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Cross-readings of Greek medicine in the Oriental Middle Ages and the Occidental Renaissance: case studies in theory and practice

Cure and heal as many people as possible, issue instructions for physicians, druggists and surgeons, teach medicine and shape a theoretical context: these are the objectives of the two physicians we study, the Persian Razes (9th cent.), and the German Leonhart Fuchs (16th cent.). Their common point is the use of the same Greek medical sources as authority readings in order to promote “good” medicine and to prevent errors. The epistemological question stemming from such a use of the sources pertains to the nature of “true knowledge” versus “ignorance”. Yet medicine is not a mere theoretical discipline, but first of all a practical one, dealing with human health as well as human suffering, life and death in a concrete social and historical context: this is the reason why the concept of “truth” is reshaped according to those external factors whose influence was quite significant in both Razes and Fuchs.

After a brief survey of the general cultural and historical context of each Galenic reception, we will present a selection of case studies following the plan of Fuch’s *Paradoxa medicinae* (1535), a treatise where the Greek sources are always valued and the Arabic, associated with their “contemporary followers”, are referred to with more or less critical intention.

1. Let us remind the general context of this twofold reception

Razes lives in an epoch of stability, in a flourishing and extended empire. Greek medicine, especially Galen, translated into Syriac and Arabic (the Arabic *Summaria Alexandrinorum*, the translations by the “Nestorian” Syriac-speaking Christians including Hunayn-ibn-Ishaq and his collaborators), was widespread in the learned milieus, the academic institutions such as libraries or universities, and the “professional” circles. Medicine in this period is practiced in big cities and funded by some powerful and enlightened patrons. Physicians were not only free from financial worries, but also encouraged to work in medical institutions such as hospitals where they could observe many patients, make comparisons, test the reliability of the recommendations of the Greek sources or experience new treatments. This was the advantage of not keeping patients at home, as it was the case with the majority of Galen’s patients.

Critical examination of the Greek scientific and cultural inheritance was not considered to be a lack of respect, but a means to pursue the quest of knowledge. The Bagdad “translation movement” and the policy of expansion (not only cultural) of the caliphate were on the point of succeeding in minimizing the role of the Byzantine declining empire as *the* authentic – or the unique – continuator of the Greek culture. In this dominant empire, the Greek language was not the main vehicle for the diffusion of the Greek culture: Razes, who wrote all his treatises in Arabic, as well as the majority of his contemporary physicians, does not read Galen in the original. In the introduction of his treatise *On Smallpox and measles*, Razes explains that he is going to question his Greek or Syriac-speaking colleagues, in order to have first-hand information about the Galenic treatises, given the importance of terminology for the identification of diseases and treatments.

Despite the fact that the caliphate’s motivations are twofold, “geopolitical” as well as religious (expansion of the empire *and* of its religion), one cannot find any prominent religious influence in Razes: the Persian physician and alchemist does not put forward his specific culture vs. the Arabic one, nor does he engage in any polemic against his Christian fellows.

Fuchs lives in an epoch of rehabilitation of the Greek past, first of all through the promotion of the language: reading Galen in the original is *the* method of a perfect medical education. Even Latin is insufficient or misleading, being the language of the Medieval past. Fuchs' epoch is a time of less certainty about the upcoming triumph of Ancient Greece regarded as the "light", over Medieval, including Arabic science, regarded as the "obscurity". Many Renaissance learned men have not completely forgotten the Muslim threat over the Christian Europe: the fall of Constantinople in 1453 was not such a remote event, and the Greek intellectuals who emigrated to the West stirred up a lot of fears about Greek culture being under the Ottoman threat. Fuchs' use of Galen to criticize the Arabic medicine can be regarded as a piece of evidence that the Western learned milieus were experiencing the general uncertainty of this more or less troubled period. In Fuchs' period, there was no dominant empire or even dominant culture: the outcome of the rivalry between the Catholic Church and the Reformation was a high stake regarding not only religion, but also scientific orientation and control over academic institutions. Fuchs' concern is mainly education in an academic context: future physicians have to read the "right" Galen, Hippocrates and Dioscorides, the undisputed scientific authorities. Even though there are not so many allusions to religion in his *Paradoxa* or his commented editions of Galen, Fuchs' statements in the dedicatory epistles highlight his strong religious commitment and Ulrich, Duke of Württemberg, the addressee of the *Paradoxa*, praised as a defender of "the real Christian faith", opposed to the "Anabaptists" and the "Papists", is well known for his reformed faith which played a pivotal role in his restoration in 1534 with the help of Philip landgrave of Hessen and François 1er king of France (Ulrich in exile, 1519-1534). Medical vocabulary is sometimes used to emphasize the noxiousness of the heretics. The eradication of those who diffuse a "barbaric" knowledge is compared to a military victory against the Turks, whose invasion would have devastated the prince's country.

2. Case studies on *material medica*

This part deals mostly with plants and herbs, given Fuchs' extraordinary botanical skill, which made him the "father" of modern botany. Discussion of animal or mineral substances is scarce. Fuchs' first purpose is to provide correct identification of substances, beginning with a comprehensive examination of terminology. The second purpose is to give practical advice about the use and efficiency of substances, including *caveat* against misuse or fatal errors.

Galen and Dioscorides are providing all the indispensable knowledge one needs about simple medicines. Only two out of the 43 chapters of the first part of the *Paradoxa* are dedicated to composite medicines.

2. 1. Aloe

Its principal use is not, as Avicenna, Mesue (Yuhanna Ibn Massawayh ca. 777- 857) and Serapion (Yahya Ibn Sarafyun end of 9th cent.) pretend, to open the veins of the anus, but to stop nose bleeding, and "close the lips of wounds". Galen recommends it particularly (*De simpl. med.* K. 11, 822) for gaping, deep wounds. According to Dioscorides (and Pliny), a drink made of aloe and cold water is a hemostatic, especially in the case of hemorrhoids. Even Avicenna and Avenzoar (Ibn Zuhr d. 1162) agree with it.

Fuchs mentions the purgative effects of aloe mixed with honey (a mixture referred to as *hiera picra*), in order to underline a serious Arabic error: the fact that Avicenna and Mesue denied the purgative properties of this mixture. Fuchs also explains the importance of honey.

Aloe is important for “Arabic” or Oriental physicians and druggists. Ibn Bayṭār (1197-1248), who collected all the knowledge of his time, Greek, Arabic or other in his treatise on simple medicines (book II, n° 1389, p. 361-7), refers to Galen (p 362, lines 23-5), Mesue and Razes (P. 363, Lines, 15-16). In his *Canon*, Avicenna mentions the purgative effect of aloe (Bulaq edition in Arabic, Book II, p. 415-6). For Mesue, Razes, and Avicenna, the use of aloe in the *hiera*, one of the most important composite medicines used in diseases provoked by some alteration of the black bile, is necessary for its gentle purgative quality. All the authors conserve the Greek term “*hiera*” with its Arabic transcription “*ayariğ*”; they quote Galen in particular. Razes explains this point in his *Al-Manşūrī*; Avicenna has a very long chapter about the *hiera* in his *Canon* (Livre III, p. 230 verifier, ed. Persan p. 291-304). He explains the meaning of the word (“coming from the God”) and suggests that this prestigious name results from the fact that the *hiera* gently purges black bile.

Diseases provoked by black bile were *difficult* or *impossible* to cure. The drastic purge could be lethal, so it is essential to act with “**moderation**”. This is the reason why the aloe is needed. However, in the three chapters of Fuchs’ aloe-development this widespread use of aloe as a component of the *hiera* seems secondary.

2. 2. Latin *casia*, Greek κασία (marjoram or savory or cinnamon)

Fuchs first of all thanks Niccolò Leonicensino (1428-1524, the Italian humanist who first translated Galen into Latin), who brought to his attention the difference between the Arabic and the Greek *casia*. He then describes both of them. The Greek description is based on Galen (*De theriaca ad Pisonem* K. 14, 257-258). The Greek κασία is pink, aromatic, and has a sweet taste. It is different from the one “sold nowadays in pharmacies”, i.e. the Arabic one: neither Galen nor Dioscorides referred to this alleged *casia*. For the sake of clarity, Fuchs gives each one an epithet: 1) *Aegyptia* or *cathartica* and 2) *fistula* or *odorata*, the Greek one. Fuchs goes beyond the mere terminological (or “philological” or linguistic) concern of Leonicensino. He criticizes a current practice in the marketplace: what is sold under a frequently used name, which sounds like Greek, is not the actual substance referred to by the Greek medical authorities, the only trustworthy. Such confusions are due to the priority given to the “Arabic” terminology, description and use of medicines.

Fuchs relates his personal experience: he met the druggist (*pharmacopola*, literally “seller of drugs”) of Nuremberg Georg Öellinger (Georgius Ellingerus 1487-1557), a man praised for his skill concerning simple medicines and for his quest of the truth. Öellinger showed Fuchs what he was selling under the name of *casia* and never thought that he committed an error. But Fuchs, based on Galen and Dioscorides, pointed out that it was not the “authentic” one, but a kind of “pseudo-*casia*” without any aromatic properties. Skilled though Öellinger is, he is not very different from the other druggists of “our contemporary *Germania*”, Fuchs concludes.

Fuchs does not indicate many therapeutic qualities of cassia, so it is not easy to find the original Arabic word. Therefore, one can imagine two possibilities:

1) It could be *Khiyar chanbar* (Ibn Bayṭār, B 836). The translation of the term by Gerard of Cremona (1114-1187) was probably a source of errors (see Ibn Bayṭār, trad. Leclerc, p 67). Bayṭār wrote that Dioscorides does not mention this plant. For the Arabic authors, there are several species of this “cassia”, according to the geographical situation; each of them has different medicinal qualities.

2) It could also be the cinnamon (*saliḥa* or *dār ṣīn* in Arabic) (Ibn Bayṭār Trad. Leclerc, vol. 2, 841, 1205, vol. 3, 2213). Avicenna (*Canon*, Pers. vol. 2, p 354-5; Arab vol. 1, 378 – 395) describes six different species of cinnamon and reports that Dioscorides knew some of them. The best is the red one, which smells good. It has a large range of medicinal properties (healing wounds and inflammation...). The difference with Fuchs is that for Avicenna the natural production of different varieties is normal: physicians and druggists should be able to recognize each one.

2. 3. *Sandaraca*

The Arabic and the Greek one have a different form as well as different faculties and therefore different effects. Fuchs thinks that there is confusion between a fossil substance, the Arabic *sandaraca* (the red pigment, a kind of gum), and the Greek one (a plant with medicinal properties, recommended by Galen and Dioscorides to heal skin diseases, asthma or cough). In order to underline this difference, he cites Vitruvius, a non-medical authority, who explains that this substance, when it is “cooked in an oven”, changes color and becomes “like a *sandaraca*”.

The problem, according to Fuchs, is twofold: on the one hand, the Arabs give this name to a substance very different from the “original” *sandaraca* mentioned by Dioscorides, Galen and the other ancient authorities. On the other hand, they are ignorant people who do not even know “which tree gives this gum they call *sandaraca*”; as a result, the “poor physicians of our time” (*doctorculi*) blindly follow the Arabs and only promote their gum-*sandaraca* as a medicinal substance.

2. 4. Weevils

Both Razes and Avicenna recommend removing the heads or wings of the weevils, and using them to heal urinary difficulties. Fuchs underlines their error, because both Dioscorides and Galen uphold the very opposite opinion: not to remove the wings. Galen recommends the use of the entire body (*De simpl. med. facult.* K. 12, 363-364).

He also relates (*In Hippocratis de victu acutorum commentaria* K. 15, 912-913) that an “audacious” physician misunderstood Hippocrates and gave his patient a medicine made of weevil without feet or wings. It was a failure, the patient died in a couple of days.

Fuchs’ wise conclusion: as there are many other medicines for urinary troubles, physicians would rather prescribe others and not the ones made from weevil, if they are for internal use. The aforementioned cases show that the Arabic use is hazardous. Nothing is said about the Arabic use of the weevil medicine not for urinary troubles, but for erection troubles. The interesting point in this chapter is that either the Galenic or the Arabic recipe would be problematic, even though Galen is undoubtedly the best.

2. 5. Two composite medicines

2. 5. 1. Theriac

This famous medicine continues to raise many scholarly debates we intend to fuel with the discussion of Fuchs’ point of view, which has several interesting aspects:

- Etymology and terminology, Greek and Arabic: *theriaca* (Greek θηρίον), not *thiriaca* (the Arabic snake *thiria*). Razes and Avicenna never explain the etymology as coming from “the Arabic snake *thiria*”, so we cannot identify the source of Fuchs’ assertion.

- Main ingredient: Fuchs' authority is Niccolò Leonicensi's treatise *About the dipsas and many other snakes* (1529), which provides all the useful knowledge about the "genuine" viper one has to use for the "genuine" theriac. Physicians ought to learn from Galen that the best kind of viper does not live in dry and arid countries like Egypt or Arabia, but in Italy.
- Polemic: Many of its components are not still in use or are completely forgotten. Fuchs makes a list of components and explains each of them. The "genuine" substances are referred to by Dioscorides and Galen, while the "non genuine" ones are sold in pharmacies. His aim is not to enumerate all the ingredients of theriac, but to point out the principal reasons why the "modern" theriac does not produce the same effects as the ancient one. As Galen says (*De theriaca ad Pisonem*), the bad quality of only one component can corrupt the whole composition. If druggists were not blind followers of the Arabs, it would be possible for us to have the good, ancient theriac. Avicenna also believes that it is difficult to change some ingredient of the theriac, because of the complexity of its manufacturing.
- Praise of Galen's travels all around the Mediterranean to collect medicinal substances (among them, the famous Lemnian Earth). This gives Fuchs the occasion to insist on "regional" plants such as the Cretan *dictamum*, one of the theriac components that it is impossible to produce in *Germania*. This praise does not apply to "modern" travels in order to increase knowledge on plant diversity depending on climate or soil variations. The importance of those factors is discussed in his commentary on Galen's *De symptomatum causis* III, K. 7, 227-228 (p. 362): the same plants transported even from nearby places can have a different aspect or different effects. There is no evidence that Fuchs' botanical skill is the result of travels. We only know that he was the first professor of the university of Tübingen to organize excursions in order to include on the spot botanical observation to his theoretical lectures.

2. 5. 2. The syrup

Fuchs gives the recipe of Mesue: the 18 ingredients, their proportions, and the method of preparation. Among them: the *endivia* (*chicorium endivia*, a kind of chicory), which is different in Italy and in Germany, but druggists ignore not only the difference, but also its properties; the Arabic "bedeguar" is a mountain plant similar to the white "*chamelaea*" (as it is described by Dioscorides). In order to make it clear to his fellow German scholars, Fuchs mentions its German name, Vehdiftel/Vueifdiftel; **it is nearly the only time he has recourse to the vernacular name of a plant as supplementary evidence of its correct identification.** The current syrup is not as efficient as expected, because physicians as well as druggists do not know how to compose and use it: a substitute for its principal component, the agrimony (*eupatorium*), can hardly replace the genuine one.

Fuchs warns to avoid foreign and exotic (*peregrina et exotica*) ingredients, and recommends using what one can find "in our place/country". The druggists who find using foreign ingredients fairly attractive are ignorant. The only way to "heal" this ignorance is to replace these medicines by the ones we have in hand: a praise of proximity? Compared to Razes' use of the ancient authorities to learn how to adapt practices in a new era demanding updated knowledge, Fuchs' ideas are rather conservative: medicines of the time of Galen and Dioscorides are supposed to be still the best, without change.

3. Diseases, causes, symptoms, and treatments

Two preliminary remarks:

- Fuchs, an academic, seems quite suspicious towards bookish culture for physicians. Yet his own advice or *caveat* stem from his readings of the Greek medical authorities; references to his field experience are very scarce. Razes, a practicing physician, values bibliographical research as a useful tool to learn about diseases and their healing.
- Although Galen wrote 4 long treatises on *The differentiae and the causes of diseases and symptoms*, Fuchs prefers quoting the therapeutic treatises. Razes took into account those 4 treatises in his *Doubts about Galen*, proceeding to their critical examination.

3. 1. Method of healing pain

The vein to open in case of pain (i.e. “inflammation of the internal parts of the body” or “the internal viscera”) should be the one directly connected to the sick member, not the one in the opposite side, as the Arabs and the *recentiores* (modern/contemporary physicians) pretend. All the ancient sources agree: Galen, Hippocrates, Alexander of Tralles. The only one supporting the erroneous Arabic opinion is Aetius of Amida, an “Oriental” (Syriac origins), who lived under Constantine the Great or Julian, and therefore his reading of the ancients is less accurate. Fuchs has already exposed this opinion in detail in his *Apologia* against Thriverus Brachelius (the Flemish physician Hieremias Thriverus Brachelis/Jérémie de Dryvere 1504-1554), but when he wrote it he did not have “an accurate Greek text in hand”, so he repeats his comments and citations of Galen in the *Paradoxa*. Galen’s superiority is due to his practice of medicine in Rome, a big city where he dealt with many patients. Sébastien de Monteux (b. 1480), who contradicts Fuchs’ reading of Galen, presents him as a follower of the majority opinion. Fuchs answers that his concern is not majority or minority, but quality medicine and persuasive, strong arguments one can find in Galen and the other Greek sources.

3.2. Discussion on diseases

The diseases that raised many scholarly debates one can find in Fuchs’ *Paradoxa* are mostly “visible” because of an alteration of the skin.

3. 2. 1. Elephantiasis and leprosy, Arabic and Greek

Fuchs’ explanation of this complicated debate pertaining to terminology and identification of the diseases is perfectly clear, due to his accurate reading of the Greek sources. This is fairly unusual in his time, and is *not* the majority opinion.

The *elephantiasis* described in the Arabic texts (Avicenna, Avenzoar, Razes book 9, ch. 93) is a swelling of the legs becoming “like the ones of an elephant”. Nowadays, physicians follow this description and regard elephantiasis only as a disease of the legs.

The Greek elephantiasis is completely different: a serious and contagious skin disease, also called “leontiasis” or “satyriasis” because of the deeply wrinkled aspect of the skin, similar to the pictures of the Satyrs. Aetius advises to avoid contact with patients, in order to avoid inhalation of “polluted air” exhaled by the ulcerated part of the body. Galen presents the elephantiasis (*De tumoribus praeter naturam* (Latin text) K. 7, 727, 15-18) as a disease provoked by melancholic blood (*De morb causis* K. 7, 29-30) changing completely the shape of the nose, the lips, and the ears.

According to Avicenna, Razes (book 5, ch. 35) and Avenzoar, the characteristics attributed by the Greek physicians to "elephantiasis" are the ones of the Arabic "*lepra*", in particular the fact that the disease is incurable. Only the name is different, this is the reason for the confusion according to Fuchs.

The medicine recommended to cure it is the same: (Galen, *Ad Glauconem de methodo medendi* K. 11, 143) the Galenic recipe is the source of the Avicennic one, whose main ingredient is "viper's flesh".

According to Pliny, the disease was "imported" from Egypt. Galen mentions Alexandria whose hot climate, as well as the diet of its population, is more favorable to such "hot" diseases (*Ad Glauconem* K. 11, 142).

The Greek "*lepra*" (λέπρα/λέπρη) is different from the homonymous Arabic disease. Hippocrates (*De affectionibus* 35) and Galen (*De tumoribus* K. 7, 727, 12-14) stress a parallel between psoriasis and "*lepra*", both diseases of the skin. In a pseudo-Galenic treatise attributed by Fuchs to an "unknown author", (*Introductio seu medicus* K. 14, 758, 8-11) there is a description of this fairly mild and curable skin disease.

It is quite intriguing that Fuchs does not comment on the famous Galenic medicine based on viper's flesh supposed to heal elephantiasis. The discussion about the use of snake flesh as a remedy is limited to the theriac chapter. The important point here is to establish a clear distinction between the 2 homonymous "*lepra*", and to highlight the fact that the majority of the physicians in Fuchs' time do not pay attention to these key distinctions: how can one trust a physician who does not consider a disease to be incurable or contagious? Razes expresses his doubts about the efficiency of the snake flesh remedy, stressing that Galen does not commit an "error", but that the remedy does not work according to his field experience.

3. 2. 2. The "Gallic disease" (*morbus Gallicus*)

The disease called "*morbus Gallicus*" in everyday language is not the one called "scaly skin" (*impetigo*) in Latin or "lichen" in Greek; it is another disease, currently "unknown". This "unknown" disease is actually well known in Fuchs' time: *morbus Gallicus/Neapolitanus* is the name given to syphilis by Geronimo Fracastore, in his book *Syphilis sive morbus Gallicus* (Verona, 1530).

Fuchs mentions Leoniceno's *De morbo Gallico* (1497) in order to distinguish the two diseases. The *lichen/impetigo* was mentioned by the Greek and Latin authors: that makes impossible its identification with the *morbus Gallicus/Neapolitanus*, which first appeared in Naples in 1493, when the army of the French king Charles VIII was fighting there. Fuchs provides the description of the Greek λειχήν/*lichen* by "the unknown author of the introductory treatise" (i.e. the Pseudo-Galenic *Introductio sive medicus* K. 14, 758): a skin disease, whose treatment is a remedy made of human saliva. Avicenna agrees with it and other Greek recipes healing the same disease.

Fuchs' criticism here is directed against Monteux, who ridiculously confuses the names of the aforementioned diseases. This gives Fuchs the opportunity to repeat Galen's opinion that the most important is not naming, but recognizing the diseases, causes and symptoms.

One can notice that there is no allusion to the *morbus Gallicus* as a venereal disease.

3. 3. Healing procedures: the example of baths

There is no better method to heal fever than bath, although physicians “nowadays” are prohibit them. Fuchs criticizes Razes who is supposed to prohibit baths as a curative means against tertian fever. Following this false opinion, contemporary physicians prevent patients from taking baths in mild water in case of fever. On the contrary, Galen (*De methodo medendi* K. 10, 696, *De sanitate tuenda* K. 6, 183) not only recommends mild baths to cure intermittent, tertian, or hectic fever (*Ad Glau.* K. 11, 33-34, *Ad Glau.* K. 11, 36, *De marcore* K. 7, 691, 6-8), but he also gives instructions about the better moment to bathe patients suffering from “ephemeral” fever (*Ad Glau.* K. 11, 6, 12-13; *De methodo medendi* K. 10, 552, 18-553, 2 and 555, 2-4 ἐν τῇ παρακμῇ παροξυσμοῦ). Even Avicenna, as well as Averroes, recommends bath in “some case” of fever, which is fairly surprising. The error of Razes -- and of Fuch's fellow physicians -- is thus more serious. Among those “fellows”, the Portuguese Vamesco de Tarenta, (1348-1418): he is “ridiculous” because even though he recognizes the utility of “soft” baths to cure fever, he does not recommend bathing patients (?). He cannot be called “*medicus*” or “*pius*” because he refuses this “*auxilium*” to sick men.

In another chapter of the *Paradoxa* explaining how to cure renal calculus, Fuchs approves Razes’ opinion about baths. But in both cases, he does not mention Razes’ detailed instructions about baths, only those of Galen.

In his *Aphorism* (*Fuṣūl*, book for young physicians) Razes devoted a chapter to healing by baths. He emphasizes the rules of bath prescriptions according to the disease, the temperament, the age of the patient and the importance of the temperature and the time (Aphorisms 76 to 80, p. 70, title *Ḥammam* or bath).

4. Anatomy

Anatomy raises questions about the best knowledge of the functioning of the human body: physicians must draw upon Galen, who practiced dissection, instead of using other more widespread sources, Arabic, as well as Arabic-friendly ones, including the “Aristotelian tradition”.

Some topics:

- There are six intestines. Neither the pylorus nor the “mesenterium” (peritoneal fold) are to be regarded as a part of them.
- In which direction does the “transformed blood” issued by the “decoction” (digestion) flow? Where does it end up? (To the duodenum).
- How does the fetus urinate? Galen (*De usu partium* K. 4, 231) explains the anatomy of the vessels surrounding the navel. Galen's evidence shows that the fetus' urine is transferred by means of a special channel to the allantois membrane and kept here until birth. The description by the Italian anatomist Mondino dei Luzzi (1270-1325) and his cognates is wrong.
- How many ventricles are there in the heart? Against the Aristotelian tradition of the 3 ventricles, Galen, who performed much more dissections than any other “especially on monkeys, whose body figures the human one”, shows that there are only 2. Razes and Averroes agree, while Avicenna, an “Aristotelian”, is wrong. In a spurious treatise, referred to as such by Fuchs (*De anatomicis administrationibus* K. 2, 618, 14-621, 11), “Galen” relates a dissection of an elephant in Rome and the discussion with his fellow physicians about the anatomy of the animal's heart.
- Does the esophagus have any muscles/need any muscles? No, because muscles are only useful for “voluntary” movements and swallowing is a spontaneous one.

Here, Razes agrees with Galen. Avicenna and “many others”, such as the Italians Jacobus de Forlivio († 1413), and Alessandro Benedetti (surgeon and anatomist ca. 1430-1512) are wrong: swallowing is not the result of 2 attractive functions, one “voluntary” and one “natural” (Avicenna’s distinction).

- What is the right place of the pharynx, the trachea, the larynx, and the throat?
- The brain’s role is not to “refrigerate the heart”, as Alessandro Benedetti pretends, following the Aristotelian tradition. Galen says that this opinion is absurd, because the brain is actually the starting point of the nerves (and the senses) and this function, as well as the brain’s location in the body (not close to the heart), its membranous protection, and the fact that the brain is hot, at least as hot as the surrounding air, helps to avoid confusion.

Fuchs encourages physicians and students to trust Galen’s experience, without neglecting autopsy. He insinuates that the Arabs and their followers did not practice dissection. Yet he makes no mention of the Arabic surgery: their descriptions of instruments and successful operations would be impossible without first-hand anatomic experience. Their influence on the Latin West is perhaps the reason of Fuchs’ omission: his principal concern is to rehabilitate the Greek sources, and thus to emancipate the medical education from its Latin Medieval past.

To conclude, we would like to pose some challenging questions: the reading of the medical authorities sheds light on the role of the past in producing useful and sound knowledge. Yet what was exactly regarded as “past” by the Renaissance humanists? How does the remote past facilitate the emergence of what was considered to be an efficient medicine, as opposed to medicine practiced and taught in the recent past? The Greek sources contribute to the Renaissance “seeking for truth” but hardly open any prospect to innovative theory and practice, partly because what was reliable in the Greek past was in many cases regarded as sufficient and satisfactory. The same Greek sources in the Medieval Arabic period raise doubts and are under constant critical scrutiny, and yet improve and enrich medical knowledge. What is under discussion is the very concept of past, present and future: return to the past guarantees the solidity of the foundations of the building; but what about erecting it and facing the unknown?

Finally, we would like to underline the difficulty to explore Renaissance treatises such as the *Paradoxa* or the commented Latin editions and translations of the Galen: although access to their digitalized copies is free, they are still static images, not “machine-readable” texts. This is the reason why in autumn we are launching a new digitalization, using the TEI standards, and soon we hope to be able to fulfill the needs of an in-depth study, and to share not only questions, but also – why not? - outlines of answers.

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