

Ibn al-Nafīs's Scientific Method

Nahyan Fancy. *Science and Religion in Mamluk Egypt: Ibn al-Nafis, Pulmonary Transit and Bodily Resurrection*. London & New York: Routledge, 2013. 186 pages. ISBN: 9780415622004.

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Ibn al-Nafis (d. 687/1288), a Shāfiʿi jurist, scholar of prophetic traditions, and distinguished physician active in Damascus and Cairo during the late Ayyūbid and early Mamlūk eras (1210-88), gained notoriety in Western scholarship during the twentieth century for what was (mis)understood as his discovery of the pulmonary circulation of the blood (lesser circulation). Much has been written, but not seriously researched, about this alleged discovery. Nahyan Fancy's book is the first one to study this particular aspect of his work in depth. He describes Ibn al-Nafis's life and scholarly milieu, investigates his position in the theological, philosophical, medical, and methodological discussions of his day, and analyzes his theories in the light of the medical traditions (Galenic and Avicennan) of his day with a view to describing his theory of the pulmonary transit—not circulation—of the blood.

As he makes clear in the introductory methodological chapter, he places Ibn al-Nafis in his historical, social, religious, and theoretical contexts in order to understand and evaluate his work. All of this is very proper and well done. However, this advanced treatment of the subject also raises some fundamental issues about Ibn al-Nafis's scientific context, his method and purpose, and the nature of his contributions, as well as a few basic questions about method and the his-

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toriography of science. I will dispense with further description of the book in order to concentrate on the essentials of Fancy's thesis.¹

According to Fancy's analysis, Ibn al-Nafis eclectically modifies some elements in Galenic and Avicennan physiology and anatomy and then presents the following theory about the pulmonary transit of the blood (in brief): The human soul is related not to some specific organs, but rather to the entire body (90-91) to which it emanates the natural (nutritive) faculties (93). The non-nutritive faculties it emanates to the material substrate in the body, known as spirit (*pneuma, rūḥ*), then carries and distributes these faculties throughout the body (93). The spirit is continuously generated in the heart's left ventricle from very fine blood and air. Blood is refined to a state that enables it to mix with air in the right ventricle. But since there is no passage between the two ventricles, the refined blood is carried from the right ventricle to the lungs, where it mixes with air and is purified, and then back to the left ventricle, where it is now ready to generate spirit (101-02). This is the pulmonary transit of the blood.

If this is so,² it raises two important questions: 1) On what basis did Ibn al-Nafis make these modifications and 2) to what purpose and for what reason did he make them? Fancy does not address the first question directly. In describing Ibn al-Nafis's statements about what Fancy calls the former's "new" physiology, he frequently uses the word *posits*,³ which leaves the reader guessing. Presumably, if one wishes to be charitable, one may assume that Ibn al-Nafis posited these theories on the basis of his medical experience (though even that is not presented). But that may be assuming too much, for Ibn al-Nafis could just as easily have behaved arbitrarily or esthetically, or on the basis of some pre-conceived notion that he wanted to advance.

Fancy tries to exculpate Ibn al-Nafis, a bit lamely and late in the game, in his final conclusion (110-11), where he addresses the Doubting Thomases among Western historians of science (e.g., Toby Huff and Helen King), who required that

- 1 A descriptive (and laudatory) presentation of the book can be found in the review by Leigh Chipman, *Der Islam* 91, no. 1 (2014): 195-98.
- 2 I have not consulted the Arabic texts of Ibn al-Nafis, the unpublished ones among which Fancy read in manuscript, in order to check the accuracy of his translations and interpretations. Some errors in the transliterations of Arabic sentences may be just that, as opposed to typos.
- 3 For instance, he says that Ibn al-Nafis "posits a new cardio-vascular anatomy, including a new theory of pulsation, in order to ensure the generation and maintenance of a pure, hot, fine, spirit" (10). I put Fancy's word "new" in quotation marks to indicate the excessive and unjustified nature of this claim of novelty for Ibn al-Nafis's physiology. The modification of a few elements in a medical system that is wholly Galenic in structure, essence, and philosophy hardly qualifies for this appellation.

Ibn al-Nafis base his “anatomical contribution” on “dissection or experimental observations.” He says, referring to Emilie Savage-Smith, that “in numerous passages throughout the *Commentary on the Anatomy*, Ibn al-Nafis explicitly appeals to dissection as showing or refuting a specific point” and makes the rhetorical point that dissection and observation would, in any case not work (!), since one “cannot merely observe the pulmonary transit of blood by dissecting cadavers.” And Fancy exculpates himself from having to study the presence or absence of observation by stating that “scholars have overlooked the theory-ladenness of observations themselves” (111), meaning that the observations made by (some?) scientists may not be objective but rather skewed because they are overloaded by the (biased) theory which they are trying to prove by reading it into their observations.

This is rhetorically cute, but false. The theory-ladenness of observations does *not* relieve scientists from having to make them and then interpret them against the theory, and it does *not* excuse historians of science from analyzing whether and how the observations were made and why they were so interpreted. Whatever the value of these dubious comments by Fancy, this discussion on the scientific method used by Ibn al-Nafis both in general and for his specific “anatomical contributions” should have been front and center in the analysis.

In the absence of a study of Ibn al-Nafis’s scientific method, the second question gains added significance. In this regard, Fancy discharges his obligations. Through an extensive study of the various works in which Ibn al-Nafis expresses or provides clues for his purpose, Fancy identifies the roles which the “new” physiology plays for him and thus reveals the purposes for which it was posited. A very significant role is how it is used “to rationalize the [Qur’anic] doctrine of bodily resurrection” (99) on the Day of Judgment and the corporeal afterlife. As Fancy explains, “Ibn al-Nafis had no choice but to defend the rationality of this [Qur’anic] doctrine” (64), for it is stated there expressly and unambiguously. Ibn al-Nafis does this by an ad hoc account of the genesis of the human embryo: A matter is generated “from sperm and similar things” to which “the soul becomes attached,” and “the [human] body is generated from it. This matter is called the *‘ajb al-dhanab*. It is absurd that this [*‘ajb al-dhanab*] should become lost as long as the soul subsists” (65). Fancy then explains that Ibn al-Nafis “concludes that this same mixture of the soul’s first attachment [i.e., the *‘ajb al-dhanab*] must *somehow survive after death*” so that it can regenerate the same body in the afterlife as it did in the first place. “Yet, *the evidence for this claim comes from revelation*. The reference to this mixed matter as *‘ajb al-dhanab* is taken from one of the most well-regarded Sunni *ḥadīth* collections, the *Muwaṭṭā’* [*sic* instead of *Muwaṭṭa’*] of Imām Mālik ibn Anas” (66, emphasis added).

Now Ibn al-Nafis was well aware of and, according to some of his texts presented by Fancy (31), a defender of the figurative interpretation (*ta'wīl*) of religious data when they conflicted with reason. There is nothing novel or surprising about this: Ever since Antiquity, the allegorical interpretation of an authoritative mythological narrative adhered to as religious dogma—and I can use this term to refer to all religious dogma in all religions—was used for this purpose, be it in ethnic Greek religion, Judaism, Christianity, or Islam before Ibn al-Nafis. To put it in terms of relevance to our subject, it is a question of either (a) somehow accommodating or explaining a mythological narrative away through allegory or symbolic exegesis in order to serve reason and defend science, or conversely, (b) distorting and abandoning reason and science in order to defend the literal sense of the mythological narrative of religious dogma.

In this (and other?) instance(s), Ibn al-Nafis clearly chose the latter alternative and accommodated science to fit a mythological narrative that he understands as religion. This raises the following question: If there is no real discussion and understanding of the basis on which Ibn al-Nafis posits his “new” physiology, and if his purpose—or at least one of his purposes—in his medical work is revealed to be the rationalization of an Islamic mythological narrative, is he a scientist or a theologian (indeed, a very conservative and literalist theologian) who tweaks scientific data at will to serve his religious purpose (*credo quia absurdum*)?⁴ How are we to understand, both in Ibn al-Nafis and his society, this half-and-half approach to science, toggling reason on and off depending on the circumstances? And does his medical work belong to the history of medicine or the history of Islamic dogma?

The question is not rhetorical, or idle. As scholarship is seriously engaging the social and intellectual history of Islamic societies in the post-Būyid era (or, as some might say, post-classical, after the first half of the 11th century), it is gradually emerging that a process of Islamizing the sciences and philosophy—what I have called paraphilosophy—began to take place.⁵ What this means in actual prac-

4 Countless examples can be given from the history of Christianity, where exactly the same thing happened. I recently came across Jacob of Edessa's (ca. 630-708) “science” describing the world in his *Hexaemeron*: “Jacob’s use of scientific sources seeks to prove that Greek philosophy is in agreement with Moses That which does not agree with the Mosaic account is dismissed or corrected and is described as foolish and godless speculation.” Marina Wilks, “Jacob of Edessa’s Use of Greek Philosophy in His *Hexaemeron*,” in *Jacob of Edessa and the Syriac Culture of His Day*, ed. Bas ter Haar Romeny (Leiden: Brill, 2008), 223-38, at 223. This may be acceptable for a fanatical theologian, but nobody would call Jacob a scientist because of it.

5 Dimitri Gutas, “Avicenna and After: The Development of Paraphilosophy. A History of Science Approach,” in *Islamic Philosophy from the 12th till the 14th Century*, eds. Stephan Conermann & Abdelkader Al Ghouz (Bonn University Press bei V&R unipress, 2018) (forthcoming).

tice will have to be studied on a case-by-case basis. For the Mamlūk period (1250-1517), whose very beginning is straddled by Ibn al-Nafis, who indelibly marked its medical tradition, recent studies are beginning to document how this occurred. The most significant one is the Islamization of the medical profession. “The founding *waqfiyya* [instrument] for the [Maṣūri] hospital [in Cairo], dated 12 Šafar 685/9 April 1286, forbids the employment or even the treatment of non-Muslims at the hospital. ... [T]he hospital was to function as a center of medical learning, education, and treatment for Muslims alone.”⁶ It may well be that such formally and legally stated policies had no “serious effects on the ground, whether in general or in relation to medicine,” as has recently been argued⁷ but the effect on attitudes and the general social and scientific climate was just as severe.

As a consequence of such policies of religious segregation in medical culture, the theologians gave medicine a religious attribute that it had previously lacked. In addition, they engaged in theoretical medicine, thereby replacing the earlier scientist-philosophers, even though they did not actually practice medicine. That was left to those excluded from the hospitals and theoretical medicine, mostly Christian and Jewish physicians. In this context, who was doing science and who was recycling theologically correct and very erudite sounding medical theory? In this particular case, those patients in Cairo who were in desperate need of a cure, including the Muslims, answered this question with their feet: They all went to the mostly non-Muslim practicing physicians instead of to the theologians who were pretending to practice “Islamic” medicine.⁸

Ibn al-Nafis lived in Cairo exactly when these developments were taking place, and he died two years after the foundation of the Maṣūri hospital that excluded non-Muslims. What was his position, function, and attitude in this socio-political and medical context that included an avowedly religiously correct “medicine of the Prophet” (*ṭibb nabawī*) (119-20)? If, as we are informed, “he was attached” to this hospital (22), *prima facie* it appears that he condoned its exclusionary practice, with all that this would imply for his understanding of what it means to do scientific research as a rational endeavor, when manifestly it is not only Muslims who are

6 Linda S. Northrup, “Al-Bimāristān al-Maṣūri – Explorations: The Interface between Medicine, Politics, and Culture in Early Mamluk Egypt,” in *History and Society during the Mamluk Period (1250-1517)*, ed. Stephan Conermann (Göttingen: V&R unipress; Bonn: Bonn University Press, 2014), 107-42, at 121-22.

7 Ahmed Ragab, *The Medieval Hospital: Medicine, Religion, and Charity* (Cambridge: Cambridge University Press, 2015), 167-68.

8 Paulina Lewicka, “Medicine for Muslims? Islamic Theologians, Non-Muslim Physicians and the Medical Culture of the Mamluk Near East,” in *History and Society during the Mamluk Period*, 83-106, at 100-01.

endowed with reason. And most significantly, what was, again in this very context, his scientific method when he “posits” his “new” physiology to accommodate his proof that the dead are bodily resurrected?

Furthermore, Ibn al-Nafis’ ideologically (religiously) driven scientific approach and method would appear to be more integrally related to his overall worldview and way of thinking than a casual ad hoc adherence, in the course of his medical work, to the Qur’anic mythological narrative for the sake of expediency would indicate. In his *Risālat Faḍīl b. Nāṭiq*, which can only be described as a historiographic travesty presented with a straight face, he tries to show that the entire revelation and its deployment among humans—the history of Islam from Muḥammad to his own day—are rational and “necessarily” so (*lā budda an, yajibu an*) and that “those who cling to the literal word of revelation are also being rational,” as Fancy maintains (43, 47).

As a medical scholar, Ibn al-Nafis did not have to write such a work—he did not, that is, have to respond to Ibn Ṭufayl’s (d. 581/1185) *Ḥayy b. Yaqzān* (if that is what he did, as Fancy claims, 40ff.), but he could have very well left it to the theologians. The fact that he actually wrote it indicates that the outlook on reality expressed in the tale of *Faḍīl b. Nāṭiq* was his very own, and that at every step his concern was to discern and validate the literal sense of the Islamic mythological narrative and its history without any regard for evidence, facts, verisimilitude, rationality, and the like. For if what he does is to rationalize ex post facto the Islamic revelation and its history (Fancy, 47) and present them as rational and scientific, then he is casting serious doubts on his own ability to grasp what rational scientific research involves and intends, something which had been exhaustively discussed by previous philosophers, and certainly by Ibn Sīnā (d. 428/1037).

Therefore, Ibn al-Nafis cannot claim innocence,⁹ for rationalization is not rationalism; it is “to devise self-satisfying but incorrect reasons for one’s behavior” (dictionary definition)—in this case, Islamic history—and all mythological narratives are notoriously full of such rationalizing (e.g., Athena, as the goddess of wisdom, was obviously—or could not have been but—born out of the head of Zeus, the father of the gods, etc.). One wonders what Shi’ite scholars would have thought of Ibn al-Nafis’s “rational” and inevitable Islamic history. More broadly, the question

9 For Ibn Sīnā’s epistemology, see Dimitri Gutas, “The Empiricism of Avicenna,” *Oriens* 40, no. 2 (2012): 391-436, in which he is followed by Ibn Ṭufayl in his empiricist narrative *Ḥayy b. Yaqzān*. If Ibn al-Nafis seriously wanted to refute Ibn Ṭufayl’s rational, empirical epistemology, he should have tackled Ibn Sīnā’s theories instead of going after rhetorical effect in *Faḍīl b. Nāṭiq*.

is the extent to which such magical thinking interacted, or was even identified, with scientific thinking in Ibn al-Nafis's time and society.

These and similar questions about Ibn al-Nafis and Mamlūk-era medicine, ably raised by the authors of the two articles I referred to above, as well as other, broader ones that relate to the historiography of medicine, should be on the agenda. Fancy has contributed to research by collecting a significant amount of material on Ibn al-Nafis that relates both to his context as well as to his signature pulmonary transit theory, and thus helps us identify and localize problem areas. But we have to hone our methods further and still have some way to go before we reach a final understanding of Ibn al-Nafis' medicine and the precise nature of his contributions.