

# The Rational Roots of Medical Science Between Greece and Egypt

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**Abstract** The chapter focuses on the most relevant features of Greek medicine in its historical development, highlighting the main factors of 'rationality' and 'irrationality' by means of a comparison with Egyptian medicine, in the attempt to outline a framework of interactions and cross-connections.

**Keywords** Egyptian medicine. Greek medicine. Magical medicine. Rational medicine. Religious medicine.

**Summary** 1 The Concept of Rational Medicine. – 2 Contacts Between Greek and Egyptian Medicine. – 3 Conclusions.

## 1 The Concept of Rational Medicine

In this chapter, we will explore and establish a connection between two primary inquiries: firstly, the concept of 'rational medicine', believed to have originated in ancient Greece, and secondly, the existence of contacts, interactions, and influences between Greek and Egyptian medicine.

Regarding the first point, a very recent definition of 'rational medicine' emphasizes its objective of

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serving the best overall interests of the patient through an all-inclusive approach to medicine that is thoroughly based on the latest science and most advanced technology in all relevant areas.<sup>1</sup>

Roughly a century and a half earlier, 'the Rational method' in medicine was described as follows:

this recognizes nature as the great agent in the cure of diseases, and employs art as an auxiliary, to be resorted to when useful or necessary, and avoided when prejudicial.<sup>2</sup>

A more ancient perspective, as expressed by the Roman physician Aulus Cornelius Celsus, who practiced during the reigns of Augustus and Tiberius, stated that

those who practice the rational medicine assume the following things as necessary: the knowledge of the hidden and originating causes of the diseases; then of the manifest ones; then also of the natural actions; and finally of the internal organs.<sup>3</sup>

All three of these statements underscore the role of pragmatic reasoning in dealing with the patients. This approach entails scientifically observing actual symptoms and applying (or not) appropriate material remedies based on scientific knowledge of human health matters. As is known, 'Hippocrates'<sup>4</sup> is generally credited with rejecting divine/irrational/philosophical notions of medicine<sup>5</sup> and, instead, using empirical observation of the body as the foundation of medical knowledge. Rather than relying on prayers, magical spells, sacrifices to the gods, or universal theoretical assumptions, 'Hippocrates' focused on actual diagnoses, dietary adjustments, beneficial drugs, and maintaining bodily balance.<sup>6</sup>

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1 Kondo 2017, 1.

2 Bigelow 1858, 30; see Cotting 1858.

3 *Med.* 1.13.

4 It is not worth addressing here the well-known and widely-debated Hippocratic question, regarding the authorship of the medical treatises comprised in the so-called Hippocratic corpus and the very existence of Hippocrates himself. With 'Hippocrates' I refer to the Hippocratic authors of the corpus. For a general overview on Hippocratic medicine see Jouanna 2001; Nutton 2004, 53-102; Longrigg 1993, esp. 72-97.

5 On pre-Hippocratic medicine, see Nutton 2004, 37-52; Longrigg 2020, 11-71.

6 See Jouanna 2012, 97-106. On the progression from irrational/pre-rational medicine to rational medicine in archaic Greece see Longrigg 1993; also Nutton 2004, 37-40.

## 2      **Contacts Between Greek and Egyptian Medicine**

Regarding the second point, there had certainly been early contacts between Greek and Egyptian civilizations, and the Greeks (and later the Romans) have consistently acknowledged the Egyptians' primacy in the field of medicine. This recognition can be traced back as early as the Homeric epic poems,<sup>7</sup> and has been further emphasized, among others, by prominent authors like Herodotus,<sup>8</sup> Diodorus of Sicily,<sup>9</sup> and the anonymous author of an *Introduction to medicine* later attributed to Galen.<sup>10</sup> Numerous scholars have sought to highlight the similarities and mutual influences between these two medical traditions, while others have chosen to maintain some distance when making comparisons.<sup>11</sup> From our present point of view, it is worth noting the conclusion drawn by the renowned historian of ancient medicine, Jacques Jouanna, who addresses such comparisons from the perspective of rationality:

In our desire to emphasise connections, we risk forgetting the fundamental point that the rational medicine of the Hippocratic Corpus sharply contrasts with the magico-religious medicine of the Egyptians.<sup>12</sup>

Egyptian culture indeed embodies a profound intertwining of medicine and religion, with medical practices seamlessly integrated into their religious framework of cosmic order and harmony.<sup>13</sup> Sickness was perceived as a disruption in this balance, compelling them to seek remedies to fix it. Consequently, proper physicians - those trained in medical knowledge - collaborated closely with healing priests, particularly those associated with the healing goddesses Sekhmet and Serqet. Nonetheless, it would be inaccurate to assert that all Egyptian medicine relied solely on magical treatments and religious beliefs: pharmacology, surgery, dietary treatments were customarily applied without any connection with magic or supernatural

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**7** "Egypt, where the fertile earth produces many different drugs (φάρμακα), many good mixtures and many harmful, and where each doctor is the wisest of men" (*Od.* 6.227-32).

**8** Egyptians as the healthiest people worldwide (2.77); "each place is full of doctors" (2.84); Egyptian doctors "were considered the first in medical art" (3.129).

**9** Isis as discoverer of medical and magical drugs (1.25.2-7).

**10** Primacy of Egyptian pharmacology, internal surgery, ophthalmology, internal hygiene (*Introd.* 1.1-3).

**11** See Jouanna 2012, 3-20.

**12** Jouanna 2012, 7.

**13** See Westendorf 1992, 19-39; Bardinet 1995, 39-59; Halioua 2005, 23-30.

powers.<sup>14</sup> Similarly, the notion that post-Hippocratic Greek medicine entirely severed ties with religion is also flawed.<sup>15</sup> For instance, the belief in the power of the major healing god Asclepius persisted long after the time of ‘Hippocrates’. Hippocrates himself was believed to have drawn upon the medical knowledge recorded in the temple of Asclepius at Kos,<sup>16</sup> and the famous Hippocratic oath commences with an invocation to Apollo, Asclepius, and other healing deities.<sup>17</sup> Generally speaking, it has been demonstrated how ancient Greek medicine originated within temple environments.<sup>18</sup> People continued the practice of visiting the sanctuaries of Asclepius (the *Asklepieia*) and other healing gods, seeking divine intervention for their ailments, as witnessed by many inscriptions and literary descriptions.<sup>19</sup> In these temples, religion functioned alongside rational medicine, with healing priests administering concrete – ‘rational’, in our perspective – healthcare interventions, skillfully cloaked as divine prescriptions from the gods.<sup>20</sup> This tradition seems to have existed in ancient Egypt too, and continued even in Hellenistic and Roman times.<sup>21</sup> A remarkable example is found in the temple of the crocodile god Soknebtunis at Tebtunis in the ancient Arsinoites (Fayum oasis), where the local priests owned a rich library containing the most updated Greek ‘rational’ medical treatises and handbooks.<sup>22</sup> Even Galen displays a somewhat ambiguous inclination towards religious beliefs, as evidenced by his belief in the efficacy of dreams and acceptance of divination.<sup>23</sup>

Moreover, the Egyptian religious perspective of illness as a challenge to the cosmic order bears intriguing resemblances to the Greek theory of bodily humors. According to the latter, the human body

**14** See Westendorf 1992; Bardinet 1995; Halioua 2005.

**15** See Nutton 2004, 103-14.

**16** See von Staden 1999, 149-57.

**17** On the ambivalent relationship between Hippocrates and Hippocratic writers and religious medicine see Jouanna 2012, 107-18.

**18** See Perilli 2005; 2006.

**19** See Steger 2020 with earlier bibliography. In general, on the ancient healing cults, see Rigato 2013.

**20** “[B]oth the Hippocratic Corpus and the rise of Asclepius cult are part of the same phenomenon, the defining of orthodoxy over against a magical alternative. In religion magic was credited with the potential to disturb the proper relationship between gods and men. It operated outside the formal religious channels for communicating with the divine; and it thereby posed a threat to civic order. The rise of Asclepius cult was one way in which the divine power to heal could be channelled for the benefit of both city and individual patient” (Nutton 2004, 114).

**21** See Reggiani forthcoming a.

**22** See Reggiani 2023a.

**23** See Kudlien 1981; Van Nuffelen 2014.

was traversed by four fundamental fluids: blood coming from the heart, phlegm from the brain, yellow bile from the liver, and black bile from the spleen. The harmonious proportion among these humors ensured good health, while any disruption in this equilibrium led to illness.<sup>24</sup> Medical interventions, whether dietary, pharmacological, surgical, or of other types, were therefore aimed at restoring the original balance. This is clearly a philosophical approach, which can be traced back to the rational musings of the Ionian physiologists (the philosophers of nature),<sup>25</sup> but the core idea is the belief in the correlation between human harmony and the universal harmony, the cosmic balance.<sup>26</sup>

The Greek philosophical theory of the bodily humors produced a holistic approach to medicine: since any disease was caused by an internal imbalance of the liquids, the doctors could treat everything by intervening on the re-establishment of the original balance. There was no medical specialization in Greek medicine, except for surgery,<sup>27</sup> which was distinguished from medicine, as the Hippocratic oath itself shows.<sup>28</sup> Both the philosophy of the humors and the holistic approach mark big differences from Egyptian medicine. Egyptians seem to have had a more mechanical approach towards the origin of illness: according to the extant texts, they believed in some external 'evil spirits' or 'pathogenic agents' called *ukhedu* and *setet*, which caused the diseases by insinuating themselves inside the human body and contaminating its liquid humors (*aaa* 'blood') and their conducting vessels (*met*) stemming from the heart (*haty, ib*).<sup>29</sup> Within an unavoidable religious framework, this looks like more mechanistic an approach than the Greek one: illness is basically caused by external agents and not by an internal imbalance. From a practical viewpoint, Egyptian medicine was characterized by a specialism, recognized by the Greek authors and mirrored in the extant texts: there existed specialized physicians for the eyes, for the teeth, for the head, and so on.<sup>30</sup>

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**24** See Nutton 2004, 77-86; Jouanna 2012, 335-59.

**25** See Longrigg 1993, 26 ff.

**26** On the early Greeks ideas of proportion and relationship between human and cosmic balance, see Reggiani 2015.

**27** Gynaecology held a somehow special place, as it was typically performed by generic male doctors, but there also existed categories of female healers credited with specialized experience and skills in treating women's diseases (see e.g. Flemming 2000; Dasen 2016; Reggiani forthcoming b).

**28** οὐ τεμέω δὲ οὐδὲ μὴν λιθιῶντας, ἐκχωρήσω δὲ ἐργάτησιν ἀνδράσι πρῆξιός τῆσδε (I will not cut, even those suffering from stones, but I will leave this to those who are trained in this craft).

**29** See Bardinet 1995, 60-138.

**30** See Halioua 2005, 31-5; Reggiani 2021, 154-5.

The philosophical attitude of Greek medicine produced another important consequence: the development of medical schools, which, just as the philosophical schools, carried on specific approaches to healing. From the earliest Cnidian and Coan schools – more properly, local traditions of common approaches –, the latter flowed into in the Hippocratic school, ancient Greek medicine proceeded up to the full development of the ‘rational’ medicine in the Hellenistic world: the Alexandrian anatomists, whose discoveries of the internal body subverted many phantastic theories of Hippocratic medicine;<sup>31</sup> the Empirical sect, which stressed the fundamental importance of direct personal experience against general and abstract theories, as opposed to the so-called Dogmatists;<sup>32</sup> the Methodists, based on precise therapeutical methods and on the definition of general states of disease;<sup>33</sup> later, in the early Imperial age, the Pneumatists, which attributed health and illness to the different functioning of a vital spirit (*pneuma*).<sup>34</sup> A parallel trend – philosophical as well, in a sense – was the preponderance given to famous individual physicians, authors of comprehensive treatises or of famous medicaments named after them – a sort of ‘heroic medicine’, in a sense, in which the faith in the healing gods was replaced by the trust in the most excellent doctors.<sup>35</sup> Both aspects – school grouping and individualism – are completely missing from Egyptian medicine: perhaps with the only exceptions of divine Imhotep and Amenhotep son of Hapu, no Egyptian physician is recorded by name, no great personality emerged, because the important was not the single contribution to the healing progress, but the general medical attitude as a way of contrasting the bodily disorders. If a name was to be associated to a medicine, it was that of the Pharaoh who successfully used it; if a brand of efficacy and authenticity was to be developed, it consisted in the story of the finding of the recipe in a sacred place.<sup>36</sup>

A certain influence of spiritual nature on Greek medicine can be seen in the case of internal anatomy. The Greeks were impeded to reach a precise knowledge of the inner parts of the human body by a long-standing cultural horror for the impurity of the dead body, which prevented them to directly explore the inner organs. For a long time, internal anatomy was deduced from the shape of the external parts and from the anatomy of the animals. This was not completely different from Egyptian medicine, since for the Egyptians the human body

<sup>31</sup> See von Staden 1989; Nutton 2004, 128-39.

<sup>32</sup> See Nutton 2004, 147-50 (Empiricists) and 194 (Dogmatists).

<sup>33</sup> See Nutton 2004, 187-201.

<sup>34</sup> See Nutton 2004, 202 ff.

<sup>35</sup> See Reggiani 2020.

<sup>36</sup> See Reggiani, Urzì, Bovo 2023.

was sacred and was to be preserved uncorrupted even after death. However, the long-standing ritual tradition of embalming and mummification – which included direct interventions on the bowels – favored a closer contact with the dead body and its inner parts. Not by chance the development of the anatomical school led by Erophilus and Erasistratus, who authored many revolutionary discoveries, took place in Hellenistic Alexandria, when Greek medicine came into contact with the Egyptian traditions.<sup>37</sup>

Another medical sector which was patently characterized by the influence of Egyptian medicine on its Greek counterpart was pharmacology. Egyptian ingredients and remedies were known well before Alexander the Great's conquest of Egypt in 332-331 BCE, which of course gave rise to deeper interconnections between the two traditions. It is not surprising, therefore, that several medicaments recorded by the Greek medical authors are labeled or recorded as 'Egyptian', as either a memory of their true origin or a simple trademark. Just to mention the most attested in our sources: the 'Egyptian oil' (castor oil) and the 'Egyptian white oil' (lily oil) in Hippocrates; the 'Mendesian unguent' in Galen; the *achariston* 'unmerciful' eye-salve; the plaster called 'Isis'.<sup>38</sup>

A last point that I would like to mention is prognosis, i.e. the foreknowledge of the development of a disease based on the observation of its external signs (what today we call symptoms). Prognostic medicine is in fact a common ground for both Greek and Egyptian medicine.<sup>39</sup> The predictive scheme that we find, e.g. in the Edwin Smith medical papyrus (observation of the signs – therapy [or not] – success [or not])<sup>40</sup> is the very same that we find in the Hippocratic corpus, but with a basic difference: in the Egyptian medicine, prognosis

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**37** See Reggiani 2021, 165-71.

**38** See Reggiani 2023b.

**39** And not only: prognostic medicine did in fact begin in second-first-millennium BCE Mesopotamia, see Wee 2019.

**40** See e.g. pEdwinSmith, col. i, r. 18-col. ii, r. 2: "If you proceed to the examination of a man who suffers at the head from an open wound that reaches the bone, while the skull is pierced, you shall explore the wound and state that he is not able to look at his own shoulders and chest any more, and he suffers from stiffness at the neck. You shall say to this man: [...] it is an ailment that I can treat. After having stitched up it, you shall put some fresh meat on the wound on the first day. You shall not bandage it. It will stay like that until the pain is over. Then you shall treat it with fat, honey, vegetal tampons, every day until it recovers"; col. ii, rr. 11-17: "If you proceed to the examination of a man who suffers at the head from an open wound that reaches the bone, while the skull is smashed, you shall explore the wound and state that such a break in the skull is deep, sinking under your fingers, and that the swelling above the break is jutting, while the man bleeds from the nostrils and from the ears, and suffers from stiffness at the neck, thus not being able to look at his own shoulders and chest. You shall say to this man: [...] it is an ailment that I cannot treat. You shall not bandage it. It will stay like that until the pain is over". Text in Bardinet 1995.

was just a technical means to predict the development of a disease in order to apply the correct therapy; in the Hippocratic medicine, there is still a strong individualistic (heroic, in the abovementioned meaning) purpose.<sup>41</sup>

I think it is excellent for a physician to practice prediction. Because if he knows and foretells the present, the past and the future, alongside his patients, and fills the gaps in the report given by the patient, he will be considered the most suitable to understand the cases, so men will gladly rely on him to be cured. Furthermore, he will carry out the treatment better if he foreknows what will happen next, from the present symptoms. Now, getting all patients back to health is impossible. In fact, succeeding in that would have been even better than predicting the future. But as a matter of fact men die, some due to the severity of the disease before calling the doctor, others immediately after calling him and before he can fight the disease with his art. It is therefore necessary to learn the natures of such diseases, how much they exceed the strength of human bodies, and to learn the prognosis. Because in doing so you will rightfully earn respect and be a skilled doctor. Because the longer you plan to deal with any emergency, the greater your power will be to save those who have a chance of recovery, while you will be un reproachable if you know and declare in advance those who will die and those who will get better.<sup>42</sup>

### 3 Conclusions

To conclude, ancient Greece and ancient Egypt were certainly two separate cultures, with peculiar aspects and different approaches to the world. In the medical sphere, where the purpose was however the same - to heal ill people - we can notice similarities and differences, according to the single cases, and even influences, though more from the Egyptian to the Greek side than the other way around. Above all, it is impossible to trace a clear limit between rational and irrational, or non-rational: distinctions must be made case by case, and we may observe that after all Greek medicine might have not been so much rational as generally intended, and Egyptian medicine not too much invalidated by its religious framework. Greek medicine might appear as a science in continuous evolution and progress, while Egyptian medicine might look like a stable technical application of a general universal establishment, but perhaps it is just a matter of chronology:

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<sup>41</sup> See Reggiani forthcoming c.

<sup>42</sup> Hippoc. *Progn.* 1.



“You Greeks are always youngsters”, the old Egyptian priest uttered in Plato’s *Timaeus* (22b), claiming the antiquity of Egyptian science. A comparison between both traditions, therefore, is also a possible key to the reflection about learning from our past for a better future.

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