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Ella Lavelle April 10, 2023

The “Hippocratization” of Galen

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Abstract

The “Hippocratization” of Galen
By Ella Lavelle

Hippocrates is credited with creating many ancient medical theories that gradually evolved into modern medicine. Much of what people are aware of when they think of “Hippocrates,” is the result of centuries of mythical stories that have been applied to a man who did exist. The influence and writings of Galen allowed these beliefs to persist to the present day. Born in Pergamum during the height of the Roman Empire, Galen spent most of his life learning from “Hippocrates,” and other ancient physicians who came before him. He then used their teachings to determine the true Hippocratic Tradition and create the figure of Hippocrates we know today. This paper aims to discuss how Galen turned Hippocrates from an unknown historical figure, to how we see him now. It also discusses how that process put Galen on the same path of “Hippocratization.”. This work will implement both ancient sources, as well as works from well-known scholars on Galen and Greek medicine, to show the centuries-long Greek medical culture Galen inherits, and how he fits himself in it.

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INTRODUCTION

Born in Pergamum in 129 A.D. at the height of the Roman Empire, roughly five centuries after Hippocrates' death in approximately 370 B.C.E., Galen studied and practiced medicine within a long-established Greek medical tradition. This medical journey started at the age of sixteen, when "his father received several 'crystal-clear dreams' as a result of which Galen was directed to the study of medicine and philosophy".[1] He began his studies in Pergamum but also traveled to other cities of the Eastern Roman Empire, including the legendary Alexandria in Egypt. He traveled to Alexandria sometime in the late 150s with the purpose of looking for a medical writer and teacher named Numisianus. According to Vivian Nutton, Galen's desire to find this physician "was probably a result of what he had heard from [his teacher] Pelops".[2] In Galen's *On Anatomical Procedures,* we learn that Pelops "was the principal pupil of Numisianus," but he would not tell Galen about his teacher's ideas, as "he preferred that certain theories, should be attributed to himself".[3] Because nobody would tell Galen about Numisianus' teachings, the young physician decided to find the man himself. This journey brought him first to Corinth, and then to Alexandria where Numisianus, unfortunately, had died before Galen could find him. Adding to his misfortune, when Galen encountered Numisianus' son Heraclianus in Alexandria, the son "wished to secure himself in the sole possession of all that his father left, [and] none of these books were shown to anyone".[4] When Heraclianus was on his deathbed, according to Galen, "he destroyed them [his father's books] by fire".[5]

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[1] Vivian Nutton, "Galen the Greek," in *Galen: A Thinking Doctor in Imperial Rome,* 1st ed. (London: Routledge, 2020), 20.
[2] Ibid, 18.
[3] Galen, *On Anatomical Procedures* 14.1
[4] Ibid.
[5] Ibid.

Despite all of this, Galen was still able to acquire vast amounts of medical knowledge in his travel in the Greek-speaking cities of the eastern Roman Empire. His education involved his learning not just from the Hippocratic writers, but from later authors such as Herophilus and Erasistratus who worked in Alexandria in the 3rd century BCE. Galen would eventually return to Pergamum around 157 A.D. at the age of twenty-seven, where he went on to become "one of the candidates for the post of doctor to the gladiators who performed at the great provincial games organized and paid for by wealthy individuals".[6] He earned the title one year later. As a gladiator physician, Galen chose to treat his patients differently than other physicians. Before Galen, the traditional treatment of wounds was "by bathing them in hot water and applying a plaster of wheat flour boiled in water and oil".[7] According to Susan Mattern, Galen "omitted the hot water and used frequent applications of oil together with a remedy of his own invention, the concoction he tested on his own patients".[8] If Galen is to be believed, he supposedly "saved all the gladiators in his care in the first year of his practice, although in previous years many had died".[9]

During his time as a gladiator physician, Galen also performed many anatomical demonstrations in public that were quite difficult. One of these procedures involved Galen disemboweling a live monkey, which Mattern suggests may have been a Barbary macaque because it was the "primate Galen most preferred to dissect".[10] In this demonstration, Galen went on to "open its abdomen and emptied its intestines, and then called on 'the other physicians who were present' to replace and secure them back in the abdomen".[11] No physician took on this

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[6] Nutton, "Galen the Greek," 22.
[7] Mattern, "Prince of Medicine," 93.
[8] Ibid.
[9] Ibid.
[10] Mattern, "Prince of medicine," 83.
[11] Ibid, 84.

challenge, and Galen went on to show off his skills by doing the feat himself—"making it clear to the intellectuals who were present that [physicians] who possess skills like [his] should be in charge of the wounded".[12]

Around the year 161, Galen's career as a gladiator physician ended, and by 162 he found himself in Rome. Once there, it did not take long for Galen to make himself known in the city. During one of Galen's first cases, his friend Teuthras says that Galen was treating a "twenty-one-year-old woman with suppressed menstruation, cough, dyspnea, and a red face; all signs, as Galen believed, indicating bloodletting".[13] However, the woman's other doctors, who were "followers of the teachings of Erasistratus, refused to do this".[14] Because Galen was young and new to Rome, the older more established physicians did not have any reason to listen to him. Unfortunately, according to Teuthras, "the patient died suffocating and coughing up blood," causing her case to become "the subject of open debate, together with several others who were being treated by the same Erasistratean physicians".[15] At some point, this debate almost became violent, and "Teuthras had to restrain Galen physically—seizing his raised arm—and calm him down".[16] Another instance of Galen speaking out against well-established physicians can be found in his *On My Own Books* where Galen speaks out against the "aged and much-respected physician Martianus".[17] In *On My Own Books,* Galen says Martianus "was a remarkably malicious and adversarial personality, in spite of his more than seventy years".[18]

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[12] Ibid.
[13] Ibid, 128.
[14] Ibid.
[15] Ibid.
[16] Ibid.
[17] Ibid, 129.
[18] Galen, *On My Own Books* ch.1.

At this point in Galen's career, he was a known public figure. As his reputation continued to grow, he eventually caught the attention of the Roman emperor Marcus Aurelius, who sent the physician a summons. Galen was to "join the emperors [Lucius Verus and Marcus Aurelius] in their camp at Aquileia, where they were preparing to campaign against the German tribes".[19] Galen's name had "been mentioned in the course of 'a discussion about those who had demonstrated medicine and philosophy by deeds as well as words'".[20] According to R.J. Hankinson, by the time Galen arrived in Aquileia the army had been hit by a plague, "which caused destruction on a scale previously unknown".[21] The plague caused both emperors to leave Aquileia, but unfortunately, Lucius Verus did not survive. A few months later, Galen rejoined Marcus Aurelius, who survived the plague, in Rome, "and from now on, his personal life was intimately linked with that of the Imperial family".[22] Within his medical career, Galen would go on to serve three Roman emperors: Marcus Aurelius, Commodus Severus, and Septimius Severus.

Although Galen served Roman emperors in the 2nd century CE, he looked to the classical Greek past for his medical models. Through reading Galen's many references to Hippocrates, we can see that during his time as a physician, Galen believed that the Hippocratic standards were not being upheld in his contemporary world and set up himself as a true Hippocratic physician. Galen presents his contributions to the field of medicine, whether it was in anatomy, physiology, pharmacology, or ethics, as based upon and continuing the work of Hippocrates, so helping solidify "Hippocrates'" mythos in history. During this process of presenting himself as a new

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[19] R.J. Hankinson, "The Man and His Work," in *The Cambridge Companion to Galen* (Cambridge University Press: 2008), 14.
[20] Ibid.
[21] Ibid, 15.
[22] Ibid.

Hippocrates, Galen puts himself on the path of becoming “Hippocratized” [my phrase]. During his life, he was immersed in the Greek diasporic Hippocratic tradition he inherited and successfully puts himself on a high pedestal along with the mythic Hippocrates.

My thesis is about the way in which Galen—a Greek-speaking physician and citizen of the Roman Empire in the 2nd century CE—received and shaped the medical traditions and doctrines of earlier writers. This timeline covers centuries of medical history, and as a result, I have separated the thesis into two chapters to properly convey the importance of the Hippocratic tradition to Galen. The first chapter focuses on the Hippocratic tradition that Galen studied and accepted as the work of a single great "Hippocrates". It also discusses other “ancients” who followed the Hippocratics. The second chapter focuses on Galen’s contributions to the Greek medical tradition he inherited, as he molded it into something he believed was closer to what the true “Hippocrates” wanted.

I also look at the basic themes in Greek medical practice—both physiological and ethical—so the reader can learn of the changes that occur over the centuries and perhaps compare the things done by these ancient physicians to what is being done today. To be more concise in the presentation of my research, each chapter is divided into subsections dedicated to discussing Hippocrates, medical ethics, and beliefs on health and anatomy. My thesis also extensively uses primary sources from both the *Hippocratic Corpus* (for Chapter 1) and a number of Galen's medical treatises (for Chapter 2).

As a collection of works, the *Hippocratic Corpus* is a gold mine when it comes to pre-Galenic Greek medicine. Like ancient scholars who read the treatises to learn about Hippocrates, I read several of these treatises to learn about the medical culture in Ancient Greece. It was a way for me to find an origin point for my research and compare these texts with the changes that

happened as time went on. As for Galen, it was not difficult to find his writings, as he spent much of his life writing and a good deal of it has survived. So much so that, Nutton estimates that about ten percent of surviving Greek literature up to 350 A.D. is from Galen.[23] Not only did Galen write his original pieces, but he also wrote two works titled *On My Own Books* and *On the Order of My Own Books,* which he wrote to ensure people knew which books were written by him. He also wrote numerous commentaries on Hippocratic texts. I was also able to make use of Henirich von Staden's collection of the Alexandrian anatomist Herophilus in *Herophilus: The Art of Medicine in Early Alexandria*.

While historic interest in Galen and Greek medicine is not new, I believe there is a lack of scholarship that focuses on Galen's contributions to the figure of Hippocrates specifically. My hope is that my thesis fills this niche and gives more context to the creation of "Hippocrates." Galen's journey to becoming a true Hippocratic physician led him to create and solidify what I believe is one of his greatest legacies in the field of medicine. This version of Hippocrates which Galen helped create is a figure whom physicians have striven to emulate, and Hippocrates' name will most likely continue to be remembered because of Galen.

[23] Vivian Nutton, *Ancient Medicine* (London 2004): 390 n.22.

CHAPTER 1: THE HIPPOCRATIC TRADITION BEFORE GALEN

On Hippocrates

Before the time of Galen (c. 129 A.D.-216 A.D.), Hippocrates (c. 460 B.C.E.- 370 B.C.E) was a name well-solidified in the minds of many Greek physicians. By this time, according to the distinguished historian of science G.E.R. Lloyd, "Hippocrates' fame inevitably eclipsed that of all other early doctors, and he came to stand for whatever any given writer held to be most valuable in early medicine".[24] The collected writings under his name were seen as the authoritative voice on both the practice of medicine and the role of a physician within society. Very little, however, is known about the historical Hippocrates. Modern scholars know he existed; he was a physician active in the later fifth and early fourth centuries BCE, who according to ancient accounts was born on the Greek island of Cos. Nothing is known about his life, including which parts of what is now called the Hippocratic Corpus were written by him. What is known about the Corpus is that it is made up of roughly 70 treatises composed over the span of time from the late 5th century to the early 3rd century BCE. The "Hippocrates" imagined as the "Father of Western Medicine" is a mythic figure whose biography was created over centuries through legends and letters that are most likely fictional. In his book *Ancient Medicine,* Vivian Nutton discusses the Greek tradition of "composing imaginary speeches or letters by famous persons from the past as school exercises and public display pieces gradually blurred the distinction between the genuine and the false".[25]

What may have once been bits of information closer to historical accuracy turned into stories about a legendary physician who became a founding hero and model for the Greek

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[24] Geoffrey E.R. Lloyd, "Introduction," in *Hippocratic Writings.* (Penguin Classics, 1983), 51.
[25] Vivian Nutton, *Ancient Medicine.* 2nd ed. (London; New York: Routledge, 2013), 53.

medical profession. For example, according to legend, Hippocrates is credited with diagnosing King Perdiccas of Macedon with lovesickness. According to the story, because Hippocrates "treated all of Greece and was so admired," he "was summoned by Perdiccas, King of the Macedonians, who was thought to be consumptive, to come to him at public expense".[26] After accepting Perdiccas' call, Hippocrates eventually discovered that the Macedonian king had fallen in love with his mistress Phila, "after he caught Perdiccas changing color when he looked at her".[27] Another story of legend involving Hippocrates is his refusal to treat the Persian king Artaxerxes. Like in the story with Perdiccas, Hippocrates' fame reaches Artaxerxes, who "begged him to come to him…offering great gifts [that] Hippocrates refused".[28] According to this author, Hippocrates did not go to Artaxerxes because of "his dignity, indifference to money, and love as home".[29]

While these stories are most likely false, they give light on how Hippocrates was seen by Greek physicians. According to Jody Rubin-Pinault, the first story shows the "exalted moral status" of Hippocrates, as later in the tale Perdiccas requests for Hippocrates to be his court physician, but Hippocrates refuses and returns to Greece. It also shows how good of a physician Hippocrates was, since "the diagnosis of lovesickness came to be regarded as the sign of a brilliant physician".[30] The story with Artaxerxes fills Greek physicians with a sense of patriotism of sorts. For some physicians, "Hippocrates exemplified the Greek physician who would not

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[26] Jody Rubin Pinault, "Hippocrates and Perdiccas," *Hippocratic Lives and Legends* 4, (1992): 61, https://doi-org.proxy.library.emory.edu/10.1163/9789004377295_005
[27] Ibid.
[28] Jody Rubin Pinault, "Hippocrates and Artaxerxes," *Hippocratic Lives and Legends* 4, (1992): 80, https://doi-org.proxy.library.emory.edu/10.1163/9789004377295_006
[29] Ibid.
[30] Pinault, "Hippocrates and Perdiccas

treat political enemies".[31] For others, this story "was a useful emblem of philosophical disdain for riches, comforts, honors, and of philosophic independence and principles".[32]

Both of these stories last for centuries, with Galen mentioning Perdiccas and Artaxerxes in *The Best Doctor is Also a Philosopher* when he states that a true Hippocratic physician "will scorn Artaxerxes and Perdiccas, [and] will wish never to come into the sight of the former; as for the latter, he will heal him of the disease he suffers, regarding him as a man in need of the Hippocratic art".[33] Because Galen does not go into specifics on who Perdiccas and Artaxerxes were, Pinault suggests that this is because people were familiar with this story of "Hippocrates". The enduring nature of these stories on the life of "Hippocrates" show how he was seen throughout Greece, as a figure all physicians should look up to and emulate.

While there were many stories told about Hippocrates that were thought to be true, the trust that scholars of Galen's time had in the "Hippocrates" of legend was not necessarily all in blind faith. In his Introduction to Hippocratic *Writings, Prof.* Lloyd discusses how in the 2nd century CE, the "writings of Rufus and Soranus establish that they were far from accepting everything that they ascribe to Hippocrates".[34] Some attempted to determine which parts of the *Hippocratic Corpus* were written by Hippocrates. It was known by ancient scholars that these writings were not all created by Hippocrates but instead written by a diverse range of authors. Like historians today, scholars working in the ancient Greek world could see how writing style and opinions changed between some of the treatises. For example, in *Epidemics, Book I,* the author takes some time to discuss how the treatment of an ill person is a team effort. There were

[31] Pinault, "Hippocrates and Artaxerxes," 89.
[32] Ibid.
[33] Galen, *That The Best Doctor is Also a Philosopher* ch.3.
[34] Lloyd, "Introduction," 52.

three different working parts for a physician to be aware of when practicing medicine: "the disease, the patient, and the physician".[35] According to this author, "the physician is the servant of the science, and the patient must do what he can to fight the disease with the assistance of the physician".[36] This relationship between patient and physician is one of cooperation. The patient is the one to take charge of their health, and the physician is there to pass along their medical knowledge and expertise to ensure the patient can make the best possible decision. Patients are respected and not seen as inferior to their doctors because they do not have the same amount of medical knowledge within their minds.

In contrast, the writer of *The Science of Medicine* seems to have a different idea of the patient-physician relationship. In this text, the author asserts the intellectual superiority and so authority physicians had over those they treated. In his defense of medicine being an art, the author brings up a physician's ability to cure. While some at the time were apparently arguing that medicine was not an authentic art because there were cases of people dying after taking a "cure", the author proceeds to turn the tables and blame the patient for their misfortune. He wonders "what trustworthy reason leads them to absolve a patient's weakness of character and impute instead a lack of intelligence on the part of his physician".[37] Consider that a patient died not because the doctor prescribed the incorrect cure, or because the medicine did not work, but because the patient did not follow the physician's instructions. The author doubles down on this stance, claiming it is more likely that patients "will disobey their doctors rather than that the doctors…will prescribe the wrong remedies".[38] When reading these different treatises, and

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[35] *Endemics, Book I,* Hippocratic Writings. ch. 11, translated by J. Chadwick and W.N. Mann.
[36] *The Science of Medicine,* Hippocratic Writings. ch. 7, translated by J. Chadwick and W.N. Mann.
[37] Ibid.
[38] Ibid.

noticing the difference in purpose, writing style, and tone, I had to believe that ancient scholars could also see such differences made efforts to figure out which were the authentic writings of Hippocrates.

While we are mostly in the dark about the details of the life of the historical Hippocrates and will most likely never know what parts, if any, of the *Hippocratic Corpus* were written by him, the ancient Greeks were quite successful at creating a biography around this ancient physician, drawing where they could on the Hippocratic writings. For example, in Galen's *On the Doctrines of Hippocrates and Plato,* Galen compares writings supposedly made by the two ancient figures. The writing style within this piece gives off a sense that Galen at this point in his life believes to have a solid belief on who Hippocrates was. At the outset, Galen talks about proposing "to investigate the teachings of Hippocrates and Plato," as well as examining them.[39] One does not have to read far into this text to see that the supposed teachings of Hippocrates have already been established since it would be hard to examine Hippocrates' teachings if they had not been figured out. This prominence "Hippocrates" had in the field of medicine continued to last for millennia. While other ancient writers on medicine and anatomy, including Galen, were challenged and "overthrown" in the early modern era, the reputation of Hippocrates, as Lloyd notes, "in many respects went untouched" as physicians "in the sixteenth, seventeenth and eighteenth centuries...continued to express their admiration for Hippocrates" and "advocated a return to what he stood for".[40] For example, English physician Thomas Sydenham (1624-1689) stated that "Hippocrates was an 'unrivaled historian of disease', who had 'founded the Art of Medicine on a solid and unshakeable basis".[41]

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[39] Galen, *On the Doctrines of Hippocrates and Plato* ch. 2.
[40] Lloyd, "Introduction," 59.-an illustration of Lloyd's point
[41] Ibid.

The Hippocratic writings are used to support the idea that medicine was an art that could be placed on the same pedestal as math, astronomy, and philosophy. The author of Hippocratic *The Science [Techne] of Medicine* at the very end of his treaty supports the skill of healing as valuable, "demonstrated by the skill of those proficient practitioners whose actions are better proof than their words".[42] While the historical Hippocrates is a figure shrouded in mystery, the influence of the ideas ascribed to him and the legends created around him put the Hippocratic tradition of medicine on the map throughout the Mediterranean and eventually the globe.

On Medical Ethics

The most well-known text of the *Hippocratic Corpus* is *The Oath*. Written sometime during the 5th century B.C.E., this vow is the origin of the promise medical students have made for centuries to do no harm to their patients and act in their best interest. Very different from the variations of the oath spoken at medical schools today, which focus on a person's morals, the original *Hippocratic Oath* covers other reasons why a physician should "refrain from wrong-doing and injury" while treating a patient.[43] After doing a quick read-through, it is easy to think that physicians of Ancient Greece swore this oath based on their morals. That these doctors promised to do no harm solely because it was the right thing to do. However, after a closer inspection of the text, one can see other important reasons, such as reputation and religion, are also emphasized.

In his article *In A Pure and Holy Way,* Heinrich von Staden notes that "it has been maintained that the personal morality of the physician is not raised explicitly as an issue by

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[42] *The Science of Medicine,* Hippocratic Writings. ch. 14, translated by J. Chadwick and W.N. Mann.
[43] Appendix, lines 9-10.

medical writers until the Hellenistic (c. 323 B.C.E.-32B.C.E.) or Roman periods (c. 31 B.C.E.-180 A.D.)".[44] Because the *Hippocratic Oath* was written during the Classical period (c. 510 B.C.E.-323 B.C.E.), there must be other reasons why a physician would recite this oath. von Staden then argues that these motivators were "considerations of dóxa (someone's professional reputation) and of téchnē (practicing in conformity with professional expertise)".[45] We can see evidence for von Staden's claim at the end of the *Oath*, where the swearer requests that if he carries out the oath, may he "reap the fruits of a good reputation involving [his] life involving [his] life and [his] art among all men for all time".[46] However, if he transgresses it, the swearer asks "may the opposite of these happen".[47]

Not only does *The Oath* promise the physician who upholds it a good reputation for upholding it, but it also explains how one would build and maintain that reputation. When a physician enters any house, he is there "for the benefit of those suffering" and commits to "restrain from all intentional wrongdoing and harm, and especially from sexual relations with women's and men's bodies, free and slave".[48] A physician who swears this oath also promises to keep secret anything he hears or sees "during treatment and outside treatment in the life of men".[49]

This expectation of behavior was to be standard for a physician in both public and private life. Although the author uses the word téchnē, which is an art or craft and is typically used to

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[44] Heinrich von Staden, "'In a Pure and Holy Way': Personal and Professional Conduct in the Hippocratic Oath?" *Journal of the History of Medicine and Allied Sciences, Inc* 51, no. 4 (1996): 404-405, https://doi.org/10.1093/jhmas/51.4.404.
[45] Ibid, 405
[46] Appendix, lines 18-19
[47] Ibid, 18-19.
[48] Ibid, 14-15.
[49] Ibid, 16.

refer to someone's professional work, there are two occasions where the phrase "my art and my life (bíos)" are used, with bíos being used to encompass everything outside of a physician's téchnē.[50] In "*A Pure and Holy Way"*, von Staden goes into detail on possible translations for the word bíos. He states that the Hippocratics used the word "in a wide range of senses, including 'life' as opposed to 'death,' 'duration of life' or 'lifetime,' 'means of living' or 'livelihood,' and 'mode or manner of living' or 'lifestyle'".[51] So, reading and interpreting "my art and my life" is not as straightforward as might seem. In von Staden's view, it is likely that *bíos* should be translated as "'mode of life' or the 'manner of living one's life,' that is, the ways in which a person shapes the series of voluntary activities, and the responses to involuntary experiences, which make up his or his history, or the totality of actions and occurrences that constitute a given human being's consistent manner of living".[52] If this is indeed what the author of the "Oath" meant when he wrote the word '*bíos'*, then the life the physician says he will guard, along with his art, is a "certain consistent, individual mode of living, one that depends in great measure upon his own actions and hence upon his deliberate choices".[53]

Another external factor, along with reputation, that should influence a physician who swears *The Oath* is religion. The téchnē and bíos a physician is supposed to guard should be led in "a pure and holy way".[54] It is the word "holy" (hosíōs) that covers religion in this phrase. Something described as "holy" meant it was "'permitted or enjoined or sanctioned by the gods,' 'not forbidden by divine law,' or 'inoffensive to the gods'".[55] In his breakdown of "holy," von

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[50] Ibid, 12, 18-19.
[51] von Staden, "In a Pure and Holy Way," 419.
[52] Ibid, *420*
[53] Ibid
[54] Ibid*,* 407 (5.i)
[55] Ibid, 426

Staden brings in the words “sacred” (hierós) and “just” (díkaios). Something described as “sacred” had some sort of “divine ownership or origin, and it hence often entails restrictions in the use of, or association with, an object or a person”.[56] While people were freely able to associate with something “holy,” they were unable to do so with something “sacred.” As for “just”, von Staden defines the word as something “which is permissible, lawful, and right to do in relation to other human beings”.[57] While both “holy” and “just” refer to things people are allowed to do, “just” refers to accepted behaviors towards other people, while “holy” refers to something “allowable to do in relation to divinities”.[58]

After understanding the Greek word *hosios* as “holy”, we can see how the word most likely refers, in von Staden's words, to the physician’s "relation to the gods” in terms of things he can do without upsetting them.[59] Those who swear this oath commit themselves to living a life “free of offense to the gods in interactions with the profane sphere,” to protect their life and art.[60]

This is just one of multiple instances in *The Oath* where religion is clearly a focus. At the start of *The Oath,* a physician swears “by Apollo the physician, and Asclepius, and Health, and Panacea, and by all the gods and goddesses, making them [his] witness”.[61] It is interesting to see this emphasis on religion at the very start of the oath, given that some Hippocratic writers, such as the author of *The Sacred Disease*, had an issue with healers who did not practice the true art of medicine, but focused solely on the divine when it came to treating epilepsy. While it initially seems like this author believes that disease had nothing to do with religion, this is not necessarily

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[56] Ibid
[57] Ibid, 427
[58] Ibid
[59] Ibid, 428
[60] Ibid, 433
[61] Appendix, lines 1-2

true. Within the text, the author says that all diseases are natural as well as divine. They were natural in the sense that every disease had an explainable cause, but divine in the sense that people and as a result, disease, were a part of the universe created by the gods. Although he does believe in a divine element of disease, epilepsy was no more divine than other diseases. It had this reputation "because it is completely different from other diseases".[62]

The author goes on to claim that those who described epilepsy as 'sacred' were "witch-doctors, faith-healers, quacks and charlatans".[63] He attempts to tear down their reputation, saying they "pretend to be very pious and to be particularly wise," since they invoked "a divine element".[64] He then claims that their use of religion was only a façade used "to screen their own failure to give suitable treatment and so called this (epilepsy) a 'sacred' malady to conceal their ignorance of its nature".[65] If the patient survived, "their reputation for cleverness [was] enhanced while, if he dies, they can excuse themselves by explaining that the gods are to blame while they themselves did nothing wrong".[66] Written sometime during the 4th century B.C.E, there is a good chance this author was aware of, or even recited the oath at some point during his medical journey. Was he too not also invoking the gods when he swore this oath, asking them to be his witnesses, and to grant him a good reputation should he uphold the oath?

The *Hippocratic Oath* is a document that gives light into the values a physician was to uphold. They were supposed to practice their techne of healing others to the best of their ability. Those responsible for teaching someone are meant to be held in high regard, with the new

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[62] Ibid, ch.1.
[63] *The Sacred Disease,* Hippocratic Writings. ch. 2, translated by J. Chadwick and W.N. Mann.
[64] Ibid ch.2.
[65] Ibid.
[66] Ibid.

physician swearing "consider his family equal to [his] brothers and to teach them the art, if they desire to learn it, without pay or contract".[67] The promise to uphold a good reputation and the religious language seen throughout the text reveal a medical world where not just morals drove physicians to do their job well. This document has influenced the practice of medicine for centuries, and because of its name, has painted Hippocrates as a physician who strove to heal people and to do no harm.

On Medical Knowledge (Humors and the Environment)

Although the term "Hippocratic Tradition" is used throughout this essay, it should be known that there was not one singular idea about medicine and disease that dominated in Greek antiquity. There were multiple theories on different aspects of healing. According to Lloyd, these ranged "all the way from the belief that all diseases have a single origin to the view that there are as many different diseases as there are patients, or that wherever any differences whatsoever can be found between two sets of symptoms, two different diseases must be diagnosed".[68] Even things that were generally agreed upon, such as the theory of humours within the body, had a variety of sub-beliefs. In *The Nature of Man*, the author refers to the humoral theory people today are most familiar with. In chapter four, he states that "the body contains blood, phlegm, yellow bile and black bile".[69] These were the substances that for this author determined pain and health. The author defines health as "that state in which these constituent substances are in the correct proportion to each other, both in strength and quantity, and are well mixed".[70] A person

[67] Appendix, lines 5-6.
[68] Geoffrey E.R. Lloyd, "Introduction," in *Hippocratic Writings.* (Penguin Classics, 1983), 21.
[69] *The Nature of Man,* Hippocratic Writings. ch. 4, translated by J. Chadwick and W.N. Mann.
[70] Ibid

would be in pain "when one of the substances presents either a deficiency or an excess, or is separated in the body and not mixed with the others".[71] Should this separated substance persist, it was inevitable that "not only the part from which it has come, but also that where it collects and is present in excess, should become diseased, and because it contains too much of the particular substance, cause pain and distress".[72]

Not everyone, however, believed there were only four humors. For example, in *On The Natural Faculties II,* Galen provides testimony that the ancient physician Praxagoras (c. 340 B.C.E.—280B.C.E.) said there were ten humours, "not including the blood (the blood itself being an eleventh)".[73] However, Galen explains this was not a departure from the teachings of Hippocrates by saying that "Praxagoras divides into species and varieties the humours which Hippocrates first mentioned, with the demonstration proper to each".[74] According to Lloyd, other aspects of the humors physicians and medical writers did not completely agree on were "their origin and role, for some writers maintained that they are natural or congenital, others that they are pathological, and some saw them as the causes, others as the products, of diseases".[75].

The humors are just one topic out of many on which Hippocratic had conflicting views. The Hippocratic Tradition presents not one singular medical authority, but instead a medical culture with a variety of practices and beliefs.

With this accurate picture of the Hippocratic tradition in mind, it is now easier to discuss the theories physicians held to at the time. In terms of the cause of disease, it was generally thought that nature had a lot of influence over a person's health. In *Aphorisms,* the author

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[71] Ibid
[72] Ibid
[73] Galen, *On the Natural Faculties* 2. pgs. 217-218
[74] Ibid, 218.
[75] Lloyd, "Introduction," 23.

discusses the effects of seasons, temperature, and winds on the human body. According to this writer, "the changes of the seasons are especially liable to beget diseases, as are great changes from heat to cold, or cold to heat in any season".[76] He believed "south winds cause deafness, misty vision, headache, sluggishness and a relaxed condition of the body".[77] In contrast, the north wind "brings coughs, sore throats, constipation, retention of urine accompanied by rigors, pains in the sides and breast".[78] As for the seasons, it was supposedly "in autumn that diseases tend to be most acute and most likely to prove fatal," with spring being "the healthiest and least fatal time of year".[79]

The importance of seasons and winds when it came to a person's health is systematically developed in the Hippocratic *Airs, Waters, Places.* In this text, the author says that a physician should study the effects of seasons, warm and cold winds, and water. According to him, for people who live in an area "which is sheltered from northerly winds but exposed to the warm ones," their "water will be plentiful but it will consist chiefly of brackish surface water".[80] Anyone who lives there will "have moist heads full of phlegm," which flows down from their head and "is likely to disturb their inner organs".[81] As a result, their bodies do not take food or drink well. Diseases in this area would include "convulsions and asthma" in children, "diarrhea, dysentery, ague," and prolonged fever in the winter for men, and vaginal discharge for women.[82]

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[76] *Aphorisms Section III,* Hippocratic Writings. ch. 1, translated by J. Chadwick and W.N. Mann.
[77] Ibid, ch.5.
[78] Ibid.
[79] Ibid, ch.9.
[80] *Airs, Waters, Places,* Hippocratic Writings. ch.3, translated by J. Chadwick and W.N. Mann.
[81] Ibid.
[82] Ibid.

However, diseases such as pneumonia "and other acute diseases are rare since such diseases do not flourish in a watery constitution".[83]

In contrast, in an area "sheltered from the south but with cold prevailing winds," their "water supply is hard and cold and usually brackish".[84] Instead of having issues with phlegm like in the former location, this district will have people who "tend to constipation, their bowels being intractable, but their chests will move easily".[85] They will also have more problems in relation to bile. Ophthalmia (inflammation of the eye), "occurs and is of long duration tending to become both serious and chronic, and the eyes suppurate (form pus) at an early stage".[86] Women, according to this Hippocratic writer, tended to suffer from infertility due to the water and have a painful period. Unlike the women who lived with warmer winds, these women rarely had miscarriages.[87]

On Medical Knowledge (Diet)

In addition to nature being a large cause of disease, the Hippocratic authors emphasizes how diet influenced health. If one ate the wrong foods, "or too much or too little food," it could "disturb the balance of the natural constituents of the body".[88] In *Aphorisms,* the author says, "sick people are in error when they take a light diet which only increases their distress".[89] Any drastic weight gain or loss was detrimental to the body, and people should avoid either extreme.

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[83] Ibid.
[84] Ibid, ch.4.
[85] Ibid.
[86] Ibid.
[87] Ibid.
[88] Lloyd, "Introduction," 24.
[89] *Aphorisms Section I,* Hippocratic Writings. ch. 5, translated by J. Chadwick and W.N. Mann.

The author also talks about using food as a preventative medicine. Asserting that "stomachs are warm and [people] sleep longest" in the spring and winter, he recommends that people should eat more because "the body produces more warmth and thus needs more nourishment".[90] However, if one was to get sick, food could also be used as a cure. For example, the author says a fluid diet is best for one who has become ill with a fever.

On Medical Knowledge (Anatomy and Physiology)

As Greek physicians attempted to understand disease, they constructed theories about both anatomy and physiology. Discussing the anatomy of blood vessels, the author of *The Nature of Man*, mentions different categories of vessels based on their size. The largest came in four pairs. One of these pairs "runs from the back of the head, through the neck, and weaves its way externally along the spine".[91] After passing through the spine, these blood vessels travel "into the legs, transverse the calves and the outer aspect of the ankle, and reach the feet".[92] Because of the location of these vessels, the author recommends that "venesection for pains in the back and loins should therefore be practiced in the hollow of the knee or externally at the ankle".[93]

The second pair of large blood vessels run "from the head near the ears through the neck, where they are known as the jugular veins".[94] They then "continue deeply close to the spine on either side" and "pass close to the muscles of the loins, entering the testicles and the thighs".[95] These vessels could also be found traveling the "popliteal fossa (a diamond-shaped space behind

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[90] Ibid, ch.15.
[91] *The Nature of Man,* Hippocratic Writings. ch. 11, translated by J. Chadwick and W.N. Mann.
[92] Ibid.
[93] Ibid.
[94] Ibid.
[95] Ibid.

the knee joint) on the medial side (inner side of the knee) and passing through the calves [and] on the inner aspect of the ankles and feet".[96] The author recommends "venesection for pain in the loin and in the testicles should therefore be done in the popliteal area or at the inner side of the ankle".[97]

The third pair of blood vessels run "from the temples, through the neck and under the shoulder-blades," meeting "in the lungs; the right-hand one crossing to the left, the left-hand one crossing to the right".[98] The right vessel "proceeds from the lungs, passes under the breast and enters the spleen and the kidneys," while the left vessel "proceeds to the right on leaving the lungs, passes under the breast and enters the liver and kidneys".[99] It is unclear whether these vessels have any value in venesection, as the author does not give any recommendations on the subject like he does for the first two pairs.

The fourth and final pair of large vessels "runs from the front of the head and the eyes, down the neck and under the clavicles".[100] They then travel "on the surface of the arms as far as the elbows, through the forearms into the wrists and so into the fingers," and return "from the fingers running through the ball of the thumb and the forearms to the elbows where they course along the inferior surface of the arms to the axillae (arm-pit)".[101] Once out of the arms, these vessels "pass superficially down the sides, one reaching the spleen and its fellow the liver," where they "course over the belly and terminate in the pudendal (genital) area".[102] Similar to the

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[96] Ibid.
[97] Ibid.
[98] Ibid.
[99] Ibid.
[100] Ibid.
[101] Ibid.
[102] Ibid.

third pair of blood vessels, the author makes no mention of any venesection recommendations for the fourth vessels.

After going over the four main pairs of large vessels, the author discusses the "large number of vessels of all sizes running from the belly to all parts of the body".[103] According to the author, the purpose of these vessels was to take food to the body, as well as create "connections between the large main vessels".[104] The author then goes over how to perform a proper venesection on any of these sets of veins. According to him, "care should be taken that the cuts are as close as possible to the determined source of the pain and the place where the blood collects".[105]

Another treatise, *The Science [Techne] of Medicine* (perhaps written after *The Nature of Man*) also sheds light on some of the earlier medical beliefs on anatomical structures in Ancient Greece. In Chapter 10, the author gives his explanation as to why the "less obvious or internal diseases should not be wholly beyond the power of science".[106] This group of diseases included those "of the bones and of the cavities of the body".[107] According to the author, "every part of the body which is covered with flesh or muscle contains a cavity".[108] Each organ was hollow, "and in health [was] filled with life-giving spirit; in sickness it [was] pervaded by unhealthy humours".[109] He uses the arms as an example to point out these "cavities," along with the thighs and legs. The author also states that areas "poorly covered with flesh [also] contain such

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[103] Ibid.
[104] Ibid.
[105] Ibid.
[106] *The Science of Medicine,* Hippocratic Writings. ch. 10, translated by J. Chadwick and W.N. Mann.
[107] Ibid.
[108] Ibid.
[109] Ibid.

cavities".[110] This meant that "the trunk [was] hollow and contains the liver, the skull contains the brain and the thorax the lungs".[111] Along with the cavities, the author then writes about the "many blood-vessels and nerves which do not lie loose among the muscles but are attached to the bones and ligaments which form the joints".[112]

Much of the information given by this author reflects a time when doctors could for the most part only look at the outside of a person to figure out what was going on in the interior. There would be instances where perhaps one could learn if they had a patient with an open wound. For example, this same author writes how the joints "contain a frothy fluid," which could be a reference to synovial fluid, which is a thick liquid found between joints.[113] There would be no way to know this unless someone came in with a joint injury that either involved an open wound, or surgery which had to be performed. However, knowledge on internal anatomy and physiology were limited because these physicians did not have the opportunity to see the internal organs. They were unable to dissect the body of a deceased person and get an accurate picture. We can see the effects of this limitation when the author claims that if the joint was opened, "large quantities of fluid escape and much damage is done".[114] If the fluid the author references is indeed synovial fluid, there is not enough in a single joint to be described as "large quantities."

Because of the special circumstances of Ptolemaic Alexandria (331 B.C.E.-30 B.C.E.) that allowed dissection, Greek physicians had the opportunity travel and either observe or perform a dissection, which were usually done on the bodies of executed prisoners. Although Ptolemaic Alexandria became a very important and vital location to learn medicine in the

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[110] Ibid.
[111] Ibid.
[112] Ibid.
[113] Ibid.
[114] Ibid.

centuries after Alexander's foundation of the city, the medical culture in Egypt was well known to the Greeks centuries before the city's establishment in 331 B.C. In the *Odyssey* (c. 8th century B.C.E.), Homer tells of drugs Helen of Argos acquired in Egypt to help people forget their troubles. She obtained them as "gifts from Polydamna the wife of Thon, a woman of Egypt, land where the teeming soil bears the richest yield of herbs in all the world: many health itself when mixed in the wine, and many deadly poison";[115] Homer continues to describe the medical culture of Egypt, saying that "every man is a healer there, more skilled than any other men on earth—Egyptians born of the healing god himself".[116]

Another example comes from the Greek historian Herodotus (c. 485 B.C.E.—425 B.C.E.) who describes Egyptian medical practices in *The Histories*. He says that physicians could be found all throughout the country, and that "the practice of medicine is so specialized among them that each physician is a healer of one disease and no more".[117] Some of these doctors would "profess themselves to be physicians of the eyes, others of the head, others of the teeth, others of the affections of the stomach, and others of the more obscure ailments".[118] He also considered Egyptians "the most healthy of all men next after the Libyans," primarily due to their diet.[119] This came from a belief the Egyptians had that "all the diseases which exist are produced in men by the food on which they leave".[120] As a result, "for three successive days in each month they purge, hunting after health with emetics and douches".[121] As a contemporary of Hippocrates, as well as a historian who was very interested in medicine, the fact that Herodotus spoke highly of

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[115] Homer, *The Odyssey,* 4.253-257.
[116] Ibid, 4.258-260.
[117] Herodotus, *The Histories* 2.84.1
[118] Ibid.
[119] Ibid, 2.77
[120] Ibid.
[121] Ibid.

the health of Egyptians, ranking them higher than Greeks, shows how aware they were of Egyptian medicine.

After Alexandria was founded by Alexander the Great, and Egypt was under the rule of the Ptolemies, the city was "offered a remarkably supportive environment for intellectual innovation" as stated by Nutton.[122] Different types of intellectuals from all over the Mediterranean such as "poets, sculptors, mathematicians, and doctors" travelled to the city to perfect their craft.[123] For physicians, the viewing or taking part in the dissection of cadavers had been permitted starting in the early third century BCE.[124] Before, physicians and other scientists could only dissect animals, and apply what they saw onto their theories for human anatomy.

Two physicians who were able to take advantage of this new opportunity were Herophilus (335 B.C.E.-280 B.C.E.) and Erasistratos (304 B.C.E.-250 B.C.E.). Each of them made great contributions to the field of anatomy. Herophilus is credited with discovering not only "the existence of nerves but also [with] accurately describing the paths of at least seven pairs of cranial nerves and recognized the difference between motor and sensory nerves".[125] He is also important in terms of cardiovascular anatomy in that "he also discovered the heart valves, the systematic anatomical distinction between arteries and veins, and the numerous other smaller features of the vascular system".[126] Herophilus then went on to be "the first to develop an

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[122] Nutton, *Ancient Medicine,*132.
[123] Ibid.
[124] Nutton, "Galen the Greek," 20.
[125]Heinrich von Staden, "Body and Machine: Interactions Between Medicine, Mechanics, and Philosophy in Early Alexandria," in *Alexandria and Alexandrianism,* (Malibu: J. Paul Getty Museum, 1996), 86-87
[126] Ibid, 87.

elaborate quantitative theory of the pulse," using musical units "to measure differences among the pulses of people at different stages of life".[127]

As for Erasistratos, von Staden explains how he extended Herophilus' work, "making an even clearer distinction between motor nerves and sensory nerves, by specifying more precisely the origin of the nerves in the brain as well as the nervous connections between the brain and the spine, and by demonstrating the function of the heart valves".[128] Erasistratus described the heart an "automatic, double-action, suction-and-force pump".[129] This pump was "equipped with superbly functional values that ensure the irreversibility of the flow both of what rushes into its two chambers and of what it pumps out".[130] It is here we begin to see an anatomy of the heart that is familiar to modern eyes. However, while the ancient physicians were able to better understand the anatomy of the heart, they were not able to make the same steps forward in terms of its physiology.

Because the treatises within the *Hippocratic Corpus* were written over two or three centuries, they reflect different experiences with anatomical knowledge. The late Hellenistic treatise *The Heart,* presents a more specific analysis of the anatomy of the heart, but we can see how the physiological ideas on the organ are mostly incorrect for the most part. The short treatise was written sometime much later than other Hippocratic treatises, around 260 B.C. (roughly twenty years after the death of Herophilus and ten years before the death of Erasistratos). The author of *The Heart* starts by describing the physical appearance of the heart. The organ is "enveloped in a smooth membrane," with "a small quantity of fluid," meant to

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[127] Von Staden, "Body and Machine," 89.
[128] Ibid, 91.
[129] Ibid, 93.
[130] Ibid.

"protect the pulsation of the heart" as well as remove excess heat within the heart.[131] This incorrect talk about the heart's importance in getting rid of excess heat is found throughout this treatise. Although we know otherwise, *The Heart* shows how limited physicians were at the time in terms of what they could see and learn about how the heart works and gives light to how physicians and scientists would reach and support their conclusions.

For example, according to this author, the heart also drew "fluid from the lung along with the air".[132] This fluid was a tiny bit of liquid that supposedly traveled down the larynx when a person drank. The author supports the presence of the liquid by explaining if a person would "take some water, color it with blue copper carbonate or red ochre and give it to an animal which is almost dying of thirst," and cut the animal's windpipe while it is drinking, they "will find that it is stained with what the animal has drunk".[133] However, only a little bit of liquid was meant to get into the larynx. Too much, and a fit of coughing would be triggered. The author goes on to say that the purpose of this fluid was to moisten the larynx to provide "a smooth passage for the air".[134] The heart would then take this fluid from the lungs and expel it out of the body with the air. This experiment mentioned by the author shows that ancient physicians wanted to know how the body worked. They wanted to know each organ's purpose and function in order to better understand the human body and did their best to conduct experiments that they believed would give them the answers they sought. Although they were wrong, *The Heart* shows that it was not due to ignorance, but because they were limited by the technology of their time.

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[131] *The Heart,* Hippocratic Writings. ch. 1, translated by J. Chadwick and W.N. Mann.
[132] Ibid, ch. 3.
[133] Ibid, ch. 2.
[134] Ibid.

Continuing with the description of heart anatomy, the author discusses the two separate cavities found inside, most likely the left and right ventricles. These two cavities were not symmetrical visually. The right cavity "lies face downwards, fitting closely against the other".[135] It is also "very spacious, and much more hollow than the other".[136] On the other hand, the left cavity "lies somewhat lower, and extends towards the line of the left nipple, which in fact is where its pulsation is observed".[137] It also "controls and tempers its own heat," because it is "enwrapped and cushioned in the lung," which is an organ thought to be "both cold in itself and is also cooled by respiration".[138] The insides of both cavities are rough, although the "left more so than the right, for the innate heat is not situated in the right".[139] According to the author, the innate heat was strong, so in order for the left cavity to protect itself, it had to be rougher.

The next part of the heart discussed are the "ears" (auricles and atria). There is a thick vein that runs out of one atrium, which are the Superior and Inferior Vena Cava. Although the author calls these two parts of the heart "ears," he makes sure to emphasize that "they are not perforated as ears are, nor do they hear any sound".[140] Instead, the job of the "ears" is to catch air in a similar manner to the bellows of a furnace. The evidence used to support this claim is that when looking at "the heart pulsing in its entirety, the ears have a separate movement of their own as they inflate and collapse".[141]

At the end of the treatise, the author discusses other aspects of heart anatomy such as the fibers within the organ that "spread out like cobwebs through the chambers of the heart and

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[135] Ibid, ch.4.
[136] Ibid.
[137] Ibid, ch.5.
[138] Ibid.
[139] Ibid, ch.6.
[140] Ibid, ch.7.
[141] Ibid, ch.8.

surrounding the orifices on all sides".[142] The purpose of these filaments was to "serve as the guy-ropes and stays of the heart and its vessels, and as foundation to the arteries".[143] Finally and notably, the author also believed intellect was found in the heart, stating that "for man's intelligence, the principle which rules over the rest of the soul, is situated in the left chamber".[144] This belief that the heart as an important part of a person's psyche had existed in Greece centuries before *The Heart* was written. According to Aristotle (384 B.C.-322 B.C.), "it was the seat of intelligence, motion, and sensation—a hot, dry organ".[145] The heart was the organ at the "center of vitality in the body," and "other organs surrounding it simply existed to cool [it]".[146]

The cardiovascular system was just one of many studied by the Greek physicians. These beliefs on medical ethics and anatomy made up the foundation of the Hippocratic tradition that would be inherited to future doctors. One of these physicians was a man named Galen, whose claims and writings would go on to influence Hippocratic medicine for centuries.

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[142] Ibid, ch.10.
[143] Ibid.
[144] Ibid.
[145] "A History of the Heart,"
https://web.stanford.edu/class/history13/earlysciencelab/body/heartpages/heart.html
[146] Ibid.

CHAPTER 2: GALEN'S CONTRIBUTIONS TO THE HIPPOCRATIC TRADITION

On Hippocrates

If there was one extremely influential figure in Galen's education, it was Hippocrates. But who was Hippocrates? To Galen, he was an ancient figure of legend like Achilles or Agamemnon. He inherited these legends about Hippocrates' life that were centuries old. For example, after Hippocrates supposedly cured Athens from a plague, he was summoned by Perdiccas, the king of Macedonia, and Artaxerxes the king of Persia, to treat them. According to these stories, Hippocrates took up Perdiccas' offer, but refused to treat Artaxerxes despite the vast amounts of gold he was offered.[147][148]

These legends were still around during the time of Galen, who references them in *That the Best Doctor is Also a Philosopher,* as he describes the ideal physician whose "desire for financial gain is limited to what will provide for his simple bodily needs":[149]

> If such a person exists, he will scorn Artaxerxes and Perdiccas. He will wish never to come into the sight of the former; as for the latter, he will heal him of the disease he suffers, regarding him as a man in need of the Hippocratic art. He will not, however, spend all his time with Perdiccas, but will treat the poor people of Kranon and Thasos and the small towns.[150]

"Hippocrates" was a man of great renown, and Galen wanted to make contributions to the man's biography so people could have a better understanding at who "Hippocrates" was. After all, one could not be a true Hippocratic physician if they did not completely know about the man they strove to emulate. His dedication to creating a singular Hippocrates was so successful that

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[147] Jody Rubin Pinault, "Hippocrates and Perdiccas," *Hippocratic Lives and Legends* 4, (1992): 61, https://doi-org.proxy.library.emory.edu/10.1163/9789004377295_005.
[148] Jody Rubin Pinault, "Hippocrates and Artaxerxes," *Hippocratic Lives and Legends* 4 (1992): 79, https://doi-org.proxy.library.emory.edu/10.1163/9789004377295_006
[149] *That The Best Doctor is Also a Philosopher,* Galen, ch.2
[150] *That the Best Doctor is Also a Philosopher,* Galen, ch.3

we can see his influence in parts of current medical education such as reciting the Hippocratic Oath. To Galen, the historical man he helped create was the paradigm of what a Hippocratic physician should be. Every doctor should attempt to follow in his footsteps, and Galen conveniently labels himself as a true successor of "Hippocrates." Within his different works, we can see Galen become the voice of "Hippocrates" for his world, making claims about what the legendary physician said and what his claims meant in both the realms of ethics and science. In this way, he puts both Hippocrates and himself on a pedestal when it comes to what a true physician should be, and he is also quite defensive when others had different ideas about the views of the "founder" of Greek medicine. Considering the ancient physician as his first teacher, Galen's determination to learn about Hippocrates and create a story around him causes him to create his own *muthos* (mythos) around Hippocrates.

At the start of his journey to answer the question of who Hippocrates was, Galen first attempted to "discover what Hippocrates meant by a word" to make sure there was no confusion between Hippocrates and anyone who read his works. Galen's approach to learning about "Hippocrates" and learning how to interpret "his" words was to study the works of Hippocrates' contemporaries. Who better to know what "Hippocrates'" words meant than those who were alive and writing at roughly the same time he was? According to medical historian Vivian Nutton, Galen looked to writers such as Plato, Aristotle, and Herodotus, and was able to create a lexicon of classical Greek usage.[151] This lexicon was a massive project for Galen. As Nutton explains, it was "important to discover the everyday meaning of the words Hippocrates used".[152] Not only did he include medical terminology, but also prose, comedy, and philosophy. Galen

[151] Nutton, "Galen the Greek," 13.
[152] Ibid.

was not the first to create a list of Hippocratic terms. There were others who attempted to do the same, but in Galen's eyes none of them were adequate:

> μετὰ δὲ τοὺς τούτου (sc. Ἱπποκράτους) χρόνους οἱ γενόμενοί τινες συνέγραψαν ὅρους, καὶ οὗτοι δὲ οὐ πάντας. δοκόῦσι δὲ επιμελείς γεγονέναι ἐν τῇ τοιαύτῃ θεωρίᾳ οἵ τε από τῆς Ἡροφίλου αἱρέσεως καὶ Ἀπολλώνιος ὁ Μεμφίτης, ἔτι δὲ καὶ Ἀθηναῖος ὁ Ἀτταλεύς, αλλά καὶ οὗτοι οὔτε συνήγαγον τὴν πραγματείαν, ἀλλὰ διεσπαρμένως ἐν τοῖς βιβλίοις ουνέγραψαν. ἔτι δὲ καὶ ενδεώς ἀνεγράφησαν. οὔτε γὰρ πάντες ὡρίσαντο τὰ κατὰ τὴν ἰατρικήν.
>
> Certain authors who lived after the times of Hippocrates composed definitions, but not all definitions. The members of the school of Herophilus seem to have been fastidious in speculation of this kind, as was Apollonius of Memphis, and also Athenaeus of Attaleia. They too, however, neither employed the required order nor collected [their definitions into] a treatise, but rather composed them in a scattered fashion in their *books*. Furthermore, they [sc. the definitions] were described inadequately, for they [sc. the authors] did not all define them in accordance with medical science.[153]

After creating this lexicon of "Hippocratic" terminology, Galen went on to determine which books in the Hippocratic Corpus were truly written by Hippocrates himself. Now that he had established what the words of Hippocrates' meant, he could, as Nutton puts it, "fully grasp the therapeutic value of the advice given and decide what came directly from the great healer and what had been wrongly attributed or misrepresented in some way".[154] Some texts that he believed were written by his "Hippocrates" include *Epidemics*, *Water, Air, and Places, the Nature of Man,* and *Aphorisms.* On the other hand, a part of *Human Nature*, "the most important text for the later doctrine of the four humours" (Nutton p. 13) Galen considered "not genuinely Hippocratic as it promoted ideas on anatomy that he had found to be incorrect".[155]

Now that Galen knew how to read the language of "Hippocrates," and believed that he could correctly identify the works written by the man, he could continue to solidify his position

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[153] Galen, *Definitiones medicae* in "Herophilus: The Art of Medicine in Early Alexandria," 86.
[154] Nutton, "Galen the Greek," 13.
[155] Ibid.

as a true Hippocratic physician. This project included writing commentaries about his ancient teacher, to ensure that others knew what "Hippocrates" was truly saying in his writing. In his *Commentary on the First Book of Hippocrates' Epidemics,* Galen offers detailed comments on what Hippocrates said in his six books of *Epidemics*.[156] According to Galen, there were two things that made up a good commentary such as his. This first virtue was "that it preserves the thought of the man whose words it comments on and does not deviate from it" and the second was "that it teaches those who read the commentary what is useful for them".[157] In following these two virtues, Galen makes claims about what "Hippocrates" stated and how it his statements should be interpreted. Anyone who reads his commentary should trust him when he says he (Galen) has "not fabricated the reasoning about the causes that inevitably give rise to diseases based on climatic conditions" and that he has "merely followed what Hippocrates said about this".[158]

Again, because Galen, in his own mind, was a true Hippocratic physician, he by default knew what Hippocrates was thinking. Throughout his commentary, phrases such as 'Hippocrates clearly indicated,' 'Hippocrates means that,' 'Hippocrates does not mean by saying,' and 'Hippocrates would not have said this if' are scattered within the commentary.[159] These claims of certainty in relation to Hippocrates' words reveal an intense desire to defend him. We can see this passion when he calls out Quintus' commentary on Hippocrates' *Aphorisms* which did not show the two virtues noted earlier that are necessary to write a good commentary:

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[156] This copy of *Commentary on the First Book of Hippocrates' Epidemics* was translated to English from an Arabic translation of the original Greek text which has not survived to present day.
[157] Galen, *Commentary on the First Book of Hippocrates' Epidemics Part I* , pg. 75.
[158] Ibid, 79.
[159] Ibid, 121, 77, 127.

> But Quintus spoiled both virtues by ignoring that the diseases which Hippocrates said frequently appear during each individual season inevitably occur as a consequence of the condition of the air surrounding the bodies during it. Hippocrates, however, means that the occurrence of these diseases is inevitable due to the mixture of the season in which they occur.[160]

A few pages later Galen critiques Quintus' method of investigating Hippocrates' claims on seasonal diseases, which he thought inadequate and so resulting in a different (and therefore incorrect) conclusion:

> But in that book (*The Aphorisms*) Hippocrates recorded four types of variation in the seasonal mixtures, even though they are very numerous. Quintus should have considered this and then investigated and studied first of all whether the number of all these types is indeed only four or higher than that, namely the types of change in the seasons from their natural mixture. Then, if he had found them to be more than four, he should have studied what their full number is. He should then have examined and determined why Hippocrates limited himself to mentioning (only) four of them. Finally, after all of this, he should have sought a method by which he would know the powers of all varieties of seasonal change, because we cannot know in advance which unusual general diseases will occur without following this method.[161]

In Galen's *Epidemics of Hippocrates Book I,* there are more attacks on Quintus, with Galen saying that "Quintus interpreted these books and also the *Aphorisms* badly…for Quintus says that this is known only by experience, without reasoning about the cause".[162] These direct attacks on Quintus are surprising, as Quintus was responsible for teaching Numisianus, a physician whom Galen highly respected, as well as Galen's teacher Satyrus. Galen also critiques Asclepiades to defend Hippocrates. Asclepiades (c. 120BCE-40BCE) was one of the ancient physicians whose works Galen recommended people read and master.[163] Despite this, he is quite

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[160] Ibid, 77.
[161] Ibid, 101.
[162] Susan Mattern, *The Prince of Medicine: Galen in the Roman Empire,* (New York: Oxford University Press, 2013), 47.
[163] Ibid, 57.

aggressive in his attack on Asclepiades' claims about the presence and absence of a tunica media of the artery, which is the "middle layer of blood vessel walls, composed principally of thin, cylindrical, smooth muscle cells and elastic tissue":[164]

> σὺ (sc. ὦ ᾽Ασκληπιάδη) δ᾽εἰτ᾽ ἐστὶν εἰτ οὐκ ἔστι, μὴ πολυπραγμονήσας, ὑπέρ ὧν ουδέν οἶσθα σαφές, ἀποφαίνεσθαι τολμάς ὡς εἰδώς, ὁ τὰς Ἡροφίλου διαπτύων ἀνατομάς, ὁ κατεγνωκὼς Ἐρασιστράτου καὶ μικρὸν φροντίζων Ἱπποκράτους. ἆρ᾽ἀγνοείς όντως οὐκ ἐχούσας τὸν ἔσωθεν χιτῶνα τὸν σκληρὸν τὰς φλέβας τοῦ πνεύμονος;
>
> But you [Asclepiades], who are not inquisitive about whether it is present or not, have the audacity to make statements about things of which you know nothing clearly, as though you knew them–you who spit on the dissections of Herophilus, have contempt for Erasistratus, and pay little attention to Hippocrates. Are you really ignorant of the fact
>
> that the veins of the lung do not have the hard inner tunic?[165]

Reading this quote does not suggest that Asclepiades was someone Galen respected. In fact, without knowing Asclepiades was alive a few centuries before Galen, at first glance it would not be far-fetched to assume the two physicians were contemporary rivals when in fact they lived hundreds of years apart and Galen did in fact respect his predecessor.

At first, it seems that every time Galen notes someone who makes a claim that initially seemed to be opposed to what Hippocrates said, he immediately shut them down. However, as we see in reading Galen's own treatises, it is clear that Galen took his time in reading the claims of physicians before making a decision on how he should proceed in his commentary on them. In *On The Natural Faculties II,* we learn that the ancient physician Praxagoras said there were ten humours, "not including the blood (the blood itself being an eleventh)".[166] This is contrary to the

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[164] "Tunica Media," National Library of Medicine, https://www.ncbi.nlm.nih.gov/mesh?Db=mesh&Cmd=DetailsSearch&Term=%22Tunica+Media%22%5BMeSH+Terms%5D

[165] Galen, *De usu partium* 6.13 in "Herophilus: The Art of Medicine in Early Alexandria," 192-93

[166] Galen, *On the Natural Faculties* II. pgs. 217-218.

belief some Hippocratic physicians (including Galen) in just basic four humors. However, instead of saying that Praxagoras was wrong, Galen says that "this is not a departure from the teaching of Hippocrates; for Praxagoras divides into species and varieties the humours which Hippocrates first mentioned, with the demonstration proper to each".[167]

At this part of *On the Natural Faculties,* we can get a slightly better picture of Galen's process for commentary. It is not as simple as challenging and rejecting the views of people who say something different from Hippocrates on a surface level. Instead, Galen shows the thought that he puts into his claims. He is concerned to see if there is any way in which the new view is simply an addition to established Hippocratic medicine. Galen also says that those "who explain the points which have been duly mentioned, [and] those who add what has been left out," such as Praxagoras, should be praised.[168] This was because "it [was] not possible for the same man to make both a beginning and an end".[169] This included people "who [were] so impatient that they [would] not wait to learn any of the things which have been duly mentioned," as well as those "who [were] so ambitious that, in their lust after novel doctrines, [were] always attempting some fraudulent sophistry, either purposely neglecting certain subjects".[170]

Not only does Galen strongly criticize people who have an idea that is contrary to what he believes are Hippocrates' teachings, or clarify what people have said, but he also uses Hippocrates as a standard when commenting on the claims of physicians. For example, when commentating on Herophilus' claims on the location of the veins along the collarbone and ribs, Galen says that Herophilus' observation that a vein which had split into two and "the vein which

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[167] Ibid, 219.
[168] Ibid, 218.
[169] Ibid.
[170] Ibid.

proceeds to the right side lies a bit lower than the vein which proceeds to the left'... is in agreement with what appears in dissection and with what Hippocrates said."[171] This happens again with Galen's comment on Herophilus' claims on abdomen anatomy. However, this comment is more complimentary than his other ones, as it shows Galen approving Herophilus' desire to learn more about the things Hippocrates said. He uses Herophilus as an example of what physicians and people who wanted to learn medicine should do:

> Just as Hippocrates recognized these things [sc. the anatomy of the abdomen] only by making an incision in the skin and observing what lies beneath it, so, too, Herophilus later gained knowledge of it. He did not confine himself to learning this from Hippocrates, but made an effort to learn things from nature itself–through which you, too, could recognize what he recognized. Like Hippocrates, he also wrote about the anatomy of the veins. Many physicians have also exposed these veins in the bodies of human beings and have seen them and have written the same about them as did Hippocrates and Herophilus.[172]

Somewhat paradoxically, one of Galen's greatest legacies and contributions to the Hippocratic Tradition is the creation of the figure of Hippocrates. After years of searching and studying, Galen pieced together an image of someone he believes to be his greatest teacher. To Galen, "Hippocrates" was no longer an ancient figure of legend, but now both a teacher and a colleague. Galen was sure he had correctly identified what was and was not written by Hippocrates and believed that he knew exactly what the physician's words meant. Because Galen was able to figure that out, it was up to him to pass on his information to other physicians and correct those who believed otherwise.

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[171] Galen, *In Hippocratis Epidemiarum 2.4.1* in "Herophilus: The Art of Medicine in Early Alexandria," 186.
[172] Galen, *In Hippocratis Epidemiarum 2.4.1* in "Herophilus: The Art of Medicine in Early Alexandria," 226.

On Medical Ethics

Thinking himself the ideal Hippocratic physician of his time, Galen believed there were physicians who claimed to practice Hippocratic medicine, but in reality, had strayed away from the model set by "Hippocrates" (as Galen imagined him). Here again, Galen's *That The Best Doctor is also a Philosopher* makes his point clearly. Similar to athletes who "in spite of a desire to become Olympic champions, take no regular exercise which might lead to the realization of that desire," doctors "will pay lip-service to Hippocrates".[173] They will make sure to "look up to him as to a man without peer; but when it comes to taking the necessary steps to reach the same rank themselves—well, they do quite the opposite".[174] In this text, Galen discusses subjects such as medical ethics and philosophy, talking about what physicians should learn apart from medicine per se and how they should conduct themselves. If they knew nothing about astronomy, the physician "should be aware first of all that they defy Hippocrates' wish since Hippocrates charged those who pursue medicine to prepare for it by studying astronomy".[175] Those who do not choose to also apply themselves to astronomy (as well as the necessary prior study of geometry) "are not only personally ignorant of both disciplines–they actually censure others who are not equally ignorant".[176] Because these physicians were not learning other important fields like astronomy and geometry, they were unable to learn matters such as "the substance, formation, construction, size, and relationship to its neighbors of each part of the body—and indeed its position too".[177]

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[173] Galen, *That The Best Doctor is Also a Philosopher* ch.1.
[174] Ibid.
[175] Galen, *Commentary on the First Book of Hippocrates' Epidemics Part I*, pg. 95.
[176] Galen, *That The Best Doctor is Also a Philosopher* ch.1.
[177] Ibid.

To answer why "this universal admiration for the man (Hippocrates) [was] not backed up by a reading of his texts," Galen concluded that it was due to physicians' desire for wealth. In drawing this conclusion, Galen mentions how in his experience, "accomplishments follow if one is well endowed with will and ability; if either of those [was] lacking, it [was] quite impossible for the goal to be achieved".[178] He uses the Olympic athlete analogy again, saying "we can readily observe athletes failing to reach their goals, either through the natural deficiencies of their bodies or through a neglect of exercise".[179] Like these athletes, did the physicians of Galen's time "lack both potential and sufficient eagerness in their preparation for the art? Or do they have one but lack the other?"[180] To Galen, it was highly unlikely that "no one should be born with sufficient mental powers to learn an art which is so beneficial to mankind".[181] The "world [was] essentially the same as it was in previous times: the seasons have no changed order, nor has the sun's course altered, nor has any one of the stars—either fixed star or a planet—admitted of change".[182]

With a lack of mental ability being out of the question, Galen was left to claim that physician's inability to become a true Hippocratic physician was due to "the bad upbringing current in [his] times, and because of the higher value accorded to wealth as opposed to virtue".[183] This was why there was no longer "anyone of the quality of Pheidias among [the] sculptors, of Apelles among painters, or of Hippocrates among [their] doctors".[184] The fact that no one was living up to the achievements of the ancients was not because centuries had passed,

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[178] Ibid, ch.2.
[179] Ibid.
[180] Ibid.
[181] Ibid.
[182] Ibid.
[183] Ibid.
[184] Ibid.

but people "have inherited from them arts which they (the ancients) developed to such a high degree," giving those living later an advantage".[185] One would think "it would be easy, to learn thoroughly in a very few years what Hippocrates discovered over a very long period of time, and then to devote the rest of one's life to the discovery of what remains".[186] Unfortunately, "it is impossible for someone who puts wealth before virtue, and studies the art for the sake of personal gain rather than public benefit, to have the art itself as his goal".[187] Someone could not "pursue financial gain at the same time as training [themselves] in so great an art".[188]

A true Hippocratic physician such as himself must also be proficient in philosophy and not be in the field for money:

> Εἰ γάρ, ἵνα μὲν ἐξεύρῃ φύσιν σώματος καὶ νοσημάτων διαφοράς καὶ ἰαμάτων ενδείξεις, ἐν τῇ λογικῇ θεωρίᾳ γεγυμνάσθαι προσήκει, ἵνα δὲ φιλοπόνως τῇ τούτων ασκήσει παραμένειῃ, χρημάτων τε καταφρονεῖν καὶ σωφροσύνην ασκεῖν, πάντ᾽ἄν ήδη τῆς φιλοσοφίας ἔχοι τὰ μέρη, τό τε λογικὸν καὶ τὸ φθσικὸν καὶ τὸ ἠθικόν. οὐ γὰρ δὴ δέος γε, μὴ χρημάτων καταφρόνησηῶν καὶ σωφροσύνην ἀσκῶν ἄδικόν τι πράξῃῃ· πάντα γάρ, ἃ τολμῶσιν αδίκως ἄνθρωποι, φιλοχρηματίας ἀναπειθούσης ἤ γοητευούσης ἡδονής πράττουσιν...καὶ μην εἴ γε πρὸς τὴν ἐξ αρχής μάθησιν καὶ πρὸς τὴν εφεξής ἄσκησιν ἀναγκαία τοῖς ιατροῖς ἐστιν ἡ φιλοσοφία, δῆλον ὡς, ὅστις ἄν ἄριστος ιατρός ᾖ, πάντως οὗτός εστιατόριο καὶ φιλόσοφος. ουδέ γὰρ οὐδ᾽ότι πρὸς τὸ χρῆσθαι καλώς τῇ τέχνῃ φιλοσοφίας δεῖ τοῖς ιατρόῖς, ἀποδείξεως ἡγοῦμαί τινος χρῄζειν ἑωρακότας γεπολλάκις ὡς φαρμακεῖς εἰσιν, οὐκ ἰατροὶ καὶ χρῶνται τῇ τέχνῃ πρὸς τοὐναντίον ἤ πέφυκεν οἱ φιλοχρήματοι.
>
> He must be practised in logical theory in order to discover the nature of the body, the differences between diseases, and the indications as to treatment; he must despise money and cultivate temperance in order to stay the course. He must, therefore, know all the parts of philosophy: the logical, the physical, and the ethical. In that case there will be no danger of his performing any evil action, since he practices temperance and despises money: all evil actions that men undertake are done either at the prompting of greed or under the spell of pleasure…If, then, philosophy is necessary to doctors with regard both to preliminary learning and to subsequent training, clearly all true doctors must also be philosophers. That doctors need philosophy in order to employ their art in the right way seems to me to require no demonstration, when it has so frequently been observed that

[185] Ibid.
[186] Ibid.
[187] Ibid.
[188] Ibid.

> those who are interested in financial gain are druggists, not doctors, and use the art for the opposite of its natural purpose.[189]

Once a physician has mastered these skills, he could then become a true Hippocratic physician and reach "a similar attainment, [or] even become better than him".[190]

While it might seem noble for Galen to criticize other physicians as greedy and as considering medicine a wage-earning profession, rather than a philosophical pursuit, it must be noted that these claims are coming from a place of privilege. Galen's family was very wealthy, his father Nicon was a successful architect, and Galen both inherited significant wealth and as a physician, amassed a large amount of money treating people.[191] For example: Susan Mattern discusses in her biography, *The Prince of Medicine,* how one day Galen received a gift of "400 aurei-gold coins-that he accepted from his enormously wealthy and powerful friend, the senator and ex-consul Flavius Boethus, for curing his wife".[192] He also eventually went on to become the physician of the Roman Emperor Marcus Aurelius.

Galen's in-depth commentary on the responsibilities of the physician in *The Best Doctor is Also a Philosopher* continues to show his determination to bring his Hippocrates back into the spotlight. It also shows Galen's concern about what the Hippocratic medical culture had turned into, with physicians practicing medicine not because they truly valued it as an art, but as a respectable means to make money. As a result, the essence of "Hippocrates" had been taken out of medical ethics, and it was up to Galen to bring it back.

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[189] Ibid ch. 3.
[190] Ibid, ch.4.
[191] Mattern "The Prince of Medicine," 28.
[192] Ibid.

On Medical Knowledge (Anatomy and Physiology)

Like many Greek physicians of his generation, Galen spent a few years in Alexandria, Egypt. He was able to learn from the discoveries of the physicians who had travelled to Alexandria before him, like Herophilus and Erasistratus. However, by the time Galen arrived at Alexandria, human dissection was no longer a routine part of medical practice in the city. Galen did not participate in any himself, although he thought it was vital for a physician to see human anatomy in person, instead of just reading about it in a book, telling other physicians to "let it become [their] task and studious undertaking not only to learn thoroughly and accurately the form of each of the bones from a book, but also to make yourself an attentive personal observer, with your own eyes, of the bones of human beings, [which] can be done quite easily in Alexandria".[193]

In *Anatomical Procedures,* Galen talks about dissecting the body of an ape to learn about human anatomy if a student did not have access to a human skeleton. His reasoning was that "the ape is likest man in viscera, muscles, arteries, veins, and nerves, as in the form of the bones".[194] Because apes and humans had similar bone structures, everything else had to be the same. If they could not find a human skeleton, they should "choose those apes likest man, with short jaws and small canines".[195] The reason Galen urges people to learn about the human skeleton firsthand is so "they will more easily recognize and recall all that [they have] learned".[196] In order for people to observe the human body, they must be familiar with it.

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[193] Galen, *De anatomicis administrationibus,* 1.2, in von Staden "Galen's Alexandria," 200.
[194] Galen, *Anatomical Procedures,* 2.
[195] Ibid.
[196] Ibid.

Galen's time in Alexandria allowed him to not only learn about the discoveries others had made before him, but also add information of his own, updating the ever-evolving field of anatomy and physiology, confirming, or denying claims made by others. For example, Galen confirms the belief about the heart as a source of heat in *On the Affected Parts*, saying that he "showed that the heart is the source of the innate heat".[197] The perpetuation of this belief, as stated in Chapter 1, shows how ancient physicians were not able to make as big of strides in the advancement in human physiology like they were in anatomy. However, this does not take away from Galen's intelligence and importance in Hippocratic medicine. For one, he becomes an important figure in his time who urges physicians to feel a person's pulse when diagnosing them. This is something physicians do today, although it is slightly more complex as they can listen to our heartbeat directly with a stethoscope and are also able to figure out other important information such as our blood pressure.

In *The Pulse for Beginners,* Galen goes into detail on the different pulses of the heart and what they mean, in a way meant to be more easily understood by those who are just beginning their medical education. He starts by claiming that "the pulse is the same in all arteries and in the heart," and as a result, someone "may infer the nature of the pulse throughout from a single example".[198] However, this supposed pulsing motion within the arteries "is not equally possible in all cases".[199] For example, "it is clearer (the pulse) in those arteries situated in the parts with less flesh, and comparatively indistinct in those in the parts with more".[200] Some of the arteries with pulses that were easier to notice were those "in the temples, the instep of the feet, and the

[197] Galen, *On the Affected Parts,* ch.1
[198] Galen, *The Pulse for Beginners* ch.1.
[199] Ibid.
[200] Ibid.

underside of the wrist".[201] Arteries found "in the head behind the ears and on the inside of the arms" had pulses that were harder to find, but it was possible to notice them with some effort.[202] According to Galen, there was "none easier to find, better-formed, or more useful in practice than those in the wrists".[203] This was due to the wrist's lack of flesh that made it so easy.

After going over which arteries had pulses that were more easy or difficult to find, Galen next describes how to use a pulse to diagnose. First, the person must know what they are doing when touching an artery. Upon touching an artery, "one becomes aware that it is extended in every dimension (length, depth, and breadth)".[204] If a human or animal is healthy, "the artery will be found to be quite well-proportioned in its extension; in abnormal states it will have a deficiency here or an excess there, in one or other of these dimensions".[205] In order for a physician to recognize if an artery is not properly proportioned, they must become familiar with what a healthy pulse in an artery feels like. Once they know this, they can better recognize any abnormalities.

These unhealthy pulses were labelled by Galen in relation to which dimension was affected. If "the abnormal pulse appeared broader, it should be termed 'broad'; if longer, 'long'; if deeper, 'deep'".[206] If the pulse appeared to be "of less than the normal dimension in any of these respects, it should be termed 'narrow', 'short', or 'shallow'".[207] Anything that affected "all

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[201] Ibid.
[202] Ibid.
[203] Ibid.
[204] Ibid, ch.2.
[205] Ibid.
[206] Ibid.
[207] Ibid.

three dimensions equally, that which is diminished in all these respects must be termed ‘small’, and that which is augmented, ‘large’”.[208]

A physician should also know any differences in the interval of a pulse, or the “space of time between two impacts, during which the artery undergoes both diastole (when the heart relaxes) and systole (when the heart contracts)”.[209] According to Galen, when someone is training to become a physician, they should be taught “that the systole is not itself perceptible”.[210] As a result, they must learn to feel for an “’impact’ and an ‘interval’, the former being the effect on the touch due to the motion of the artery, the latter the period of rest between two impacts”.[211] In other words, an impact is the heartbeat felt after placing a finger on an artery. The interval is the amount of time between each beat. Using the interval, a physician can determine if a pulse is “‘frequent’, ‘sparse’, or ‘medium’—which is the normal state for a pulse”.[212] A frequent pulse “is that in which the period of rest is a short one,” and a sparse pulse “is that in which it (the interval) is long”.[213]

Another thing to look out for when feeling a pulse is its ‘even’ or ‘unevenness’. Even pulse “consists in the continued equality of any” of the previously mentioned characteristics.[214] For example, if a pulse was the same size “over a series of impacts, then the pulse is said to be ‘even in size’; if the speed is the same, then it is ‘even in speed’”.[215] An uneven pulse “is a loss of equality arising within any of the [previously mentioned] categories”.[216] In the possible

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[208] Ibid.
[209] Ibid, ch.4.
[210] Ibid.
[211] Ibid.
[212] Ibid.
[213] Ibid.
[214] Ibid, ch.5.
[215] Ibid.
[216] Ibid.

circumstances where "one unequal pulse occurs within a series of equal impacts, but in a regular manner".[217] According to Galen, while the pulse is uneven, because "a certain regularity has been preserved," it is still to be considered regular.[218] A pulse was only to be considered irregular if no pattern existed.

Galen also discusses the ways in which someone's pulse may change, dividing that into three categories. The first category was that of natural change, "second, that of that which is not natural, but nevertheless not unnatural; third, that of unnatural".[219] Because there are many things that could change someone's pulse, Galen states that "the artery must be observed on a number of occasions, most particularly when the subject is in perfect health and resting from all vigorous activity; but in other states also".[220] Another factor that could determine someone's pulse was their sex, and age. Men had "a much larger pulse than women" that was "also much more vigorous, slightly slower, and considerably sparser".[221] The pulse of a newborn "is comparatively frequent, while that of an old man is sparse".[222] During someone's prime of life is when their pulse will be its largest, with the opposite happening when they turn old. The same trend occurs with a pulse's vigor.

As for seasons, "mid-spring is the time of the largest and most vigorous, (pulses) which are also well proportioned in terms of speed and frequency".[223] This also happens during mid-autumn, but as fall "proceeds, there is a loss of all qualities—size, vigor, speed, frequency; and

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[217] Ibid, ch.6.
[218] Ibid.
[219] Ibid, ch.9.
[220] Ibid.
[221] Ibid.
[222] Ibid.
[223] Ibid.

so at the onset of winter it has already become small, faint, slow, and sparse".[224] On the other hand, "as spring proceeds, there is a loss of size and vigor, but an increase in speed and frequency".[225] Finally, as summer arrives, "the pulse becomes faint, small, quick, and frequent".[226] Because of the many factors that can affect a person's pulse, Galen urges students "to train both his intellectual faculties and his sense of touch, in order that he may be able to recognize pulses in practice, not just to distinguish them in theory".[227]

After going over all the factors that could naturally affect someone's pulse, and were not reasons for concern, Galen discusses how different ailments could affect it. For example, in someone with dropsy, "the pulse is large, frequent, slightly hard, and with a degree of tension".[228]If someone had taken hellebore (a type of plant), "the pulse just before the vomiting, while they are undergoing compression, is broad, sparse, fairly faint, and fairly slow; as they are vomiting and retching it is uneven and irregular; as they recover, it is regular, but still uneven, though less so than before".[229] If someone is suffocating, their pulse "is small, faint, irregular, and uneven, but not frequent or quick; rather, it tends to slow down" as well as manifest "a certain wavelike quality, as well as broadness and sometimes also a little tension in the artery".[230]

Galen's claims on anatomy and physiology, including his ideas about the cardiovascular system, became the standard for Hippocratic medicine for centuries. Because of his influence, it would take centuries before someone would have a "lightbulb" moment on cardiovascular

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[224] Ibid.
[225] Ibid.
[226] Ibid.
[227] Ibid, ch.12.
[228] Ibid.
[229] Ibid.
[230] Ibid.

physiology. It was not until the Renaissance that the physician and anatomist Andreas Vesalius (1515-1564) challenged Galen's beliefs and updated the medical knowledge of human anatomy.

Although many of Galen's claims about anatomy were proved wrong by Vesalius, the way Vesalius came to his conclusions was in a manner Galen would most likely approve of. Just as Galen instructs a physician to learn about the discoveries of the ancients in *That The Best Doctor is Also a Philosopher*, Vesalius took time to read and critique "Latin translations of Galen's *On Anatomical Procedures, On the Anatomy of the Veins and Arteries,* and *On the Anatomy of the Nerves*".[231] Next, he "devotes the rest of [his] life to the discovery of what remains".[232] While this part of Vesalius' career involved him disproving much of what Galen thought to be true, I believe Galen would have appreciated this more than what the other physicians were doing when they took his word as law. They did not move the science of medicine forward the way Vesalius did. Were Galen to meet them, he would probably describe them as lazy. Vesalius was in this way "Galen reincarnated," and in the same way Galen took the study of medicine into his own hands, Vesalius revolutionizes the anatomical ideas of the Hippocratic Tradition.

[231] Mattern, "The Prince of Medicine," 287.
[232] Galen, *That The Best Doctor is Also a Philosopher* ch.2.

CONCLUSION

To Galen, living in the 2nd century CE, Hippocrates was one of "ancients" and the revered founder of the medical art. In this thesis, I first investigated the Hippocratic tradition that Galen inherited before he entered the field. I then researched Galen's beliefs on both Hippocrates and the medical *techne,* and how these claims were able to have a strong foothold in Greek medicine for centuries.

In a similar manner to how Galen was dedicated to learning about and emulating "Hippocrates," Galen himself was "Hippocratized" (my phrase) by ancient Arabic scholars, as they translated his writings into Arabic with the purpose of learning about his life and teachings. In the same way Galen studied and commented on the Greek language from the time of Hippocrates, so too the Arabic scholars studied the Greek texts, and translated Greek to Arabic. One of these medical scholars was Hunayan ibn Ishaq (809-973). According to scholar Glen M. Cooper, Hunayan Ibn Ishaq was "a student by one of the leading Syriac physicians, but after they quarrelled, Hunayn went into self-imposed exile among former lands of the Byzantine Empire, mastering Greek and gathering Greek medical manuscripts".[233] He later returned home to al-Hira, "the capital of the former Lakhmid Kingdom in south central Iraq," after "the caliphate supported a class of administrators, eager for Greek knowledge, willing to pay well for good translations".[234] Once he returned home, Hunayan soon became one of the most prolific translators and interpreters of Galenic medical treatises.[235] He created what was called his

[233] Glen M. Cooper, "Hunayn Ibn Ishaq and the Creation of an Arabic Galen," *Brill's Companion to the Reception of Galen* 17, (2019): 180.
[234] Ibid.
[235] Ibid, 179.

Risalah (Epistle), which is "a document that details the translation history of 129 of Galen's works into Syriac and Arabic".[236]

The adaptation of Galen's writings and teachings into Arabic medical culture by scholars is similar to how Galen wished to bring the "true" Hippocrates back into the medical spotlight. For example, as scholars in the Middle East translated Galen's works, they became authority figures on the Greek physician, the same way Galen considered himself to be extremely knowledgeable on the historic Hippocrates. In *The Best Accounts of the Classes of Physicians*, author Ibn Abī Uṣaybiʿah (1203-1270), an Arab physician from modern day Syria, uses such phrases such as "Galen states", "Galen remarks," and "Galen's purpose in this passage" throughout the writing.[237]

Also, in the same way that Galen's studies of Hippocrates led him to create a mythos around him, so too happened as Arabic scholars learned about Galen. For example, although it was not an accepted fact by all scholars, some believed Galen to be a contemporary of Jesus. Ibn Abī Uṣaybiʿah talks about this belief, citing Persian historian al-Bayhaqī, who in *Draughts of Experiences and Waves of Wonder,* says "it would have been sufficient if Paul, who was the son of Galen's sister, had been the only Apostle. For Galen sent him to Jesus and made much of his own inability to travel to him due to his frailty and great age. He believed in Jesus and commanded his nephew Paul to pay homage to him".[238] While Hippocrates was believed to be related to the god Asclepius, Galen was believed by some to be not only a contemporary of Jesus, but also the uncle of the Apostle Paul.

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[236] Ibid, 181.
[237] Ibn Abī Uṣaybiʿah, *The Best Accounts of the Classes of Physicians* 1.10, 2.1.2, 2.1.6.2 translated by E. Savage-Smith, S. Swain, G.J. van Gelder eds.
[238] Ibid, 5.1.5. 1

The mythification of Hippocrates was what allowed this historical figure to become "the father of western medicine." Although very little is known about him, the stories and legends surrounding Hippocrates, as well as the writings attributed to him, allow scholars to learn about the medical culture in Ancient Greece. We can learn not only what physicians believed in terms of health, disease, human anatomy, and physiology, but also how they were meant to conduct themselves.

One reason for the longevity of these beliefs about Hippocrates is Galen. With a lot of the Greek medical texts during his time coming from Galen, his words become a very prominent voice in the study of Greek medicine. If we are to listen to him, we learn what people believed in terms of anatomy and physiology in writings such as *The Pulse for Beginners.* By reading *That the Best Doctor is Also a Philosopher, we* can also get a glimpse of a medical world in which physicians had, according to Galen, abandoned the ethical teachings of Hippocrates.

Both Hippocrates and Galen are two historical figures who are very important when studying Ancient Greek medicine. Hippocrates became a man who created an origin point for a type of healing that would eventually become what we have today. While we may know very little about him, the writings and stories associated with him, such as the *Hippocratic Oath*, have influenced doctors around the world for centuries, with Galen being one of those physicians. As an extremely influential person in the medical world during his time, Galen's claims on "Hippocrates," and his self-appointed position as a true successor of Hippocrates allowed his beliefs to become law for centuries in both the Middle East and Europe.

While many of the Hippocratic and Galenic principles on the science of medicine have been disproved for a long time, it is still important to learn about this path to progress. The reason medicine is always evolving is because we as people know that there is always more to

discover. In order to know what we need to look into, we need to study the discoveries of past scientists in order to move beyond them. This need to move forward is seen in *The Science of Medicine*, where the author says that "it is the aim and function of an intelligent mind to make new discoveries in whatever field such investigations may be useful, and also to bring to completion tasks that are but half-finished".[239] A few centuries later, Galen repeats this same belief in *That the Best Doctor is Also A Philosopher*, saying that "it would be easy, for example, to learn thoroughly in a very few years what Hippocrates discovered over a very long period of time, and then to devote the rest of one's life to the discovery of what remains".[240] My goal for readers is to do just what these ancient figures wished. I hope for them to learn about some of the medical practices and beliefs of antiquity in order to see how far we have gotten in terms of medical discoveries, and perhaps inspire them to continue looking into the past.

[239] *Hippocratic Writings,* ch.1 pg. 139
[240] *That The Best Doctor is Also a Philosopher*, ch.2

Appendix

This appendix consists of the Greek version of the original *Hippocratic Oath* from the Loeb Library as well as an English translation of the text created by me. When reading this oath in Greek, I was able to have a better understanding on the original meaning of the text. Seeing the original Greek words allowed me to get a more detailed idea on what *The Oath* is truly saying, instead of the "do no harm" impression I originally had before reading. I was also able to see how specific words and phrases were used multiple times throughout *The Oath*, such as ἐπιτελέα (carry out/fulfill) and βίον καὶ τέχνην (life and techne/art).

ΟΡΚΟΣ

Ὀμνύω Ἀπόλλωνα ἰητρὸν καὶ Ἀσκληπιὸν καὶ Ὑγείαν καὶ Πανάκειαν καὶ θεοὺς πάντας τε καὶ πάσας, ἵστορας ποιεύμενος, ἐπιτελέα ποιήσειν κατὰ δύναμιν καὶ κρίσιν ἐμὴν ὅρκον τόνδε καὶ ξυγγραφὴν τήνδε. Ἡγήσασθαι δὲ τὸν διδάξαντά με τὴν τέχνην ταύτην ἴσα γενέτῃσιν ἐμοῖσι, καὶ βίου κοινώσασθαι, καὶ χρεῶν χρηΐζοντι μετάδοσιν ποιήσασθαι· καὶ γένος τὸ ἐξ αὐτοῦ ἀδελφεοῖς ἴσον ἐπικρινέειν ἄρρεσι· καὶ διδάξειν τὴν τέχνην ταύτην, ἢν χρηΐζωσι μανθάνειν, ἄνευ μισθοῦ καὶ ξυγγραφῆς, παραγγελίης τε καὶ ἀκροήσιος καὶ τῆς λοίπης ἁπάσης μαθήσιος μετάδοσιν ποιήσασθαι υἱοῖσί τε ἐμοῖσι καὶ τοῖσι τοῦ ἐμὲ διδάξαντος, καὶ μαθητῇσι ξυγγεγραμμένοισί τε καὶ ὡρκισμένοις νόμῳ ἰητρικῷ, ἄλλῳ δὲ οὐδενί. Διαιτήμασί τε χρήσομαι ἐπ᾽ ὠφελείῃ καμνόντων κατὰ δύναμιν καὶ κρίσιν ἐμήν· ἐπὶ δηλήσει δὲ καὶ ἀδικίῃ εἴρξειν. οὐ δώσω δὲ οὐδὲ φάρμακον οὐδενὶ αἰτηθεὶς θανάσιμον, οὐδὲ ὑφηγήσομαι ξυμβουλίην τοιήνδε· ὁμοίως δὲ οὐδὲ γυναικὶ πεσσὸν φθόριον δώσω. ἁγνῶς δὲ καὶ ὁσίως διατηρήσω βίον ἐμὸν καὶ τέχνην ἐμήν. οὐ τεμέω δὲ οὐδὲ μὴν λιθιῶντας, ἐκχωρήσω δὲ ἐργάτῃσιν ἀνδράσι πρήξιος τῆσδε. ἐς οἰκίας δὲ ὁκόσας ἂν ἐσίω, ἐσελεύσομαι ἐπ᾽ ὠφελείῃ καμνόντων, ἐκτὸς ἐὼν πάσης ἀδικίης ἑκουσίης καὶ φθορίης, τῆς τε ἄλλης καὶ ἀφροδισίων ἔργων ἐπί τε γυναικείων σωμάτων καὶ ἀνδρείων, ἐλευθέρων τε καὶ δούλων.

ἃ δ᾽ ἂν ἐν θεραπείῃ ἢ ἴδω ἢ ἀκούσω, ἢ καὶ ἄνευ θεραπείης κατὰ βίον ἀνθρώπων, ἃ μὴ χρή ποτε ἐκλαλέεσθαι ἔξω, σιγήσομαι, ἄρρητα ἡγεύμενος εἶναι τὰ τοιαῦτα.Ὅρκον μὲν οὖν μοι τόνδε ἐπιτελέα ποιέοντι, καὶ μὴ ξυγχέοντι, εἴη ἐπαύρασθαι καὶ βίου καὶ τέχνης δοξαζομένῳ παρὰ πᾶσιν ἀνθρώποις ἐς τὸν ἀεὶ χρόνον· παραβαίνοντι δὲ καὶ ἐπιορκοῦντι, τἀναντία τούτων.

Oath

I swear by Apollo the physician, and Asclepius, and Hygeia and Panacea, and all the gods and goddesses, making them my witnesses, that I will fulfill, according to the best of my abilities and judgment, this oath of mine and this contract. I will consider the one who teaches me this art equal to my parents, and will share with him my livelihood, and will give a common gift when he is in need of necessities, and I will consider his family equal to my brothers and to teach them the art, if they desire to learn it, without pay or contract, and to make a common gift of precepts, oral instruction, and all remaining learning to my sons and the sons of my teacher, and contracted students who swore the medical law, but to no others. I will continuously use treatment to benefit those who are suffering to the best of my ability and judgment but will refrain from wrongdoing and injury. And I will not give anyone a poison if I am asked to do so, nor will I advise any such thing. Similarly, I will not give a woman a destructive pessary. But I will keep pure and holy my life and my art. I will not cut, not even, on those suffering from stone, but I will give way to male practitioners who practice this. Into whatever houses I will enter, I will go into them for the benefit of those suffering, and restrain from all intentional wrongdoing and harm, and especially from sexual relations with women’s and men’s bodies, free and slave. The things I will see and hear during treatment and outside treatment in the life of men, it is necessary for it to not to be talked about in public; I will be silent, considering such things secrets. Therefore, if I fulfill this

oath, and do not violate it, may I reap the fruits of a good reputation involving my life and my art among all men for all time; but if I transgress it and swear falsely, may the opposite of these happen.

*My translation adapted from the Loeb translation

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