCE, and were already circulating under the name Hippocrates in the Hellenistic period (Smith 1979: 177–246). The biological fragments of sixth- and fifth-century natural philosophy, together with compilations of medical opinions, such as the aetiological section of the Anonymous Londinensis papyrus (Diels 1893; Jones 1947; see also Manetti 1999), complement our understanding of the treatises of the Hippocratic Corpus, and can, in fact, serve as an important corrective to the picture these treatises give of early Greek medicine. Secular medical activity in the centuries between the mid-fourth century BCE and the career of Galen in the second century CE spans Aristotelianism, the rise of systematic anatomy, challenges to humoral pathology, and divisive debates about the value and use of reason, definition, aetiology, and physiological knowledge in medicine. Our understanding of this period is built mostly on fragments, a consequence of Galen's success in establishing his version of medicine as canonical for later generations. However, as new editions appear (Garofalo 1988; von Staden 1989; Garofalo 1997; Guardasole 1997; Masullo 1999; Mauroudes 2000; van der Eijk 2001; Tecusan 2004), we can increasingly appreciate the vitality of medical thought in the years between the Hippocratic Corpus and Galen. We can better grasp, too, the variety of medical responses to problems raised by explanations of disease and well-being that privilege the material body. With Galen, famine turns to feast. His voluminous corpus represents approximately 10 per cent of extant Greek literature before the mid-fourth century CE, and it is growing, as new fragments and even entire treatises are rediscovered in Latin and Arabic. Nutton (2002: 249–50) has pointed out that a previously unknown work of Galen has appeared nearly every two years since 1960—an incredible proliferation that has enriched our understanding of Galen not only as a physician, but also as a thinker active in a time of considerable intellectual ferment. Galen's work exhibits an ongoing, lively, and almost always polemical engagement with his predecessors and contemporaries. It also delivers a global vision of Greek medicine, generated through a creative interpretation of the Hippocratean legacy and a wealth of anatomical investigations, therapeutic experience, and philosophical reflection, a vision that decisively shapes the theory and practice of medicine in the Byzantine, Arabic, and medieval western worlds. I would like to turn, now, to how the chronological progression that I have just sketched is treated in various accounts of the history of ancient medicine.

### 45.1. GREEK MEDICINE PAST AND PRESENT

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The Greeks saw health as the most valuable of goods—without it, no one is happy, according to a fourth-century BCE hymn by Ariphron (Athenaeus 15, 702). They also found the susceptibility to disease to be emblematic of the mortal condition.

Unsurprisingly, then, ideas about healing are steeped in cultural and religious significance. Early Greek sources trace the gift of healing to sympathetic gods (Homer, *Iliad* 4.218–19; *The Sack of Troy*, fr. 1 Davies). The late fifth-century BCE treatise *On Ancient Medicine* offers a different perspective. Its author casts *tekhne* as the outcome of a collective attempt to overcome the pain that arises from the inability of human bodies to assimilate food from the outside world. Subsequent genealogies of the history of medicine in antiquity often conflated these two approaches, joining gods, heroes, and mortal physicians, while emphasizing the importance of empirical investigation (e.g. [Galen], *Introductio* 1, xiv. 674–6 Kühn). The first modern narratives, however, which begin to appear in the seventeenth century, hewed more faithfully to the Hippocratic author's perception of the present as the beneficiary of human achievements within a continuous tradition reaching back to Hippocrates himself. These narratives shared, too, the ancient author's commitment to progress, albeit one moulded by Enlightenment concepts of scientific advancement. While nineteenth-century nosology and pathology broke with this tradition as a system of medical theories and practices, Greek medicine retained its privileged place in early and mid-twentieth-century histories of medicine by virtue of its purported rationality and freedom from superstition. What it lacked in facts, it made up for in scientific spirit, a spirit imagined as kindred to our own.

In line with critiques of the 'Greek miracle' elsewhere, systematic contestation of this Enlightenment narrative, never unchallenged, has dominated the recent history of ancient medicine. Scholars have shown that ancient medical investigations were not beholden to the scientific method (von Staden 1975; Lloyd 1979). They have recognized the complex role of the divine within the medical writers (e.g. Boudon 1988; van der Eijk 2004). Adopting methodologies from social history and anthropology, recent research has rooted learned Greek medicine in the cultural and historical conditions of its emergence, drawing attention to its pluralism and the blind-spots of its most prominent elite practitioners. The classical medical writers' interest in causality and the nature of knowledge has been read alongside similar concerns in rhetoric, philosophy, and historiography (Jouanna 1999: 177–285; Schiefsky 2005: 5–71; Thomas 2000). Its disease concepts and therapies have been traced to older healing practices and the cultural imaginary (Lloyd 1983; Dean-Jones 1991; von Staden 1992a; Hanson 1991; King 1998). Most scholars continue to present learned secular medicine as an epistemic shift. Yet they have justified this assessment by emphasizing the medical writers' use of signs and proof (Manetti 1993: 36–52), as well as changes to the production and circulation of knowledge in this period—the emphasis on systematization and explanation, criticism of opposing views, and the use of argument and evidence (Lloyd 1987)—that are evident in the extant treatises.

And so, superseded in pathology and physiology, excommunicated from Enlightenment secularism, the Greek medical writers have been reborn as semioticians, epistemologists, and rhetoricians. The ideas that count—about causality,

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empirical knowledge and the scope of *tekhne*, the relationship of body to mind, the patient—are not those validated by contemporary medicine, but, rather, those that continue to needle us. As a result, the field finds itself caught between two tendencies. Having only recently uprooted a tenacious presentism, scholars remain rightly committed to ancient medicine's historical specificity and strangeness (von Staden 1992a; Flemming 2000: 3–28; van der Eijk 2005: 1–8). Moreover, comparative study, especially of ancient Chinese medicine, continues to demonstrate the contingency of ideas once taken for granted as discoveries en route to the present's grasp of reality (Kuriyama 1999; Lloyd 1996b, 2002, 2004; Lloyd and Sivin 2002). At the same time, critique and logical demonstration are nearly universally taken as virtues of the modern academy, meaning that the 'new' history of medicine is as much about prized intellectual legacies as its predecessor. And the significant role of non-classicists in the field's renaissance, together with the escalation of technologies of biopower and the increasing urgency of articulating medicine's relationship to the human, suggests that teleological progressivism is not the only language in which ancient medicine 'speaks' to us.

In recent analyses of the differences between ancient and modern perspectives, perhaps the most contested point has been the status of 'magical' or 'divine' elements in Greek medicine (cf. Collins in the previous chapter). Undoubtedly, rigid polarizations (natural/supernatural, secular/divine), historically used as a litmus-test of a given thinker's scientific credibility, end up distorting our evidence. Indeed, the text that is most often made to shore up these divisions, namely the fifth-century BCE *On the Sacred Disease*, openly recognizes the gods' healing powers, at least with respect to moral errors (1.13, vi. 364 Littré). And interaction between learned and temple medicine remains lively in the first centuries BCE. The persona of the god Asclepius is often that of a brilliant personal physician (e.g. *IG IV<sup>2</sup>.1*, no. 126 = T432 Edelstein). Galen uses his relationship with Asclepius, whom he sometimes credits for prognoses or insights transmitted through dreams, to guarantee his moral and elite credentials. The Hippocratic Oath is a religious document, which positions the physician firmly within a community founded on shared values (von Staden 1997). What matters no longer seems to be whether or not there are gods in learned Greek medical writing. What is worth exploring, rather, is what the gods—or the divine in a more impersonal sense—are doing there. There is, of course, no single answer to this question. Yet insofar as the gods seem intimately related to the question of what suffering *means*, foregrounding their presence can keep us attuned to the complications that necessarily attend the pursuit of knowledge about life, death, and the place of humans in the world around them.

The gods' absence, however, matters as well. For the differences between the secular and the magico-religious traditions are not inconsequential. In privileging the mechanics of events, rather than the social agency of gods and sufferers, and material bodies rather than suffering persons, secular physicians drive a wedge



between disease and conventional perceptions of moral error. Yet this is not to say that the patient *qua* ethical agent disappears from Greek medicine. S/he is, rather, transformed by new perspectives on embodiment. Regimen and dietetics, which are associated with the 'new' medicine of the late fifth century, allocate a position to the patient as master of his own health, while, in anticipation of Aristotle, remaining ambivalent about the agency of women (Dean-Jones 1992). The medical *tekhnē* is a moral phenomenon, capable of shaping what constitutes a liveable life (e.g. Plato, *Republic* 3, 405c–408b; Celsus, *On Medicine*, proem 4–5). Medicine's marginalization of the gods contributes to the growing autonomy and crystallization of 'the' body (*sōma*), which comes to pose a challenge to theology, metaphysics, and ethics.

In short, gods and patients connect the physician's engagement with humours and nerves to human lives and values. We are obliged neither to see these connections as prescriptive, nor to credit Greek medicine with an enviable synthesis of body and spirit—to romanticize the 'humanism' of Greek medicine is simply to court philhellenism in another guise. Rather, such relationships show how medicine begins to assume its position in the western tradition at the point of slippage between bodies and persons.

One place to locate this point of slippage is inside the medical body itself. Archaic thought takes it for granted that we think and feel with our viscera. But as secular medicine elaborates the visceral interior in terms of fluids and forces and enquires into the precise role of these fluids and forces in converting external catalysts into symptoms, the question of *how*, exactly, our viscera are related to conscious thought and voluntary action arises. Medicine introduces, too, the question of what it means to 'see' or 'know'—and ultimately to control—the corporeal interior. In light of the importance of these questions in both the learned medical tradition and beyond it, I would like to turn now to a brief overview of this tradition telescoped by ideas and debates about corporeal interiority.

## 45.2. UNCOVERING THE MEDICAL BODY

Within a magico-religious world-view, not every ailment requires the intervention of a religious authority or an explanation, and therapy may unfold at either the corporeal or the sacred level—or both. However, in our early Greek sources symptoms, especially dramatic ones, tend to be blamed on angry gods, daemons, and heroes (e.g. Homer, *Iliad* 1.43–52; Hesiod, *Works and Days* 242–3, 741; see also Celsus, *On Medicine*, proem 4). This anger becomes intelligible within a framework of shared expectations about interpersonal obligations (e.g. reciprocity), concepts

of purity, and moral precepts, though it can also resist interpretation, as in Euripides' *Heracles*. In *On the Sacred Disease*, magico-religious healers correlate specific symptoms with the gods responsible (*aitioi*) for them (1.10–11, vi. 360–2 Littré) in order to determine which course of action to pursue. Curse-tablets and figurines (discussed by Collins in the previous chapter) suggest that symptoms could also be attributed to another person's desire to harm, realized through performative speech and enactment. Each of these explanations assumes that harm arrives from outside the person. In most cases, it can be traced back to the baneful intentions of somebody else, god or human. 'Hidden' causes, then, are sought in divine or magical space, rather than corporeal space. Therapy requires social negotiation, as well as practical intervention.

Secular medicine works with the belief that, together with environment and diet—ancient Greek medicine recognizes contagion or viruses only in a very weak sense (Nutton 1983)—'the things inside a person hurt him' (*On Ancient Medicine* 14, i. 602 Littré). These 'things' differ from author to author (bile and phlegm; powers or juices; residues from digestion). The kinds of explanation one finds in learned medical writing do not simply make the 'obvious' substitution of natural causes for divine ones; for disease is never 'obviously' the result of natural causes. Rather, by transferring the concept of responsibility to impersonal forces and privileging a notion of mechanical causality over divine agency, medical explanations of disease transform the very concept of causality (Vegetti 1999).

In the archaic world, explanations of what people do and suffer are often two-pronged, insofar as they refer to both a divine and a human level of action: this double determination is evident in Agamemnon's famous apology (*Iliad* 19.78–144), and is elaborated in Attic tragedy. Coming out of such a cultural context, the medical writers develop explanations of symptoms that recognize both internal and external factors. Yet what qualifies as internal in this model no longer corresponds to a human agent, however unwitting or unwilling. Between external causes and symptoms, the medical writers instead place substances and forces that lie below the threshold of the patient's consciousness—except in pain—and so outside the patient's scope of action. Unlike the *thumos* in Homer, these substances are deaf to speech. Like the basic stuffs of early Greek cosmology, they are changed by food and drink, heat and cold, and trauma. Changes to a given substance often grant it dangerous power, thereby disrupting relations inside the body and precipitating disease.

Some medical writers are particularly interested in the mechanics of these changes. Their explanations assume the cardinal principle of physical determinism: everything happens on account of something (*On the Tekhnē* 6, vi. 10 Littré). Changes to the body's fluid substrate initiate a chain of snowballing events leading first to symptoms, then to death or debility. This series is the disease, difficult to objectify apart from the corrupted humours; therapy is designed to thwart the onset and development of disease. Yet there are other factors that can help or hinder

the process, such as the existing quantity of a humour, or a patient's particular constitution. Interposed between catalyst and symptom, each corporeal interior must be seen, then, as a space of multiple possibilities. Daemonic or divine agency splinters into a number of small, locally motivated causes, some originating outside the body, others realized within it. The fragmentation of agency encourages the medical writers to think about the gap between what occurs necessarily and what happens only 'for the most part' (di Benedetto 1966; von Staden 2002), where 'for the most part' tacitly recognizes the heterogeneity of bodies and causal series. Given that disease is realized incrementally in the majority of cases, it becomes more difficult to assess the patient's own role in bringing it about. At the same time, the need to recuperate agency in the face of fragmented causality puts pressure on physicians and patients to master the volatile and mysterious inner body.

Medicine's own version of double determination thus introduces the inside of the body as the part of the self that participates most transparently in sixth- and fifth-century materialist cosmologies. Much of what medicine claims to know about the nature and power of the disease relies on inferences from corporeal phenomena to events inside the body; knowing the causes of symptoms is often held as key to therapy (*On Breaths* 1, vi. 92 Littré). To control his/her body and, hence, his/her well-being, the patient adopts the same strategies as the physician, that is, interpreting his/her experience and monitoring his/her behaviour in the light of medical theories. Regimen, I have noted, develops into an important technique of self-mastery in the fifth century, gaining prestige and complexity in fourth-century physicians like Diocles of Carystus (van der Eijk 2000-1), Praxagoras of Cos (Steckerl 1958), and Mnesitheus and Dieuches, both of Athens (Bertier 1972). Indeed, regimen may be taken as *the* model for the masculine 'techniques of self' analysed by Foucault in the last two volumes of his *History of Sexuality* (1986, 1988), with the material body as the original object of mastery.

Thus, secular medicine departs from magico-religious medicine in its interest in the corporeal interior, its fascination with mechanical causality, and its preference for substances and processes over social agents. This legacy unfolds in subsequent centuries as a series of cacophonous debates and sophisticated reflections about the theory and practice of medicine. These controversies converge on the nature of the body that intervenes between external catalyst and symptom, or, as it begins to emerge as a psychosomatic entity in Democritus, Plato, Aristotle, and the Hellenistic philosophers, between stimulus and act. How is this corporeal space organized? What are its component parts and their functions? What forces operate there? What is the relationship of these forces to one another, to foodstuffs, to the environment? To the subject of pain? To the subject of reason? How do they relate to cosmic order, or to the divine? What do different constitutions contribute to disease or character? How does the physician learn about and control this space? Does he need to know anything about it at all? What is the patient's role in understanding and managing his own vulnerability?

While these questions are always evolving, they are fundamentally transformed by the practice of systematic human dissection in Hellenistic Alexandria, which encourages medicine to deal in a more hands-on way with the materiality of the bodily interior, while also producing a new set of limits on what can be seen. As has long been recognized, a basic knowledge of anatomy is evident already in Homer. Yet systematic dissection apparently begins in earnest with Aristotle and fourth-century physicians like Diocles of Carystus and Praxagoras of Cos, all of whom work with animals. Human dissection is first and apparently *only* undertaken on condemned criminals in Alexandria by the third-century BCE physicians Herophilus and Erasistratus, with Ptolemaic support (von Staden 1992b; Annoni and Barras 1993; Flemming 2003: 451–5). It is in large part through bodies rejected as fully human, then, that human norms are established in the Hellenistic period.

Whereas symptoms only reveal what is happening inside the body when there is a problem, dissection, like Praxagoras' 'discovery' of the pulse, furthers a growing interest in the nature of the healthy body. There is strong evidence that the anatomists turned to vivisection to observe, 'while their subjects still breathed, parts that nature had previously hidden', on the grounds that diseases often occur in those hidden parts (Celsus, *On Medicine*, proem 23–4). Some critics countered that, violently exposed to the light, the internal parts were so changed as to no longer qualify as normal: the vivisected body thus serves as a poor window onto subcutaneous life, which is destroyed by the act of seeing. Others protested that the practice was unnecessary, given the likelihood of a physician having to deal with a body already gashed open. Still others simply insisted that the practice was unconscionably cruel (proem 40–4, 74–5).

What is at stake here is not only the right of medicine to destroy life in order to save life—the argument Celsus attributes to the anatomists (proem 26)—but also the question of just what anatomy can reveal of the visceral interior. Dissection facilitates the critique of ideas such as the 'wandering womb'—which turns out to be anchored by ligaments—as well as the acquisition of new knowledge: Herophilus is credited with first mapping the nervous system and tracking its origins to the brain, thereby undermining (albeit not destroying) Aristotle's claim that the heart is the 'controlling' centre of the person. Yet anatomy also creates another layer of phenomenal traces, and so another gap between external forces and visible effects. This gap requires, in turn, an interpretation of the hidden reality that produced those effects. Herophilus himself thought that anatomical description shed little light on the faculties controlling us (fr. 57 von Staden). Galen, too, believed anatomy could tell us little about the substance of the soul (*On the Doctrines of Hippocrates and Plato* 9.9, v. 793–5 Kühn).

At the less invasive end of the spectrum of investigative techniques to see the unseen, Herophilus is credited with making the pulse the physician's key point

of contact with bodily life. To 'touch' the artery's contraction and expansion sets the anatomical body in time, while also facilitating diagnosis and prognosis. Analogy, too, offered some help in bridging the inert cadaver and the body's inner life. Herophilus, for example, argued that arteries attracted *pneuma* through their expansion, on the model of a pump (fr. 145a von Staden). Still, while analogies could supply a basic mechanics to the structures perceived in dissection, thereby helping to explain the pulse, they could account neither for changes to the pulse, nor for the causes of disease: despite his physiological speculation, Herophilus kept to the basic tenets of humoral pathology.

Herophilus' contemporary Erasistratus, on the other hand, did try to build both a physiology and a pathology based on the networked body of Hellenistic medicine. In the end, however, his presuppositions lead him to bypass the surface of this anatomical body in favour of a new set of entities that could be perceived by reason alone. Convinced that the arteries do not contain blood (the main nutritive fluid), Erasistratus 'infers' the existence of the *triplokia*, an invisible intertwining of nerves, veins, and arteries that allows blood to supply nourishment to arterial walls. This belief participates in the more general principle, developed in conjunction with Praxagoras' differentiation of the veins and the arteries and Herophilus' discovery of the nervous system, that each type of vessel—veins, arteries, nerves—has its own proper substance. Erasistratus' pathology is based on another theoretical entity: valves that leak excessive blood into the arteries and nerves, causing fever and paralysis respectively. This slide from the visible back into the invisible is repeated by the late second-century BCE physician Asclepiades of Bithynia, who reduces all corporeal phenomena to the circulation of tiny corpuscles (*onkoi*) through equally tiny passages (*poroi*). In both Erasistratus and Asclepiades, however, these entities, like anatomy's macrostructures, continue to function according to mechanical laws and find their analogies in the world of machines (Vegetti 1995; von Staden 1996).

On the one hand, then, corpuscular theories rely on inferential reasoning and hidden causes. On the other hand, causal inference is arrested at the level of mechanical explanation, with the result that the body envisioned by the Hellenistic physicians differs from the body imagined by Aristotelian vitalism (Vegetti 1998). Corpuscular theories also downplay the speculation about environmental conditions, diet, and individual constitutions that is characteristic of Hippocratic writers. Erasistratus argued, for example, that since the seepage of blood from veins to arteries (*paremptōsis*) is the only event that necessarily causes fever in every body, it is the only thing that can be called a cause (Celsus, *On Medicine*, proem 54 [= Erasistratus, fr. 210 Garofalo]; Galen, *On Antecedent Causes*, 8.102–4 Hankinson [= Erasistratus, fr. 211 Garofalo]); anything else is irrelevant. In short, a hidden corporeal interior remains fundamental to corpuscular theories of disease. Yet rather than concealing some quasi-metaphysical level, this space is governed by mechanics alone.

This starkly mechanistic account of the body's hidden interior offers a useful point of orientation for other Hellenistic and imperial-age theories of the body. These theories can be seen as both contracting and expanding the place of a hidden gap between external catalyst and symptom in explanations of suffering. The two major medical 'sects' that appear in the Hellenistic period offer a strident challenge to the physician's reliance on entities and causes hidden inside the body. Empiricists, a sect allegedly founded by a breakaway Herophilean in the third century BCE, argued that successful therapy requires only a refined familiarity with symptoms and the effects of different treatments. While they accepted the relevance of antecedent causes, they held that hidden causes were inherently irrecoverable; speculation about unseen things was deemed useless to the physician (Frede 1987: 243–60; 1988; Hankinson 1995). Methodism, which appeared in Rome in the late Hellenistic period, claimed that the only pathological states were constriction, flux, or a combination of the two. These states were visible to the naked eye—no inference from symptoms necessary—and invariable from individual to individual. Perception of the state dictated therapy, regardless of cause (Edelstein 1967: 173–91; Frede 1987: 261–78). Both sects defended a reorientation towards clinical medicine.

In contrast to Empiricism and Methodism, other medical writers neither reduced the role of the corporeal interior in symptoms to valves and vessels, nor ignored that space altogether. Celsus distances himself from Erasistratus' views on causality even as he reports them, by stressing the role of different constitutions in explanations of why not all bodies respond in the same way to the same stimuli (*On Medicine*, proem 58–60). Galen, too, made individual constitution, together with existing imbalances in the body, crucial to his explanation of symptoms. In so doing, he treats regimen and moderation not only as preconditions of health, but also as ethical imperatives that safeguard praise and blame, insofar as the patient who neglects his body may be held responsible for his ills (*On Antecedent Causes* 15.187–96 Hankinson). While we saw that a 'double determination' model is Hippocratic in origin, Galen's attention to the individual corporeal factors may be influenced by Stoic theories of causality, which isolate alterations to the inner *pneuma*, for example, as an important step in the production of disease (Galen, *On Containing Causes* 2.2–3 Lyons). Indeed, the interference of the highest form of *pneuma* between external stimulus and individual action is indispensable to Stoic notions of human responsibility.

The massive Galenic Corpus is not only our most fertile source of these debates, but also showcases a Herculean attempt to synthesize their competing positions (Aristotelianism, Hellenistic and Roman ethics, Platonism, Alexandrian anatomo-physiology, humoral pathology) under the aegis of Hippocrates' historical authority. This encyclopedic impulse results in a conceptualization of the corporeal interior that is, by turns, nuanced and incoherent. Despite his avowed Platonism, Galen cannot reconcile his experience as a physician and anatomist,

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for example, with the immortal soul. He appropriates ethics for medicine, thereby challenging the working separation of *sōma* and *psukhē* enforced by the 'medical analogy' developed in Hellenistic philosophy (Nussbaum 1994). Yet he never doubts the existence of the soul, and even claims its (Platonic) tripartite nature can be empirically demonstrated. His extraordinary respect for, and command of, anatomy, far from encouraging mechanical materialism, subsidizes teleology and vitalism. His aetiology, as we have seen, is capacious, admitting causes external and internal, contingent and constitutional, determinist and ethically salient. While the physician's authority vis-à-vis the disease is indisputable, patients and potential patients populate the treatises as spectators, obstacles, peers, sufferers, and ethical subjects: lifestyle and constitution are important causes of all diseases, even in the case of epidemics.

Galen's potent blend of dogmatism, self-confidence, and eclecticism shapes the reception of Greek medicine as a carapace of solutions, rather than a live set of problems. And yet, as scholars continue to demonstrate (e.g. Hankinson 1991, 1993; von Staden 1995; Lloyd 1996a; Flemming 2000; van der Eijk 2005: 279–98), medicine's capacity to disturb some of the cardinal precepts of 'classical' Hellenism—the segregation of the (rational) soul from the body, the value of definition and logical demonstration in the pursuit of truth, the autonomy of male subjects, gender difference, the systematicity of nature, the authority of *tekhnē*—emerges most clearly in the hands of a thinker deeply and passionately committed to these precepts as he struggles to map the space between what lies outside the body and the phenomena of symptoms and persons. Our own ideas about what happens in that space and how we affect those events will no doubt continue to shape what we make of Hellenism.

### SUGGESTED READING

An up-to-date and erudite overview of all aspects of ancient medicine, from Homer to late antiquity, is now available in Nutton (2004). The essays by Jouanna, Vegetti, Gourevitch, and Strohmaier in Grmek (1998) serve as excellent, more in-depth introductions to humoral medicine and anatomy, as well as to the major periods of Greek medicine and its fate in the Roman, Byzantine, and Arab worlds; Grmek's introduction usefully surveys methodological issues in the history of medicine from the early modern period to the present. For those interested in the historiography of ancient medicine in antiquity, van der Eijk (1999b) furnishes a handy overview. Jouanna (1999) offers a comprehensive introduction to the Hippocratic Corpus, while expertly situating the secular medical writers in the intellectual and cultural milieu of fifth- and fourth-century Greece. Von Staden's impressive edition of the fragments of Herophilus (1989) has defined our understanding of Hellenistic medicine, while his articles (many of which are listed under 'References' below), have shaped nearly every aspect of the study of ancient medicine. Flemming (2000) includes

a thorough overview of the reception of Greek medicine at Rome. The essays gathered in van der Eijk, Horstmanshoff, and Schrijvers (1995) signalled a key turn towards the study of medicine from the perspective of social and cultural history in the 1990s. Recent work in paleopathology may be found in the essays by Arnott, Fox, and especially Roberts *et al.* (with extensive bibliography) in King (2005); the standard reference work remains Grmek (1989).

Nowhere do the lineaments of the medical writers' body emerge with greater clarity than in Kuriyama (1999), a comparative survey of early Greek and Chinese medicine. The majority of the work done on the medical writers' concepts of the body, however, has concentrated on the female body. Dean-Jones (1994) is a lucid and thorough analysis of the female body in the Hippocratic writers and Aristotle, while the collection of essays in King (1998) offers a less systematic, but equally illuminating picture of the female body in the Hippocratic Corpus. More concise surveys can be found in Hanson (1990 and 1991). Flemming (2000) provides a sophisticated analysis of gynecology and women patients in Roman medicine, including the Galenic Corpus. Extant gynecological texts in English include the Hippocratic selections translated in Hanson (1975) and Flemming and Hanson (1998) and the *Gynecology* of the Methodist physician Soranus of Ephesus, in a translation by Oswei Temkin; for an overview of Soranus see Green and Hanson (1994).

Lloyd (1979), which definitively sited early Greek medicine between the conceptual habits of archaic and classical Greece and the 'invention of nature' in the sixth- and fifth-century cosmologists, still offers stimulating insights. Pigeaud (1981, 1987) broke new ground with his alert and complex readings of the grey area between medicine's body and philosophy's mind, and the full implications of his work await further exploration. The essays collected in van der Eijk (2005) range from the Hippocratic Corpus to late antiquity, and create a nuanced portrait of the interactions between Greek medicine and philosophy; the essays on Aristotle, in particular, take an important step towards restoring the place of medicine and the body to philosophical attempts to describe the human. A more detailed examination of the concept of the corporeal interior in classical Greek medicine may be found in Holmes (forthcoming).

### EDITIONS CITED

- Davies = M. Davies ed. 1988. *Epicorum Graecorum Fragmenta*. Göttingen.  
 Edelstein = E. J. Edelstein and L. Edelstein eds. 1945. *Asclepius: Collection and Interpretation of the Testimonies*. 2 vols. Baltimore and London.  
 Garofalo = Garofalo (1988).  
 Hankinson = R. J. Hankinson ed. 1998. *Galen: 'On Antecedent Causes'*. Cambridge.  
 Kühn = C. G. Kühn ed. 1821–33. *Claudii Galeni Opera Omnia*. 20 vols. in 22. Leipzig.  
 Littré = É. Littré ed. 1839–61. *Oeuvres complètes d'Hippocrate*. 9 vols. Paris.  
 Lyons = M. Lyons ed. 1969. *Galen: On the Parts of Medicine; On Cohesive Causes, On Regimen in Acute Diseases in Accordance with the Theories of Hippocrates. (Corpus Medicorum Graecorum: Supplementum-Orientalis, 2.)* Berlin.  
 von Staden = von Staden (1989).



REFERENCES

- ANNONI, J. M. and BARRAS, V. 1993. 'La Découpe du corps humaine et ses justifications dans l'antiquité.' *Canadian Bulletin for Medical History*, 10: 185-227.
- BERTIER, J. 1972. *Mnénisthée et Dieuchès*. Leiden.
- BOUDON, V. 1988. 'Galien et le sacré.' *Bulletin de l'Association Guillaume Budé, Lettres d'Humanité*, 47: 327-37.
- DEAN-JONES, L. 1991. 'The Cultural Construct of the Female Body in Classical Greek Science.' In *Women's History and Ancient History*. 111-37. S. B. Pomeroy ed. Chapel Hill, NC.
- 1992. 'The Politics of Pleasure: Female Sexual Appetite in the Hippocratic Corpus.' *Helios*, 19: 72-91.
- 1994. *Women's Bodies in Classical Greek Science*. Oxford.
- DI BENEDETTO, V. 1966. 'Tendenza e probabilità nell'antica medicina greca.' *Critica Storica*, 5: 315-68.
- DIELS, H. 1893. *Anonymi Londinensis ex Aristotelis Iatricis Menoniis et aliis medicis eclogae*. (Supplementum Aristotelicum, 3.1.) Berlin.
- EDELSTEIN, L. 1967. *Ancient Medicine: Selected Papers of Ludwig Edelstein*. O. Temkin and C. L. Temkin eds. Baltimore.
- FLEMMING, R. 2000. *Medicine and the Making of Roman Women: Gender, Nature, and Authority from Celsus to Galen*. Oxford.
- 2003. 'Empires of Knowledge: Medicine and Health in the Hellenistic World.' In *A Companion to the Hellenistic World*. 449-63. A. Erskine ed. Oxford.
- FLEMMING, R. and HANSON, A. E. 1998. 'Hippocrates' *Peri Partheniôn* ("Diseases of Young Girls"): Text and Translation.' *Early Science and Medicine*, 3: 241-52.
- FOUCAULT, M. 1986. *The History of Sexuality*, vol. 2: *The Use of Pleasure*. Trans. R. Hurley. London.
- 1988. *The History of Sexuality*, vol. 3: *The Care of the Self*. Trans. R. Hurley. London.
- FREDE, M. 1987. *Essays in Ancient Philosophy*. Minneapolis.
- 1988. 'The Empiricist Attitude Towards Reason and Theory.' In *Method, Medicine and Metaphysics: Studies in the Philosophy of Ancient Science (Apeiron, 21/2)*. 79-97. R. J. Hankinson ed. Edmonton.
- GAROFALO, I. ed. 1988. *Erasistrati Fragmenta*. Pisa.
- ed. 1997. *Anonymi Medici De Morbis Acutis et Chroniis*. Translated into English by B. Fuchs. (Studies in Ancient Medicine, 12.) Leiden.
- GREEN, M. H. and HANSON, A. E. 1994. 'Soranus of Ephesus: Methodicorum Princeps.' In *ANRW ii*. 37.2: 968-1075.
- GRMEK, M. D. 1989. *Diseases in the Ancient Greek World*. Trans. M. and L. Muellner. Baltimore.
- ed. 1998. *Western Medical Thought from Antiquity to the Middle Ages*. Trans. A. Shugaar. Cambridge, Mass.
- GUARDASOLE, A. ed. 1997. *Eraclide di Taranto: Frammenti*. Naples.
- HANKINSON, R. J. 1991. 'Galen's Anatomy of the Soul.' *Phronesis*, 36: 197-233.
- 1993. 'Actions and Passions: Emotions, Affections and Moral Self-Management in Galen's Philosophical Psychology.' In *Passions and Perceptions: Studies in Hellenistic Philosophy of Mind. Proceedings of the Fifth Symposium Hellenisticum*. 184-222. J. Brunschwig and M. Nussbaum eds. Cambridge.

Rome. The essays gathered in a key turn towards the study in the 1990s. Recent work, and especially Roberts *et al.* reference work remains Grmek

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ses'. Cambridge.  
ols. in 22. Leipzig.  
s. Paris.  
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tes. (Corpus Medicorum*

- HANKINSON, R. J. 1995. 'The Growth of Medical Empiricism.' In *Knowledge and the Scholarly Medical Traditions*. 60–83. D. Bates ed. Cambridge.
- HANSON, A. E. 1975. 'Hippocrates: *Diseases of Women I: Archives*.' *Signs*, 1: 567–84.
- 1990. 'The Medical Writers' Woman.' In *Before Sexuality: The Construction of Erotic Experience in the Ancient Greek World*. 309–37. D. M. Halperin, J. J. Winkler, and F. I. Zeitlin eds. Princeton.
- 1991. 'Continuity and Change: Three Case Studies in Hippocratic Gynecological Therapy and Theory.' In *Women's History and Ancient History*. 73–110. S. B. Pomeroy ed. Chapel Hill, NC.
- 1992. 'The Logic of the Gynecological Prescriptions.' In *Tratados Hipocráticos: Actas del VII<sup>e</sup> colloque international hippocratique, Madrid, 24–29 de Septiembre de 1990*. 235–50. J. A. López-Férez ed. Madrid.
- HOLMES, B., forthcoming. *The Symptom and the Subject: The Emergence of the Body in Ancient Greece*. Princeton.
- JONES, W. H. S. 1947. *The Medical Writings of Anonymus Londinensis*. Cambridge.
- JOUANNA, J. 1999. *Hippocrates*. Trans. M. B. DeBevoise. Baltimore.
- KING, H. 1998. *Hippocrates' Woman: Reading the Female Body in Ancient Greece*. London.
- ed. 2005. *Health in Antiquity*. New York and London.
- KURIYAMA, S. 1999. *The Expressiveness of the Body and the Divergence of Greek and Chinese Medicine*. New York.
- LLOYD, G. E. R. 1979. *Magic, Reason, and Experience: Studies in the Origin and Development of Greek Science*. Cambridge.
- 1983. *Science, Folklore and Ideology: Studies in the Life Sciences in Ancient Greece*. Cambridge.
- 1987. *The Revolutions of Wisdom: Studies in the Claims and Practice of Ancient Greek Science*. Berkeley.
- 1996a. 'Theories and Practices of Demonstration in Galen.' In *Rationality in Greek Thought*. 255–77. G. Striker and M. Frede eds. Oxford.
- 1996b. *Adversaries and Authorities: Investigations into Ancient Greek and Chinese Science*. Cambridge.
- 2002. *The Ambitions of Curiosity: Understanding the World in Ancient Greece and China*. Cambridge.
- 2004. *Ancient Worlds, Modern Reflections: Philosophical Perspectives on Greek and Chinese Science and Culture*. Oxford.
- and SIVIN, N. 2002. *The Way and the Word: Science and Medicine in Early China and Greece*. New Haven.
- MANETTI, D. 1999. 'Aristotle and the Role of Doxography in the Anonymus Londinensis (Pbrlibr Inv. 137).' In van der Eijk (1999a), 95–141.
- MANETTI, G. 1993. *Theories of the Sign in Classical Antiquity*. Trans. C. Richardson. Bloomington, Ind.
- MASULLO, R. 1999. *Filagrío. Frammenti*. Naples.
- MAUROUDES, A. 2000. *Archigenes Phillipou Apameus*. Athens.
- NUSSBAUM, M. C. 1994. *The Therapy of Desire: Theory and Practice in Hellenistic Ethics*. Princeton.
- NUTTON, V. 1983. 'The Seeds of Disease: An Explanation of Contagion and Infection from the Greeks to the Renaissance.' *Medical History*, 27: 1–34.

- 2002. 'Ancient Medicine: Asclepius Transformed.' In *Science and Mathematics in Ancient Greek Culture*. 242–55. C. J. Tuplin and T. E. Rihll eds. Oxford.
- 2004. *Ancient Medicine*. London.
- PIGEAUD, J. 1981. *La Maladie de l'âme: étude sur la relation de l'âme et du corps dans la tradition médico-philosophique antique*. Paris.
- 1987. *Folie et cures de la folie chez les médecins de l'antiquité gréco-romaine*. Paris.
- SCHIEFSKY, M. J. 2005. *Hippocrates: 'On Ancient Medicine'*. Leiden.
- SMITH, W. D. 1979. *The Hippocratic Tradition*. Ithaca, NY.
- STECKERL, F. 1958. *The Fragments of Praxagoras of Cos and his School*. (Philosophia Antiqua, 8.) Leiden.
- TECUSAN, M. 2004. *The Fragments of the Methodists*, vol. 1: *Methodism Outside Soranus*. Leiden.
- TEMKIN, O. 1956. *Soranus' Gynecology*. Baltimore.
- THOMAS, R. 2000. *Herodotus in Context: Ethnography, Science, and the Art of Persuasion*. Cambridge.
- VAN DER EIJK, P. J. ed. 1999a. *Ancient Histories of Medicine: Essays in Medical Doxography and Historiography in Classical Antiquity*. Leiden.
- 1999b. 'Historical Awareness, Historiography, and Doxography in Greek and Roman Medicine.' In van der Eijk (1999a), 1–31. Leiden.
- 2000–1. *Diocles of Carystus: A Collection of the Fragments with Translation and Commentary*. 2 vols. Leiden.
- 2004. 'Divination, Prognosis and Prophylaxis: The Hippocratic Work "On Dreams" (De victu 4) and its Near Eastern Background.' In *Magic and Rationality in Ancient Near Eastern and Graeco-Roman Medicine*. 187–218. H. F. J. Horstmanshoff and M. Stol eds. Leiden.
- 2005. *Medicine and Philosophy in Classical Antiquity: Doctors and Philosophers on Nature, Soul, Health and Disease*. Cambridge.
- HORSTMANSHOFF, H. F. J., and SCHRIJVERS, P. H. eds. 1995. *Ancient Medicine in its Socio-Cultural Context*. 2 vols. Amsterdam.
- VEGETTI, M. 1995. 'L'Épistémologie d'Érasistrate et la technologie hellénistique.' In van der Eijk et al. (1995), 461–72.
- 1998. 'Between Knowledge and Practice: Hellenistic Medicine.' In Grmek (1998), 72–103.
- 1999. 'Culpability, Responsibility, Cause: Philosophy, Historiography, and Medicine in the Fifth Century.' In *The Cambridge Companion to Early Greek Philosophy*. 271–89. A. A. Long ed. Cambridge.
- VON STADEN, H. 1975. 'Experiment and Experience in Hellenistic Medicine.' *BICS* 22: 178–99.
- 1989. *Herophilus: The Art of Medicine in Early Alexandria*. Cambridge.
- 1992a. 'Affinities and Elisions: Helen and Hellenocentrism.' *Isis*, 83: 578–95.
- 1992b. 'The Discovery of the Body: Human Dissection and its Cultural Contexts in Ancient Greece.' *Yale Journal of Biology and Medicine*, 65: 223–41.
- 1995. 'Science as Text, Science as History: Galen on Metaphor.' In van der Eijk et al. (1995), 499–518.
- 1996. 'Body and Machine: Interactions between Medicine, Mechanics, and Philosophy in Early Alexandria.' In *Alexandria and Alexandrianism*. 85–106. Malibu, Fla.

- VON STADEN, H. 1997. 'Character and Competence: Personal and Professional Conduct in Greek Medicine.' In *Médecine et morale dans l'antiquité*. 157-210. J. Jouanna and H. Flashar eds. Geneva.
- 2002. 'Hôs epi to polu: "Hippocrates" Between Generalization and Individualization.' In *Le Normal et le pathologique dans la Collection hippocratique: Actes du X<sup>ème</sup> colloque internationale hippocratique*. 23-43. A. Thivel and A. Zucker eds. Nice.