Greek medicine: a new look

The earliest known Greek medical school opened in Cnidus in the Hellenistic period BCE. Alcmaeon of Croton, author of the first anatomical text, worked at this school in the 6th and 7th centuries BCE. Before Hippocrates, he suggested that man might be constituted of Talete’s four individual elements or humours. A person’s health derived from the equilibrium of these elements, which he called isonomy, whereas disease derived from monopoly when one element superseded the others. The Greeks incorporated older Egyptian ideas and remedies into their medicine. Greeks believed that evil spirits or angry gods caused diseases, and that the gods such as Asclepius, son of Apollo, could heal and cure diseases. Sacrifice and prayer, often at Asclepius’ shrine, were common methods of seeking remedy. In Greek mythology, the centaur, Chiron, wounded by Hercules, was thought to have invented medicine in order to heal himself. He taught Asclepius the art of healing, the source of divine medical knowledge. But by ~500 BCE, Greek doctors had become more interested in using scientific observation and logic to discover what caused diseases.

After the fall of the Roman Empire in the 5th century, most works of the Greek physicians were lost to Western Europe. Fortunately, in the 14th and 15th centuries, some were rediscovered in Arab repositories of learning, many in Spain and Italy. Most texts on Medical History before the 18th century rely heavily on translations often from Greek, Latin or Arabic. With authenticity diminished by the passage of time, many are based on quotations.

Thomas M. Walshe’s Neurological Concepts in Ancient Greek Medicine is different. He interrupted his medical career in 1992 to study Ancient Greek, and subsequently wrote a series of original essays, which he has now revised in this book. Walshe relates much academic detail of reference sources and their transmission and closely examines the constructions and meanings of the ancient Greek texts.

He starts with Homer’s epic poems, The Iliad (c.8th century BCE) and The Odyssey (c.7th century BCE), and the archaic period, then moves to the Hellenistic period (between Alexander’s death and Rome’s conquest of Greece, 323–31 BCE); this predated Galen whose work is mentioned, but not detailed here. The universe, nature and man’s existence were all natural forces directed by and subject to the whims of the gods. Homeric writings were devoid of any medical knowledge; Walshe describes them as ‘mythopoetic’. But Homer’s lines contain blood-curdling accounts of head injuries sustained in the Trojan War and the associated weapons that inflicted them. The concept of a brain (encephalos) as an organ of neural function was not defined by Homer. His work is purely descriptive and focused on the psyche or soul, a diffuse, phantom element necessary for life, which escaped in the breath or pneuma at death. It did not relate to emotion or thinking.

The Corpus Hippocraticum

We learn details of the well-known Corpus Hippocraticum, a collection of at least 60 works by different writers composed in the 5th and 4th centuries BCE. Aldus Manutius edited the first Greek edition of Hippocrates’ complete works in 1526: the standard for the Corpus Hippocraticum for over a century. Ptolemy Soter (323–285 BCE), an Egyptian pharaoh, published a collection of treatises by Hippocrates and his followers for the library at Alexandria. Our main sources are from medieval texts copied centuries later, and no one knows which Hippocrates wrote. Francis Adams’ The genuine works of Hippocrates was published by the Sydenham Society.
London, 1849 in two volumes, and is widely respected and quoted. The Corpus contains sections on fractures, joints, aphorisms, epidemics, diseases, and of course The Oath. Walshe provides his own translation. It begins with a pledge to Apollo, his son, and his daughters, Hygeia and Panacea, and all the gods.

Before Hippocrates, in the archaic period, the wrath of the gods caused human illness. A doctrine of opposites pertained where illness related to imbalances of wet and dry, hot and cold, both inside the body and externally in the winds and the air. This insidiously changed to humoral imbalance (Fig. 1). Central to Hippocratic ideas was the humoral theory of health, whereby the four bodily fluids, or humours, of blood, phlegm, yellow bile, and black bile needed to be kept in balance. Imbalance caused disease. This followed Empedocles’s notion of a universe governed by earth, air, fire and water. The Hippocratic scholars largely rejected divine notions of illness, prayers and sacrifices to the gods but advised changes in diet, drugs, and keeping the body ‘in balance’. They moved medicine onto a more rational basis that sought biological explanations, though such knowledge was inchoate at that time. Walshe’s account shows that The Corpus describes paraplektios (‘paraplegia’) but this refers to unilateral weakness caused by catarrhs supervening from the brain: the word hemiplegia is not contained in the texts. Apoplektios (apoplexy) described a lesion of the brain—the use of arms, legs and voice being suddenly ‘utterly struck away’. They became paralysed as a result of dark bile. Carphology, a deadly sign, is recognized. Kephalgia and headaches caused by systemic infections are described. Aphonios, tetanus, strabismus and coma were all observed, but though there was some inkling as to their prognostic import, their mechanisms were understandably uncertain or often mistaken.

The importance of the Corpus is that it is the major existing source of the new scientific concepts, practices and altercations in Greek medicine before the advances of Galen who assiduously collected and quoted Hippocratic dicta.

Walshe has included his own translations of Hippocrates’ On the Sacred Disease and his Wounds of the Head. He has used the existing translations of W. H. S. Jones, Chadwick and Mann, and Francis Adams to check his version of the Sacred Disease; he has similarly checked the text of Maury Hanson as a guide to support his own translation of Wounds of the Head. It is revealing that this section focuses almost entirely on various injuries of the skull and scalp with scarcely a mention of damage to the brain. Trephining and techniques of wound debridement are clearly set out. On the Sacred Disease shows the major step forward from epilepsy, a divine disease, to the Hippocratic understanding:

![Figure 1 Schema: the four humours. The four elements, four qualities, four humours, four seasons, and four ages of man. Airbrush by Lois Hague, 1991. By Lois Hague and St Bartholomew's Hospital. ©Wellcome Library, London. Copyrighted work available under Creative Commons Attribution only licence CC BY 4.0.](https://academic.oup.com/brain/article-abstract/139/8/2322/2846590)
The sacred disease is no more supernatural nor sacred than other diseases, but it has its explanation in nature.

The Hippocratic author likened to magicians the charlatans and quacks, who pedalled their skills in Asklepiian temples of healing (Fig. 2), believing the disease was sacred. Medical practice was unlicensed and as pathology and physiology were speculative sources of polemic, much Hippocratic Medicine rests on clinical phenomena and on treatments based on Regimen—modifications of diet and lifestyle.

The three great philosophers Socrates (c.470–399 BCE), Plato (c.428–348 BCE) and Aristotile (384–322 BCE) each contributed ideas and philosophical methods, which influenced concepts of Science and Medicine. But because dissection was banned on religious grounds, the philosophers’ role in furthering medical knowledge was limited. Plato who focused on ideology rather than the observable, following Anaxagoras discarded questions of science, physiology and anatomy as irrelevant to the nature of man. He opposed experimental methods in favour of abstract philosophical notions of the nature of disease. This meant that all physical forms and entities were reflections of pure forms or ideas called archetypes, which existed in a spiritual, universal, localized psyche or soul.

Socrates (c.469–399 BCE), whose enigmatic legacy is recorded in Plato’s dialogues and in Xenophon’s Symposium, also denied the utility of physical phenomena as a basis for...
ideas underlying perception. He devoted his time to exploring ideas by Socratic questioning, and by developing critical thinking as a skill and a way of communicating with the world. Politically unacceptable, it famously cost him his life.

The polymath Aristotle (384–322 BCE) was both philosopher and scientist. The son of a physician from Stageira in Macedonia he became a student at Plato’s Academy in Athens. Aristotle adopted his own methods and felt that one should trust one’s senses and observations in the investigation of knowledge and reality. He did not succeed Plato as head of the Academy. He left Athens and eventually returned to Macedonia, where he taught the young Alexander the Great. Aristotle’s writings covered diverse subjects including human and animal anatomy. Many were lost, but his remaining works (e.g. De animalibus. Venice: Iohannem de Colonia, 1476) on animals advocated direct observation and comparative anatomy by means of dissection. He classified the souls of different forms of life and inanimate objects, including the earth and the heavens.

After Alexander’s vast conquests of the Middle East, Aristotle returned to found the Lyceum in Athens, a school similar to Plato’s Academy. After Alexander’s death, he was forced to flee Athens to the nearby island of Euboea, where he died soon afterwards. Aristotle, Socrates and Plato have each been considered the founder of Western Natural Philosophy.

The nature of mental functions and their localization were explored from Homer to Aristotle, but the conjectures were of necessity more philosophical than clinical.

Mind and soul were often confused. Temperaments were described as sanguine, choleric, phlegmatic, and melancholic. For Homer, the soul was a mysterious, supernatural force, an ‘impotent wraith’ a concept that gradually developed into a centre of man’s humanity as well as the seat of intelligence, motion and sensation. For him, the brain was not the organ of cognition; it was the life force. Air, breath and pneuma were also psyche and noos philosophical notions without an anatomy. Phrenes was a substrate for understanding, noos represented intelligence and psyche was the life force. Air, breath and pneuma were also related in ill-defined terms to emotions and cognition. Aristotle realized the soul was part of the physical body acting as the motive force and a source of potential for activity. For him, the brain was not the organ of cognition; he regarded it as the means to temper the heat and seething activity. The brain was the life force. Air, breath and pneuma were also psyche and noos philosophical notions without an anatomy. Phrenes was a substrate for understanding, noos represented intelligence and psyche was the life force. Air, breath and pneuma were also related in ill-defined terms to emotions and cognition. Aristotle realized the soul was part of the physical body acting as the motive force and a source of potential for activity. For him, the brain was not the organ of cognition; he regarded it as the means to temper the heat and seething activity. For him, the brain was not the organ of cognition; it was the life force. Air, breath and pneuma were also psyche was the life force. Air, breath and pneuma were also related in ill-defined terms to emotions and cognition.

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Not until the Hellenistic era did Herophilus and Erasistratus discover the crude anatomy of the nervous system describing the brain, cord and nerves. Herophilus (c.330–c.260 BCE) was one of Ptolemaic Alexandria’s scholars, a leading physician, often named the ‘Father of Anatomy’. From cadaveric dissections and possibly vivisection, Herophilus considered the brain (especially the ventricles) as the seat of intelligence, motion and sensation. He distinguished nerves that produce voluntary motion from blood vessels, and motor from sensory nerves. The nerves of the spinal cord were directly linked to the brain. He identified at least seven pairs of cranial nerves. Erasistratus (c.325–c.250 BCE) by dissections discovered the ventricles as well as the convolutions of the cerebrum, which governed the whole nervous system, and the cerebellum, which both he and Herophilus considered the site of the soul and intelligence (encephalocentric), in contrast to prevailing Aristotelian (cardiocentric) opinions of their origins in the heart. Like Herophilus, Erasistratus had appreciated the separate neural pathways for motor and sensory functions, denied by Asklepios, thus clarifying a long prevailing controversy. But nerves were hollow, importantly originating in the brain and cord and containing psychic pneuma, the equivalent of the Roman spiritus animalis.

Later, Rufus of Ephesus (A.D. c.80–c.150) confirmed: ‘Erasistratus declares that there are two kinds of nerves, those of movement and those of sensation.’ This vital era when anatomy was founded led to immediate rationalization of physiology. It gradually put paid to the vague superstitions about pneuma, invisible pores, humours and divine interventions that had dominated the archaic notions of the ancient Greeks. However, many mistaken beliefs persisted. The mechanisms of symptoms and disease were to emerge slowly from the works of Galen onwards.

A final section of this book provides the author’s own translation of The Hippocratic Oath and a modern digression.

This fascinating work of learning does much to illuminate these complex dilemmas that so mystified the ancient Greek scholars and physicians. At times, the rather self-conscious scrutiny of sources and translation are heavy-handed, perhaps impeding the narrative of this important history. But the profusion of references to this era will be invaluable to scholars. As Walshe says in his preface, his book is not the story of neurology in Greek Medicine, rather a description of Greek ideas that pertain to our own ideas of neurology. And it’s an excellent one.

John M. S. Pearce
Hull, UK
E-mail: jms.pearce@me.com
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