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The Question of Anatomy: Towards a Different Understanding of the Interactions of Religion and Science in the Medieval Middle East

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Citation	Ragab, Ahmed. The question of anatomy: towards a different understanding of the interactions of religion and science in the medieval Middle East. Paper presented at the Annual Conference of the Middle East Studies Association (MESA) in Boston, MA, November 21-24, 2009.
Accessed	February 18, 2015 10:13:10 PM EST
Citable Link	http://nrs.harvard.edu/urn-3:HUL.InstRepos:4725937
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The Question of Anatomy

Towards a Different Understanding of the Interactions of Religion and Science in the Medieval Middle East¹

Throughout the high Middle Ages, a large number of writings on medicine and anatomy were produced by scholars of religion. Scholars, like Ibn Qayyim al-Jawziyyah², al-Suyuti³, al-Dhahabi⁴, al-Qalyūbi⁵, al-Damanhuri⁶ and al-Attar, were only the most prominent examples of a common intellectual practice. These books were directed to the general public and intended to provide general and nonspecific medical advice and/or medical knowledge to the audience.

Most of these books included detailed sections on anatomy. In other instances, separate volumes were solely dedicated to anatomy and the description of different body parts. As part of the medical corpus of knowledge, anatomy had a unique place for both the medical professionals and the religious scholars and intellectuals writing those ‘lay’ manuals.

For physicians, anatomy was largely an isolated theoretical body of knowledge, where they had little chance of practicing or observing. The differences and tensions between theory and empiricism collapsed because there was virtually no empirical practice to speak of. Ibn al-Nafis, who is credited for presenting the most significant critique to Galen and Avicenna’s view of the

¹ This is the text of a presentation in the Annual Conference of the Middle East Studies Association (MESA), held in Boston in November 2009

² Muḥammad Ibn ‘Abī Bakr Ibn Qayyim Al-Jawziyyah, *Al-Ṭibb Al-Nabawī* (Beirut: Dār al-Kutub al-‘Ilmiyyah, 1957).

³ Jalāl Al-Dīn ‘Abd Al-Raḥmān Al-Suyūṭī, *Al-Raḥmah Fī Al-Ṭib Wa-L-Ḥikmah* (Tunis: Dār al-Maṭīfah, 1989), Suyūṭī, *As-Suyuti’s Medicine of the Prophet, May Allah Bless Him and Grant Him Peace* (London: Ta-Ha, 1994).

⁴ Muḥammad Ibn Aḥmad Al-Dhahabī, *Al-Ṭibb Al-Nabawī* (Cairo: Muṣṭafā al-Ḥalabī, 1961).

⁵ Shihāb Al-Dīn Aḥmad Ibn Aḥmad Qalyūbī, Suyūṭī, and Al-Mahdī Ibn Ibrāhīm Ṣabīrī, *Hādhihi Tadhkirah Fī Al-Ṭibb* ([Cairo]: aal-Maṭba‘ah al-Wahhābīyah, 1882).

⁶ Ahmed Ragab, *Al-Qawl Al-Ṣarīḥ Fī ‘ilm Al-Tashrīḥ: Anatomy in 17th-18th Century Ottoman Middle East* (London: Royal Asiatic Society, Forthcoming).

circulation, admits in the introduction to his book “Sharḥ Tashrīḥ al-Qānūn/the explanation of al-Qānūn’s anatomy” that both religious obligations and personal sensitivities prevented him from performing dissection and that he depended solely on the writings of the ancients and the famous physicians⁷. His critique was based on logical inconsistencies and was not rooted in any evidence of actual dissection⁸.

Outside the realm of medicine and the books directed to medical practitioners and students, a large corpus of popularized medical treatises became very popular in the late middle ages and provided valuable medical advice to their readership. This corpus, under which the most important writings on prophetic medicine can be placed, depended on Galenic theory and on the writings of the major medical authorities in the Middle East and included a number of anecdotal and popular prescriptions, which were common among the educated population of the medieval Middle East. Anatomy, to which some chapters of these books were dedicated, was different in being a body of theoretical knowledge with less value in the daily lives of the readers. Although it is safe to assume that the intended lay audience was probably intrigued or excited by the anatomical data presented smoothly in these writings, as evidenced by the popularity of these books, we can notice that the authors tried to remind their readers of the possible significance of many of the details they mentioned.

At the epistemic level, anatomy was different because it depended only on the knowledge transmitted from the Greek masters of the medical profession. There was no empirical evidence or experiential knowledge to count on and there was little evidence to counter the arguments of

⁷ ‘alī Ibn Abī Al-Ḥazm Ibn Al-Nafīs, *Kitāb Sharḥ Tashrīḥ Al-Qānūn*, ed. Salmān Qaṭāyah and Paul GHALIYUNJI (Cairo: al-Hay’ah al-Miṣrīyah al-‘Āmmah lil-Kitāb, 1988), 17.

⁸ Ibid., 293-94.

the Galenic corpus or to even limit their implications. In the absence of these sources of direct experience, the Galenic knowledge acquired more importance and relied in its justification on trust and on the faith of the receiver in the accuracy of the transmitted knowledge. In the writings of prophetic medicine and in the hands of the religious scholars, who composed these volumes, a textual conflict arose between the transmitted trustworthy knowledge of the Galenic theory and the anatomical and embryological remarks in the prophetic narrative or in the Qur'ān. Here too, the source of knowledge was transmission via reliable sources and the authority was based on a belief in the superiority of the narrative and in its transcendence.

Therefore, anatomy represented an interesting interface between the religious narrative and the narratives of the scientific authorities and allowed for the development of different strategies to deal with the conflicting authorities and the sometimes contradicting narratives. For our historiography, this “conflict” enables us to analyze and investigate the methods by which the intellectual community understood and dealt with the various versions of knowledge and gives us an idea about the place occupied by the Galenic narrative in the medical discourse and in the intellectual construction of the medieval Middle East.

In this presentation, I will look at some of the examples of these contradictions, trace how these religious intellectuals structured the sources of their writings and how they dealt with the epistemic authority of these sources and analyze how the religious scholars navigated through these different claims of authority.

Examples

Negotiating Contradictions

The first example is related to the formation of the body out of the four elements; earth, water, fire and air, and the body's containing four different humors, which represent the characters of these four elements. In his famous "prophetic medicine," Ibn Qayyim al-Jawziyyah engages this question as he discusses the suitable foods for preserving health⁹. He mentions Muḥammad's instructions on dividing one's stomach into three parts; one-third for food, one for water and one to allow a space to breathe. Ibn Qayyim understands this commonsensical advice of moderation in a Galenic medical garb and explains that this is because the body is formed of the elements of earth, to which food corresponds, water and air. Therefore, he claims, Muḥammad was in a way responding to the "fact" of the body's composition of four parts. However, Ibn Qayyim was faced with the problem of the fire part.

Now, there was no possible way of denying the existence of that part, which the medical theory proved by citing the fact that we feel cold and that our bodies are normally warm and, thus, we enjoy innate heat. At the same time, it appears problematic that Muḥammad did not mention this part in his thematic division of the human stomach. Ibn Qayyim embarks on a trial to explain the apparent contradiction. Ibn Qayyim suggests that the heat in animal bodies is not caused by actual fire but rather by the heat of the sun. In the process, he misquotes Avicenna and present him as an undisputed medical authority who agrees with him¹⁰.

The interesting remark here is Ibn Qayyim's inability and reluctance to engage the medical theory critically or to question its assumptions. On the contrary, he fumbles for arguments and

⁹ Ibn Qayyim Al-Jawziyyah, *Al-Ṭibb Al-Nabawī*, 13-17.

¹⁰ *Ibid.*, 17.

gives extensive quotes attributed to “some physicians” in a trial to portray disagreement and to give a space for his argument. Ironically, he misses the fact that Aristotelian philosophers like al-Farabi and Avicenna have determined that the Aristotelian element “fire” is not actually material fire, which we witness and which Ibn Qayyim understands it to be, but rather an unseen element, which is characterized by warmth and that Aristotle used the word “fire” to provide continuity with previous traditions¹¹.

The inability of Ibn Qayyim to use the Aristotelian understanding of fire, upon which Galenic physicians based their own understanding of the elements and the humors, reflects a gap in our author’s knowledge. While medical knowledge was popular and authoritative enough to form and inform the author’s understanding of the prophetic tradition, philosophical arguments and writings in physics and cosmology were less known and were not accepted in the same manner that medical theory was. Ibn Qayyim, who was a faithful follower of Ibn Ḥanbal, had little interest in these theories and followed the lead of the founder of the Ḥanbalī school in admitting and taking pride in his disinterest in these sciences and their oft-considered heretical contemplations.

The style of quotations in Ibn Qayyim’s arguments is equally interesting. While he quotes the Canon of Avicenna verbatim indicating that he had direct access to it and he quotes some other books by Avicenna and by Galen correctly, he uses the term “some physicians” to attribute quotes, which are in many cases contradictory to Galenic theory. In many cases, it appears that the terms “some physicians” and “some of the best physicians” were used to provide a cover of

¹¹ Muhsin Mahdi, "Alfarabi against Philoponus," *Journal of Near Eastern Studies* 26, no. 4 (1967).

epistemic authority to some arguments and assumptions, to which he had no direct or textual evidence from Galenic theory.

Ibn Ṭūlūn avoids the problem of the four elements by using a different tactic. He starts his anatomy chapters by mentioning a divine tradition¹² where God says:

“When I created Adam, I composed his body of four things and I made them inheritable to all his offspring [so that] they grow in their bodies till the day of Judgement: humid, dry, warm and cold. That is because I created him of earth and water and gave him a psyche and a soul. [Therefore] the dryness of the body is from the earth, the humidity from the psyche, the coldness from the water and the heat from the soul. After this first creation, I created four secondary elements in each body [...]: black bile, yellow bile, blood and phlegm. Then, I installed the characters of the first four [elements] in the second four elements. Thus, I installed dryness in black bile, heat in yellow bile, humidity in blood and coldness in phlegm. If a body has these elements in perfect equilibrium, its happiness is complete and its built is straight. If one of them increased over the others, [...] disease happens from its character, corresponding to the amount by which it increases.”¹³

In this interesting account, God is made to give us a perfect explanation of the basics of Galenic humoral theory. Here, it appears that Ibn Ṭūlūn had a better understanding of the principles of the Galenic theory and Aristotelian physics than Ibn Qayyim. By presenting this

¹² Divine traditions were believed to be inspired to Muḥammad in meaning and not in word as opposed to the Qur’ān, which is seen as revealed in both meaning and word.

¹³ Shams Al-Dīn Muḥammad Ibn Ṭūlūn, *Al-Manḥal Al-Rawī Fi Al-Ṭib Al-Nabawī* (Haydar Abad: al-Maṭba’ah al-‘Azīziyyah, 1987), 11.

tradition, Ibn Ṭūlūn overcomes all the difficulties involved with God's creation of man and with the formation of bodies of the four elements.

Another example is the number of the bones in the human body. A tradition reported in 'The True Book of Muslim', which is the second most credible collection of Muḥammad's traditions, states that the human body has three hundred and sixty joints. This tradition is widely reported by many of the religious scholars, who wrote books and treatises on anatomy and/or medicine. The problem arises when we know that Galen and other Galenic physicians, such as Rhazes, Avicenna and Ibn al-Nafis, were sure that the body contains only two hundred and forty-six to two hundred and fifty bones, depending on whether we count the hyoid bone of the larynx, the "heart bone" and the two heads of the humerus bone as separate bones¹⁴. In all cases, the number of joints cannot reach the three hundred and sixty mentioned by Muḥammad.

In the part dedicated to the bones, al-Dhahabī mentions the famous tradition at the outset. He never mentions the number according to Galenic anatomy but he proceeds to enumerate the bones of the body following the scheme in Avicenna's Canon and Ibn al-Nafis' "The Explanation." Ironically, he falls short even of the Galenic count by about twenty bones counting only two hundred and thirty bones and ending his enumeration by saying "and these are the bones, which the prophet mentioned."¹⁵

Ibn Ṭūlūn appears more willing to engage the contradiction. He starts his account with Muḥammad's tradition and then follows it with an extended quote from Avicenna's Canon, in which the famous physician explains the formation and the importance of bones and then

¹⁴ Ibn Al-Nafīs, *Kitāb Sharḥ Tashrīḥ Al-Qānūn*, 152-53.

¹⁵ Al-Dhahabī, *Al-Ṭibb Al-Nabawī*, 156-57.

proceeds to enumerate them¹⁶. Ibn Ṭūlūn quotes Avicenna as saying “Thus, the total number of the body bones, should you count them, is two hundred and forty-eight except for the sesamoid bones.”¹⁷ Ibn Ṭūlūn then quotes al-Suyūfī, who tries to explain the contradiction by saying, “It is possible that the sesamoid bones are numerous so that the number of bones reach [what is mentioned] in the tradition, or that the tradition included cartilages with the bones because of their physical proximity or similarity in shape.”¹⁸

The manner with which these authors dealt with this contradiction is interesting and informing as to another contradiction, which we will look at. The authors used two main strategies. The first involved a deliberate inaccuracy and a convoluted language, which does not endorse any of the two visions. In fact, the carelessness by which al-Dhahabī mentions the number of the bones is indicative of the nature of his audience, who were not specialists and were not interested in any accurate information but rather in a general idea. Ibn Ṭūlūn and al-Suyūfī resorted to a different strategy, which is to reinterpret Muḥammad’s tradition in order to dismiss the contradiction. In their interpretation, the tradition is made to include sesamoid bones, cartilages and other bone-like structures so that they complete the count. More importantly, neither of the two authors actually attempts to count the cartilages or the sesamoid bones. Instead they try to allow for the coexistence of the tradition with the medical theory, while effectively undermining scientific importance of the tradition by not engaging with its supposed notions.

Another example shows the use of these strategies in dealing with another contradiction. In his discussion of embryology and the development of the fetus, Ibn Ṭūlūn faces a logical

¹⁶ Ibn Ṭūlūn, *Al-Manhal Al-Rawī Fi Al-Ṭib Al-Nabawī*, 28-32.

¹⁷ *Ibid.*, 32.

¹⁸ *Ibid.*

contradiction between two traditions¹⁹. In the first, Muḥammad mentions that if male semen floats over female semen, the fetus would be male. In the second, the male semen's floating would lead to the fetus resembling the father's family in shape and features.

Al-Qurṭubī explains, “These two traditions must be interpreted because [in the first tradition], the floating leads to [sex differentiation], while in the second it leads to resemblance to [the father or the mother]. Therefore, the two traditions mean that female sex is always coupled with resemblance to the mother and male sex with resemblance to the father. However, this is not true because we witness resemblance to the mother with male sex and resemblance to the father with female sex. Therefore, the second tradition should be interpreted so that floating means arriving first to the uterus.”²⁰

A few lines later, another contradiction appears. Regardless of the interpretation of the two traditions, they both indicate that the fetus is formed almost equally by both male and female semen. Avicenna, however, explained in the Canon that female semen is the main component of the fetus' body and that male semen simply helps to ‘cook’ female semen. He tries to clarify it simply by saying that “female semen is like milk to cheese , while male semen is like rennet to cheese”²¹. Here, Ibn Ṭūlūn sides clearly with Avicenna and proceeds to explain the two different roles of male and female semen in the formation of the fetus. Although it is clear that our author was not perfectly aware of the details of Galenic and Avicennian embryology, he follows faithfully the details sanctioned by the author of the Canon. Moreover, he mentions that Galen believed that both semens have a ‘cooking’ power and a ‘cookable’ material. He dismisses the

¹⁹ Ibid., 21-24.

²⁰ Ibid., 24.

²¹ Ibid., 27.

apparent contradiction between the two medical authorities by stating that this does not negate the possibility of male semen having more 'cooking power' than female semen and of female semen having more cookable material²².

²² Ibid., 27-28.

Conclusion

In all the previous examples, the authors were faced with an epistemological challenge: As they tried to report a popular anatomical knowledge, they had to rely on particular figures and writings of authority, namely Galen and Avicenna, who was mostly quoted as the author of the Canon. With the absence of any empirical evidence or any experience-derived knowledge, the epistemic authority of Galenic statements increased dramatically as they became virtually undeniable and unchallengeable. Such a phenomenon does not repeat in other branches of medicine where we find the authors under study capable of presenting a limited number of ideas and medications, which are largely based on day-to-day experience.

The epistemic authority of the Galenic text is based on a general and unwavering trust in its validity and its encompassing the medical and anatomical knowledge. The nature of this trust-based epistemic formation allows for very little difference among the representatives of the Galenic text, for our trust in these texts is partially derived from Rhazes, Avicenna and Ibn al-Nafis' trust in them. This becomes evident in the reluctance of the authors under study to invoke any difference between the different authors or medical authorities, which could be seen in other branches of medicine. Moreover, and as we saw with Ibn Ṭūlūn, a sincere effort to dismiss the differences between Avicenna and Galen was exerted, although a similar effort was not done by Avicenna himself or by any of his students²³.

The irrefutability of the Galenic text of anatomy led to some epistemic tensions, when the Galenic text contradicted the religious text, which is epistemologically based on trust as well. Here, it is important to remember that these medieval intellectuals, regardless of their religiosity

²³ Quite the opposite, Rhazes composed a critique of Galen, in which he argued that dialogue and critical thinking is part of the Galenic tradition. Abū Bakr Muḥammad Ibn Zakāriyyā Rāzī, *Kitāb Al-Shukūk Lil-Rāzā 'alā Kalām Fāḍil Al-Aṭibbā ' Jālinūs*, ed. Muṣṭafā Labīb ' Abd al-Ghanī (Cairo: Dār al-Kutub, 2005).

and adherence to the Muslim religious traditions, viewed the religious text as largely unconcerned with the scientific facts, unable to represent them accurately and very limited in its relevance temporally and geographically. Such an attitude was watered down in other branches of medicine by presenting different empirical and experience-based evidence to support the claims made in the religious texts and to suggest that the Galenic text may have been misunderstood or misrepresented. In the case of anatomy, this chance was not there and the contradictions had to be negotiated by reinterpreting the religious text in a way, which would resolve the contradiction.

It is interesting to remember that the question of interpretation of religious texts was intellectually contentious throughout the Middle Ages with religious scholars disagreeing on the question of the legitimacy of interpretation. In one indicative example, it is reported that Aḥmad ibn Ḥanbal, who is the founder of the Ḥanbalī school to which Ibn Qayyim enthusiastically belonged, interpreted only one single tradition in his entire life. The acceptance of the literal meaning of this tradition would have led to believing that God spreads out his right hand for people to kiss²⁴.

In our study, it appears that the epistemic necessity watered down, if not annulled, the differences around the question of interpretation and led these scholars to pursue active acts of interpretation, which were in many cases epistemologically and textually violent, to force a correspondence between the religious text and the authoritative Galenic text.

²⁴ Sherman A. Jackson, *On the Boundaries of Theological Tolerance in Islam : Abū Ḥāmid Al-Ghazālī's Fayṣal Al-Tafriqa Bayna Al-Islam Wa Al-Zandaqa* (Oxford: Oxford University Press, 2002).

Finally, authors resorted to ‘epistemic blindness’ as a strategy to resolve some of these contradictions. In these cases, they reported the controversial statements, with a clear emphasis on the truthfulness and the trustworthiness of the Galenic statement, but without offering any help as to how these contradictions can be resolved. Relying on the disinterest of the amateur readership and their similarity with the author’s epistemic and intellectual background, authors left the problem unsolved and turned the blind eye to the possible consequences of such problems.

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