

# THE TAŠRĪḤ-E MANŠŪRĪ AND FÜNFBILDERSERIE: EAST AND WEST

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## ABSTRACT

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The five illustrations of the *Tašrīḥ-e Manšūrī*, a fourteenth century Persian Galenic anatomy book, and the collection of medieval European images known as the *Fünfbilderserie*, are strikingly similar; this similarity without an obvious cause has been a mystery to scholars for over a century. I reopen this question first by reviewing the major theories of origin proposed by Sudhoff, O’Neill, and French, and then I illuminate the potential flaws in their theories by examining the text and context surrounding the images in further detail. In particular, I compare the Latin and Arabo-Persian labels of the Vatican Palat. Lat. 1110 bone man to the *Tašrīḥ-e Manšūrī*’s, and conclude that although the images appear similar, on closer examination they are significantly different. The *Tašrīḥ-e Manšūrī* shows 32 bones in the spinal column while the Vatican Palat. Lat. 1110 features only 27. However, the *Tašrīḥ-e Manšūrī* does not illustrate the coccyx, whereas Vatican Palat. Lat. 1110 almost does. I suggest that the superficial similarities may be due to convergent evolution as opposed to a direct route of image transmission. However, if scholars find older Persian images or Byzantine leaves showing the five images, that could lend credence to theories of a shared common origin. A more thorough index of the *Fünfbilderserie* manuscripts would allow for better textual comparisons with Arabic and Persian medical texts, and a serious translation of the *Tašrīḥ-e Manšūrī* would also be useful, as Persian medical language has been neglected in English scholarship.

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“Since the first decades of this century, the drawings in the *Tašrīḥ-e manšūrī* have become the focus of controversy on the origins of the early medieval history of anatomical illustrations.”<sup>12</sup> The *Tašrīḥ-e Manšūrī*, *Manšūr’s Anatomy*, also known as the *Tašrīḥ al-Badan*, *Anatomy of the Body*, is a fourteenth century Persian manuscript written by Manšūr ibn Ilyās

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<sup>12</sup> Gul A Russell, “Ebn Elyās, Manšūr,” *Encyclopædia Iranica*, VIII/1 pp. 16-20; available online at <http://www.iranicaonline.org/articles/ebn-elyas>.

(d. 1422) which features the first full scale human anatomical drawings known in the broader “Islamic” context. It was often rewritten in later centuries, so there are a number of extant copies, and it focuses exclusively on Galenic anatomy. Not all medieval scholars writing in Arabic were Muslims, and demonstrably not all medical works were written in Arabic, but with these caveats I will use the terms Islamic and Arabic to describe the scholarly network from Egypt to Syria to Iraq to Iran and beyond in the medieval period.

The book’s five illustrations feature humans with no particular genitals in a squatting position, one each for the bones, nerves, muscles, veins, and arteries. These illustrations became famous and were copied into some European editions of the *Canon of Medicine*,<sup>13</sup> written by ibn-Sīnā, who is known to the west as Avicenna; today the pictures often illustrate news articles about Arabic medicine. Ibn-Sīnā’s treatise, full of Greek and Arabic learning, was often reprinted in both the Islamic context and the Christian, and the *Tašrīḥ-e manṣūrī* is arranged into similar sections with an added introduction and conclusion. The *Tašrīḥ-e manṣūrī* also portrays the sutures in the human skull and an unusual image of a pregnant woman and her fetus.<sup>14</sup> While the illustration of the woman is interesting and worthy of further study, as is the accompanying question of Islamic views on childbirth, this paper will instead revisit the open question of the comparable Fünfbilderserie images, many of which are from Europe, and attempt to describe the theories of their origins and the relative validity of each proposed option.

In 1907, Karl Sudhoff found two twelfth century Bavarian documents which contained five very similar anatomical images, which he called Fünfbilderserie, or series of five images. Only three of the thirteen European manuscripts which he identified as part of the Fünfbilderseries have the distinctive feature of the *Tašrīḥ-e manṣūrī*’s “bone man,”<sup>15</sup> where the head is pronated so far back one can also see the face; the *Tašrīḥ-e manṣūrī* also features a pronated head in the nerve illustration. This pose does not seem intuitive, and as such, scholars have speculated as to a common origin of these images. While it is important to note that not all Fünfbilderserie images are a complete set of five images, as they may have more or less, all are based on Galenic anatomy. Less attention has been paid to the accompanying texts and places where they factually disagree, particularly since there are a number of terms in Manṣūr’s text that are highly specialized to a late medieval Persian medical context.<sup>16</sup> The illustrations have received more focus than the images, but most translations of the work, with the exception of “Illustration of the Heart and Blood Vessels

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<sup>13</sup> Mohammad M. Zarshenas, Arman Zargaran, and Alireza Mehd. “Mansur ibn Ilyas (1380–1422 AD): A Persian anatomist and his book of anatomy.” *Journal of Medical Biography* 24, no. 1 (2016): 70.

<sup>14</sup> Bethesda, National Library of Medicine, MS P 18 (NLM 9506458), fols 1-39.  
<http://resource.nlm.nih.gov/9406458>.

<sup>15</sup> These three manuscripts are Vatican Palat. Lat. 1110; Munich MS. Lat. 130432 (14th c., no text); and Basel MS. D. II.11 (13th c., bone text in Provençal).

<sup>16</sup> Andrew J. Newman, “Tashrīḥ-i Manṣūr-i: Human Anatomy between the Galen and Prophetic Medical Traditions,” in *La Science dans le Monde Iranien à l’époque Islamique*, ed. Vesel, Ž., H. Beikbaghan, and Thierry de Crussol des Epesse B (Institut Français de Recherche en Iran, 1998): 258.

in Medieval Times,”<sup>17</sup> have been broad overviews instead of paying special attention to the text surrounding the images, which might illuminate common themes across scholarship or discontinuity.



Figure 1: MS P 18, Manşūr’s Bone Man.

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<sup>17</sup> Khalili et. al. “Illustration of the heart and blood vessels in medieval times.” *International Journal of Cardiology*, Volume 143, no. 1 (2010): 5-6.

Three scholars have dedicated significant resources to this controversy of origins: Karl Sudhoff, Ynez Violé O'Neill, and Roger French. Each one posits a slightly different plausible explanation. Sudhoff speculated heavily about an Alexandrian origin for both images, although he did not rule out other possibilities.<sup>18</sup> O'Neill postulated that since the text surrounding the Fünfbilderserie manuscripts is so clearly Galenic, and that Galenic ideas could only have come to Europe via Arabic translations in the eleventh or twelfth century, the images must derive somehow from that shared Galenic tradition.<sup>19</sup> She also observes that the European prefaces divide the body into nine parts, five major and four minor, and notes that larger Fünfbilderserie collections reflect this.<sup>20</sup> She suggests that this is due to the work of Constantine the African, who translated part of ibn-Sīnā's *Canon* in the eleventh century,<sup>21</sup> presumably leading to Galenic knowledge being available to the Bavarian monks in the twelfth century, and perpetuating what we now know to be Galenic anatomical inaccuracies.

According to French there was perhaps a Byzantine-Sasanian transmission of some similar images, so the Greeks gave knowledge directly to the Iranians, which filtered to ibn-Sīnā and then later to Maṣṣūr. No original Alexandrian illustrations with the bone man have been found, nor have early Byzantine-Sasanian leaves, so this remains speculative. French noted in 1984 that "The text accompanying the Persian figures has not been studied by specialists,"<sup>22</sup> and I have as of yet been unable to find a complete translation of the most relevant sections, although Newman has made some translations available.<sup>23</sup> In this essay, I will provide historical context for the *Taṣrīḥ-e maṣṣūrī*, examine the scholarly debate on origins, and analyze the Fünfbilderserie images and their possible origins by comparing the work of Maṣṣūr's to the Vatican Palat. 1110 manuscript. I will conclude that, while the similarity of the images is striking, a further examination of the text surrounding them and the context in which the images were produced is necessary to draw a conclusion about the likeliest transmission route. Moreover, unless we find a shared common source or evidence of a continuing scholarly tradition using visual sources, we must also consider the possibility of a convergent evolution.

## Historical Context

There is an occasional tendency to view Arabic scholars as preservers of Greek knowledge who stored it until the West could use it in the Renaissance instead of as

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<sup>18</sup> Ynez Violé O'Neill. "The Fünfbilderserie—A Bridge To The Unknown." *Bulletin of the History of Medicine*, 51, no. 4 (1977): 543.

<sup>19</sup> Ynez Violé O'Neill. "The Fünfbilderserie Reconsidered." *Bulletin of the History of Medicine* 43, no. 3 (1969): 237-238.

<sup>20</sup> O'Neill, "Fünfbilderserie: A Bridge," 542.

<sup>21</sup> O'Neill, "The Fünfbilderserie Reconsidered," 238.

<sup>22</sup> Roger K. French. "An Origin for the Bone Text of the 'Five-Figure Series'." *Sudhoff's Archive* Bd. 68, H. 2 (1984): 144.

<sup>23</sup> See both Newman, "Tashrīḥ-i Maṣṣūr-i: Human Anatomy," and Khalili et. al, "Illustration of the heart and blood vessels in medieval times."

innovators in their own right. Islamic science was not static; it developed, had discourse, and arguably later fused with the Prophetic medical tradition, which is drawn from the Hadith and contains remedies which are believed to have been used by the Prophet Muḥammad. Ibn Ilyās, a later scholar in this tradition, merged Galenic ideas with some notes from Prophetic medicine,<sup>24</sup> although the earlier Islamic scholars who pushed for more reliance on reason and less on folk knowledge might not have considered that progress. The philosopher ibn-Khaldūn criticized Prophetic medicine as “definitely no part of divine revelation but... something customarily practiced among the Arabs.”<sup>25</sup> Later innovations aside, the overall history of medieval Islamic medicine is vast, and a few figures are particularly noteworthy both for their great influence and for our understanding of Manṣūr ibn Ilyās.

Arabic or Islamic science is called that because of the intense efforts of the ‘Abbāsīd Caliphate to foster learning. The Umayyads, who followed the four rightly guided Caliphs, may have funded some science, but the ‘Abbāsīds, who overthrew them and ruled in Baghdād, paid enormous sums for translations of Greek books, and even Indian and Chinese texts.<sup>26</sup> There is a popular story about this translation movement taking place in the Bayt al-Ḥikmah, or House of Wisdom, a grand library; however, Pormann and Savage-Smith point out that there is no definitive evidence of such a place existing.<sup>27</sup> The majority of the Arabic medical tradition reflects the Greeks more than others, and Galen was particularly popular. The Greek original texts were translated into Syriac or, more commonly, Arabic; the Indian and Chinese texts were sometimes translated first into Persian and then into Arabic.<sup>28</sup> These texts were not translated idly but often commented and improved upon the originals. While many gains were made in astronomy and other sciences, Islamic medical scholars are particularly noteworthy. Men such as al-Rāzī, Latin name Rhazes (d. 925), ibn-Sīnā, or Avicenna (d. 1037), and ibn-Ruṣd, called Averroes (d. 1198), definitively influenced Western medicine.

Galenic ideas regarding humors, pneuma, and heat were generally accepted. Al-Rāzī wrote two popular books, *Kitāb al-Ḥawī fī al-Ṭibb* (The Comprehensive Book in Medicine) and *Kitāb Al-Manṣūri* (Manṣūr’s Book, dedicated to the governor of Rey). *Kitāb Al-Mansuri* includes anatomical descriptions that mostly follow Galen, but there are some important divergences.<sup>29</sup> Alghamdi et al., in a 2016 paper, trace the development of anatomical study from al-Rāzī to Manṣūr. They note that al-Rāzī was the first to state that the laryngeal nerve was both sensory and motor; to describe the connections between arteries at the inferior side of the brain, an area now known as the circle of Willis; and to correct Galen on the

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<sup>24</sup> Newman, “Tashrīḥ-i Manṣūr-i: Human Anatomy,” 266.

<sup>25</sup> Newman, “Tashrīḥ-i Manṣūr-i: Human Anatomy,” 257.

<sup>26</sup> Peter E. Pormann and Emilie Savage-Smith. *Medieval Islamic Medicine*. Washington, DC: Georgetown University Press, 2007: 36.

<sup>27</sup> *Ibid.*, 36.

<sup>28</sup> *Ibid.*

<sup>29</sup> Malak A. Alghamdi et. al. “An Untold Story: The Important Contributions of Muslim Scholars for the Understanding of Human Anatomy.” *The Anatomical Record* 300, no. 6 (2016).

topics of the layers of the stomach and the number of bones in the coccyx, among others.<sup>30</sup> He also “disagreed [with Galen] that the brain, spinal cord and cerebral ventricles were formed in pairs.”<sup>31</sup> Next, ibn-Sīnā correctly stated that some women have two cavities in the uterus and others only have one, contra Galen. However, these corrections were sometimes debated or ignored by later scholars; ibn-Ruṣd, also known as Averroes, did not maintain all these things in his later works on medicine, of which *Al-Kulliyāt fī al-Ṭibb* (Generalities or General Medicine) is the most famous. Others made still more improvements, as al-Baghdādī (d. 1231) did regarding the bones of the lower jaw and the sacrum, which Galen and various Muslim scholars had misidentified. Unfortunately, al-Baghdādī wrote this in a book about the geography of Egypt, not anatomy, so it was perhaps understandably overlooked by the majority of scholars.<sup>32</sup>

One of the most famous advances from Galenic anatomy was made by ibn al-Nafīs (d. 1288), who objected to Galen’s widely accepted idea of nigh-invisible passages of blood from the left to right side of the heart via the lung. Ibn al-Nafīs also predicted that “there must be small communications between the pulmonary artery and the pulmonary vein,”<sup>33</sup> which was first written about in Europe by Michael Servetus 300 years after ibn al-Nafīs died, and proven by William Harvey in 1628.<sup>34</sup> We know that some of ibn al-Nafīs’ work was translated into Latin, but it is unclear if Servetus had access to this particular volume.<sup>35</sup>

This period of scholarship from the eighth to the sixteenth century<sup>36</sup> has been considered an Islamic “golden age,” although others narrow this range to the ninth to twelfth.<sup>37</sup> The Bayt al-Ḥikmah has been likened to a university, and while this view has been dissected, it is certain that the ninth to twelfth centuries produced many scholars, whether Christian, Jewish, or Muslim, whose native languages ranged from Aramaic to Persian to Turkish. The lingua franca of the time was Arabic; the ‘Abbāsids are generally believed to have sponsored scholarship as a political move to strengthen the legitimacy of their rule. The presence, or lack thereof, of human dissection remains a debated topic; ibn-Ruṣd stated that “anyone who undertakes dissection increases their faith in God,”<sup>38</sup> but this could well have referred to animal dissections. After the Mongol invasions and their conquest of Baghdād in 1258, there may have been less funding for the sciences, hence an end to the “golden age.” Other accounts differ as to how disastrous the Mongol invasion was. Some scholars say that:

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<sup>30</sup> Ibid.

<sup>31</sup> Mohammadali M. Shoja and R. Shane Tubbs. “The History of Anatomy in Persia.” *Journal of Anatomy* 210 (2007): 359–378.

<sup>32</sup> Malak et. al, “An Untold Story.”

<sup>33</sup> John B West. “Ibn al-Nafīs, the pulmonary circulation, and the Islamic Golden Age.” *Journal of Applied Physiology* 105, no. 6 (2008).

<sup>34</sup> Pormann and Savage-Smith, *Medieval Islamic Medicine*, 47.

<sup>35</sup> West, “Ibn al-Nafīs.”

<sup>36</sup> Ibid.

<sup>37</sup> Malak et. al, “An Untold Story.”

<sup>38</sup> Shoja and Tubbs, “History of Anatomy in Persia.”

The Mongol invasion of Persia, which took place in the thirteenth century AD, was one of the most disastrous events in the history of Persia; many crucial cities like Gundishapur [Gondēšāpur], Nishapur [Nišapur], Merve and Ray with large libraries and educational centers were destroyed by the invading Mongols ruled by Changiz Khan. Later, the Mongols conquered Baghdad with eventual collapse of the last Islamic caliphate, the Abbasids. Following the collapse of the Islamic Caliphate, three powers rised [sic] in the region and were based in Persia, Turkey and Egypt. Persia was ruled by Mongols (Ilkhanid dynasty) who in contrast to their predecessors became patrons of science and medicine.<sup>39</sup>

Others contend that since the powers that rose up afterwards, the Ottomans, Persians, and Fatimid Dynasty of Egypt, also sponsored knowledge, the Mongol conquest was not a disaster.<sup>40</sup> Iran was ruled by the Ilkhanids, who fostered prophetic medicine as part of their patronage of the arts and sciences.<sup>41</sup> Astrology also once again gained popularity under the Ilkhanid Dynasty. Tīmūr founded the Tīmurid Empire (1370–1507), and his descendants sponsored scholars such as Manṣūr ibn Ilyās.

The Manṣūr of the *Tašrīḥ-e Manṣūrī*, Manṣūr ibn Muḥammad ibn Amād ibn Yūsuf ibn Ilyās, lived in the late fourteenth to early fifteenth centuries.<sup>42</sup> The National Library of Medicine holds a copy of his magnum opus, which has been completely digitized and is available for free online, that was published in 1488. The original, according to Emilie Savage-Smith, was published in 1386.<sup>43</sup> Manṣūr ibn Ilyās was from Šīrāz, the chief city of the province of Fars. Manṣūr grew up in a scholarly family; his ancestors authored some medical compendiums and books of poetry, and he visited other cities like Tabriz in his lifetime.<sup>44</sup> According to Zarshenas, he also contributed to medical schools in Fars, as Šīrāz was a center of learning; the actual reality of Muslim hospitals will be explored later in this paper. He wrote as many as three noteworthy books, the *Ghiasieh*, *Kefaye Mojahedieh*, and *Tašrīḥ al-Badan*.<sup>45</sup> The *Tašrīḥ-e manṣūrī* was dedicated to Pir Muḥammad ibn ‘Umar ibn Tīmūr, a grandson of Tīmūr, who is known to the west as Tamerlane. The Tīmurid patronage of the arts and sciences was generous, and they sponsored Manṣūr’s books. Given the wide dissemination of extant manuscripts, it was likely used for medical instruction. He did not only focus on Galen, as he ignored Galenic ideas on female sperm,<sup>46</sup> and included some Prophetic medicine alongside his anatomy in the Islamic intellectual tradition, arguably to “influence the Tīmurids to religious tolerance.”<sup>47</sup>

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<sup>39</sup> Khalili et. al, “Medieval Heart and Blood Illustration,” 4.

<sup>40</sup> Shoja and Tubbs, “History of Anatomy in Persia.”

<sup>41</sup> Ibid.

<sup>42</sup> *Encyclopædia Iranica*, “Ebn Elyās, Manṣūr.”

<sup>43</sup> Emilie Savage-Smith, “Anatomical Illustrations in Arabic Manuscripts,” in *Arab Painting: Text and Image in Illustrated Arabic Manuscripts*, ed. Anna Contadini (Brill, 2007): 155.

<sup>44</sup> Zarshenas, “A Persian Anatomist,” 68.

<sup>45</sup> Ibid.

<sup>46</sup> Newman, “Tashrīḥ-i Manṣūr-i: Human Anatomy,” 265.

<sup>47</sup> Ibid., 266.

It is important to note that Maṣṣūr ibn Ilyās lived almost 500 years after al-Rāzī, and almost 200 after ibn al-Nafīs. Maṣṣūr’s work did not, as far as we know, influence Western medicine except for the illustrations which accompanied ibn-Sīnā’s canon. Zarshenas and his colleagues, also from Šīrāz, contend that Maṣṣūr lived and wrote during the “golden age of the medieval Islamic period.”<sup>48</sup> Maṣṣūr was born long after the fall of Baghdād, however, and his writing in Persian is a sign that Arabic’s status as *lingua franca* was falling. However, many of Maṣṣūr’s drawings are labelled in Arabic as well as Persian, and as Newman discusses, a comprehensive glossary of Persian medical terminology has not yet been made.<sup>49</sup> I suggest that we abandon the term golden age, as progress is distinctly non-linear and attempting to highlight a specific period as being more advanced than another removes nuance from the conversation.

Many of the great medical books and compendiums produced in the late medieval Islamic context included illustrations, some of abstract knowledge, and most also of anatomical features, like sutures, but they are less detailed than the Fünfbilderserie illustrations. The Galenic curriculum, derived from the antique Alexandrian schools,<sup>50</sup> divided medical knowledge into theory and practice, with theory further divided as physiology, aetiology, and semiotics and practice understood as prophylactics and therapeutics. This division would be represented by branch diagrams in encyclopedias and commentaries. The other form of illustration we find in Arabic books is anatomical illustrations, quite geometric and abstract, in stark contrast to the lush and sometimes even erotic illustrations found in Renaissance anatomies, notably Vesalius’. Savage-Smith notes that the impossible perspective and abstraction seem to be to an earlier taste we no longer have that was arguably cross-cultural.<sup>51</sup> Perhaps naturalism is then a more distinctly modern movement that Maṣṣūr and other anatomists were creating. Alternatively, less abstract Arabic anatomical illustrations might be sparse because of the religious prohibition against drawing the human figure for most Muslims; however, by the Safavid era (1501-1772), though not necessarily throughout the Tīmurid period, that prohibition had long been flouted in Iran.

Emilie Savage-Smith, in her chapter “Anatomical Illustration in Arabic Manuscripts,” from the book *Arab Painting: Text and Image in Illustrated Arabic Manuscripts*, notes that triangles were used for illustrating the ventricles of the brain, stomach muscles, and the bones of the upper jaw.<sup>52</sup> Circles are used for illustrating the structure of the eye, either on its own or as part of the entire visual system. The illustrations of the upper jaw tend to feature a suture in the jaw, or maxilla, that is not actually present in human anatomy, as al-Baghdādī noted when he observed human bones and recorded them in his ill-fated geography book. These sutures are instead found in the skulls of the Rhesus monkey, and

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<sup>48</sup> Zarshenas, “A Persian Anatomist,” 68.

<sup>49</sup> Newman, “Tashrīḥ-i Maṣṣūr-i: Human Anatomy,” 258.

<sup>50</sup> Pormann and Savage-Smith, *Medieval Islamic Medicine*, 15.

<sup>51</sup> Savage-Smith, “Arabic Anatomical Illustration,” 158.

<sup>52</sup> *Ibid.*, 147-148.



perhaps also the Barbary Ape Galen likely dissected.<sup>53</sup> Cranial suture diagrams are by far the most frequent, and as mentioned, the *Taṣrīḥ-e maṣṣūrī* also shares this diagram, which will be briefly discussed further below in analysis of French's paper. Savage-Smith believes that the pregnant figure was Maṣṣūr's only original contribution; the other illustrations, she posits, were derived from earlier sources.<sup>54</sup> One potential artistic ancestor—and Savage-Smith does stress that this is only of possible relevance—is a fifteenth century Egyptian, Arabic manuscript of a horse's anatomy; the head is pronated backwards, like the heads of Maṣṣūr's bone and nerve men.<sup>55</sup> Other illustrations, albeit much later, suggests that this equine pose might be part of a now-lost tradition, but the evidence is tenuous at best.

### The Question of Origins

While most scholars who have studied the Fünfbilderserie or Maṣṣūr ibn Ilyās consider the question of where the images originated, Sudhoff, O'Neill, and French produced some of the more specific detailed papers in the 20<sup>th</sup> century. Sudhoff discovered the earliest Fünfbilderserie manuscripts, coined the term Fünfbilderserie, and produced some of the most important work on that topic beginning in 1907. The earliest set Sudhoff discovered is a Latin text produced by Benedictine Bavarian monks, from 1158, at the cloister of Prüfening near Regensburg,<sup>56</sup> and the other is by another Benedictine Bavarian monk named Conrad, who wrote in 1240 in the monastery of Scheyern. Sudhoff noticed other manuscripts fitting this pattern of five images, often depicting bones, nerves, muscles, veins, and arteries, as he continued to explore manuscripts; the number of Fünfbilderserie sets has increased over time. There is as of yet no definitive index, in part because some manuscripts have been listed incorrectly in the secondary literature, others have moved, and scholars do not necessarily even agree on what constitutes a Fünfbilderserie manuscript. Most, however, share at least one of five images and the distinctly Galenic anatomy.

French's 1984 article gave a working and tentative index of the manuscripts, saying "a review of the secondary literature provides a total of twenty-six known MSS that have one or more features of the 'five figure series'. Of this total a dozen MSS are in Latin, eight Persian, two 'Islamic' without further qualification, and one each Arabic and Provençal."<sup>57</sup> Savage-Smith identified at least seventy sets of Islamic anatomical full figure diagrams, two-thirds of which occur in Maṣṣūr ibn Ilyās' work, but many of these do not have any accompanying text and merely follow the five or six figure pattern of images.<sup>58</sup> The most recent manuscript I am aware of is listed as being part of the Fünfbilderserie is Vatican Palat. Lat.1110, which brings the number of Latin manuscripts up to thirteen and French's total number of manuscripts up to twenty-five; it was documented in 1964. It is not entirely

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<sup>53</sup> Ibid., 148.

<sup>54</sup> Ibid., 156.

<sup>55</sup> Ibid.

<sup>56</sup> Ibid.

<sup>57</sup> French, "An Origin," 147n29.

<sup>58</sup> Savage Smith, "Arabic Anatomical Illustration," 157.

clear if Savage-Smith is including any of the European manuscripts in her count, but in any case, the illustrations following Manṣūr's text abound. The question, then, is whether or not Manṣūr followed a European source for his five images. I will trace the arguments of origin on the Fünfbilderserie chronologically, first with Sudhoff, then O'Neill, then French, and finally the somewhat less emphatic suggestions of other scholars such as Savage-Smith and Michael Frampton.

## Pisa Leaves

According to O'Neill:

Sudhoff believed that the so-called five picture series originated in Alexandria, that its prototype was a short anatomical textbook composed in Greek during the third century, B.C., and that the text and its illustrations must have been transmitted from antiquity via Byzantium to the Bavarian monastery of Prüfening where he thought he had found its earliest copy. According to his theory, the depictions of various organs found on a sheet in Pisa, and those scattered through the Ashmolean codex containing the gorgeous if garish five anatomical drawings must also have originated near the Nile delta.<sup>59</sup>

It is not in question that Alexandria had a notable library, nor that they had a great deal of medical knowledge; Iskander and Pormann both explore this.<sup>60</sup> Sudhoff identified similarities in his early studies due to the squatting posture in many of the figures as well as some similarities in accompanying texts. *Ashmolean Codex 399* contains some squatting figures as well as richly colored drawings of, among other things, a five-lobed liver; its preface discusses nine systems of the body, not just the bones, nerves, muscles, veins, and arteries. Sudhoff maintained that illustrations of these other systems did not bear a relationship to the Fünfbilderserie, but that they could have come from a similar source; the Pisan leaf he found illustrates the stomach, gallbladder, spleen, two illustrations of the heart, a five-lobed liver, the trachea, an enlarged drawing of the liver with six lobes, the lungs, the nose and eyes, intestines, and the reproductive organs.<sup>61</sup> The Ashmolean codex contains similar drawings, but they are not all on one page and have no explanatory text. Based on this comparison, he assumed that the images had come to the West separately and before Arabic works entered medieval Europe.

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<sup>59</sup> O'Neill, "Fünfbilderserie: A Bridge," 542-543.

<sup>60</sup> As this paper is already considering a wide time and geographical range, it seems appropriate to provide references on the Alexandrian medical curriculum instead of devoting significant time to that here; see A. Z. Iskander, "An Attempted Reconstruction of the Late Alexandrian Medical Curriculum," *Medical History* 20 (1976): 235-58, especially pp. 245-46, and also Peter E. Pormann, "Medical Education in Late Antiquity, From Alexandria to Montpellier." In *Hippocrates and Medical Education*: 419-441.

<sup>61</sup> O'Neill, "Fünfbilderserie: A Bridge," 543.

## Translation as Transmission

O'Neill believes these images might, instead of coming from Byzantium, be part of the broader Galenic tradition of the Fünfbilderserie. This is in part due to the Gonville and Caius series, which has nine drawings accompanying the prefacing text which also resemble the Ashmolean drawings. In a later paper on the Fünfbilderserie, O'Neill questions how medieval European scholars would have had access to Galen's ideas, and concludes that it must have been through Latin translations of Arabic texts, either from Spain in the twelfth century or from eleventh century Southern Italy through the work of Constantine the African.<sup>62</sup> Gerard of Cremona, a Spanish translator, translated ibn-Sīnā's *Canon*, but as Gerard died in 1187, if his *Canon* were to be used as a source for an 1158 treatise it would have to have been translated quite early in his life. The *Pantegni*, an eleventh century manuscript, is a more likely source. Its author, Constantine the African, was a colorful figure, whose translations of 'Alī ibn al-'Abbās' (d. 944) book *Al-Malaki* were not necessarily accurate. O'Neill says of his work that, "if unfamiliar words confused Constantine, unfamiliar ideas, especially if expressed metaphorically, must have baffled him still more."<sup>63</sup> However, it seems plausible that Constantine's translations influenced the authors of the early Fünfbilderserie manuscripts, and thus that these were some of the earliest Galenic anatomies in medieval Europe.<sup>64</sup>

## Greeks to Sasanians

French begins his essay by stating that Sudhoff's theory of Alexandrian and Byzantine origin, now eighty years old, still has little to no textual evidence beyond conjecture. Since "to reach the unknown we need some signposts from the known," he considers Galenic works in late antiquity as being relevant to the question of origins. Galen organized his work into five topics, organized into four volumes, for the purpose of teaching students.<sup>65</sup> Galen also, in his various treatises on anatomy, described the sutures of the skull as being similar to capital Greek letters; in Arabic translations, these were seen as symbols and not understood as letters. The Provençal manuscript, Basel D.II.11, has a long text on bones that displays similar symbols, rather than Greek letters; other European texts that discuss the bones are similar to that manuscript in content. Because of this, French concludes that the text accompanying most Fünfbilderserie manuscripts is originally from the Middle East.

He suggests that the images in the Provençal manuscript and others undoubtedly come from the east because of the strikingly similar pronated head. Moreover, in French's

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<sup>62</sup> O'Neill, "The Fünfbilderserie Reconsidered," 238.

<sup>63</sup> *Ibid.*, 244.

<sup>64</sup> *Ibid.*, 245.

<sup>65</sup> French, "An Origin," 144.

view this image is a Persian copy of an original transmitted from the Greeks to the Sasanians before the Arab conquest, incorporated into later Arabic scholarship. However, he does not provide evidence of this kind of Persian illustration appearing in Arabic books before the *Taṣrīḥ-e manṣūrī*. Zayn al-Dīn Ismāʿīl ibn Muḥammad ibn Ḥasan al-Jurjānī (d. 1136) wrote a medical encyclopedia in Persian, perhaps the first of its kind, titled *Zakhīrah-i KhvārazmʾShāhī* (The Treasure of KhvārazmʾShāh); it is preserved in several manuscripts. One of these, held by the National Library and Archives of the Islamic Republic of Iran, features five illustrations which look almost identical to those of the *Tasbriḥ-i Manṣūr-i*.<sup>66</sup> While this could raise the possibility of a long tradition of such Galenic drawings, other copies do not feature these illustrations; the National Library of Medicine holds three manuscripts and references others, and none of these feature such illustrations. One of them, MS P 5, held a loose sheet with colored anatomical figures.<sup>67</sup> It is agreed that this sheet, MS P 5 fol. A, was a later insertion from the eighteenth century.<sup>68</sup> Moreover, in the manuscript held by the Islamic Republic of Iran, the images appear as a series, without reference to the text, unlike Manṣūr's images, which are integrated into the book. As such, I am inclined to say that the appearance of these seemingly earlier illustrations is most likely in fact a later insertion based upon Manṣūr's illustrations, as opposed to an earlier source.

Taking as a given the improbability that any early copies of the *Zakhīrah-i KhvārazmʾShāhī* were illustrated, for both an antique set of Persian illustrations and an Arabic text to have arrived in Provençal France is not impossible, but it stretches plausibility. In fact, French almost seems to stretch the argument to suggest a Persian-Arabic origin for Galenic texts as opposed to a Graeco-Arabic origin. While this may be true in some cases, it seems like a rather large assumption. French suggests that “the cultivation and assimilation of Greek medicine at Jundishapur [Gondēšāpur] and Edessa is well known in outline and provides a route for the transmission of Hellenistic anatomy to Iran and the Persian language,” and as such after the Arab conquest of Iran, Arabs had access to this knowledge.<sup>69</sup>

Like many major works on the *Taṣrīḥ-e manṣūrī*, his paper is quite old, and even scholarship from a decade afterwards complicates these ideas about the Sasanian city Gondēšāpur. Michael Dols, in an influential 1987 essay, “The Origins Of The Islamic Hospital: Myth and Reality,” questioned the supposed role and even existence of the Gondēšāpur school of medicine, located in the Khuzestan province of Iran, entirely. Miri Shefer-Mossensohn and Keren Abou Hershkovitz also appear to support Dol's analysis. What is agreed is that Šāhpūr II (d. 380) established Gondēšāpur and this city had doctors; likely it also had a school, which taught astronomy, theology, and medicine, with an attached

<sup>66</sup> “The Treasure of Khvarazm'Shah,” World Digital Library, March 30, 2015, <https://www.wdl.org/en/item/10608/>.

<sup>67</sup> Savage-Smith, Emilie, “Catalogue: Medical Encyclopedias. Zakhīrah-i KhvārazmʾShāh,” Islamic Medical Manuscripts at the National Library of Medicine, January 15, 2004. [https://www.nlm.nih.gov/hmd/arabic/E11\\_E13.html](https://www.nlm.nih.gov/hmd/arabic/E11_E13.html).

<sup>68</sup> Savage-Smith, Emilie, “Catalogue: Medical Monographs,” Islamic Medical Manuscripts at the National Library of Medicine, January 15, 2004. <https://www.nlm.nih.gov/hmd/arabic/mon6.html>.

<sup>69</sup> *Ibid.*, 147.

hospital.<sup>70</sup> Eastern Christians were translating Greek texts from Alexandria and Edessa into Syriac at this time, and so could have practiced Galenic medicine and have produced Galenic images in Gondēšāpur, supporting French's transmission route. According to *Encyclopedia Iranica*, "information found in narrative sources concerning the derivation of such knowledge during the Sasanian period from outstanding individual Greek and Indian sources...has substantially been corroborated by the texts themselves."<sup>71</sup> The school, according to the generally accepted narrative, continued to practice scholarship until and after the Arab conquest, but in order for French's transmission route to be plausible, there must have been an active and consistent scholarly tradition using images which preceded the Fünfbilderserie.

"In ad. 787, Jibril ibn Bakhtīshū' (d. a.D. 828) was summoned from Jūndī-Shāpūr [Gondēšāpur] to Baghdād to supervise the founding of a state hospital by Hārūn al-Rashīd,"<sup>72</sup> who was the fifth 'Abbāsīd Caliph, and the hospital was to be built according to the Sasanian model. The Bakhtīshū' family of physicians, who were Nestorian Christians from Gondēšāpur and were well respected by the 'Abbāsīds, might have promoted the idea of a centuries-old intellectual heritage to add to their own status.<sup>73</sup> According to Dols this influence is exaggerated and no Persian sources corroborate the existence of Gondēšāpur's school of medicine,<sup>74</sup> yet some scholars have continued to praise this school.<sup>75</sup> Ibn al-Qifṭī (d. 1248) was the first Arab historiographer to mention Gondēšāpur's school, some 900-1000 years after its founding.<sup>76</sup> Pormann and Savage-Smith cite an infirmary at nearby Susa as being associated with Gondēšāpur.<sup>77</sup> According to the historian al-Tha'ālibī (d. 1038):

Thus, the people of Sūs became the most skilled in medicine of the people of Ahwāz and Fārs because of their learning from the Indian doctor [who was brought to Susa by Shāhpūr I] and from the Greek prisoners who lived close to them; then [the medical knowledge] was handed down from generation to generation.<sup>78</sup>

However, due to a paucity of historical records, political reasons for perpetuating the idea, and existence of neighboring Susa, Pormann and Savage-Smith refer to accounts of a great medical school with continuous influence as "the myth of Gondēšāpur."<sup>79</sup> From this, we can conclude that French's proposed route through Edessa and Gondēšāpur, while

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<sup>70</sup> Michael W. Dols. "The Origins of the Islamic Hospital: Myth and Reality." *Bulletin of the History of Medicine*, 61 (1987): 368.

<sup>71</sup> Lutz Richter-Bernburg and A. Shapur Shahbazi. "Gondēšāpur." *Encyclopaedia Iranica*, XI/2 pp. 131-135; available online at <http://www.iranicaonline.org/articles/gondesapur>.

<sup>72</sup> Dols, "The Origin of Islamic Hospitals," 369.

<sup>73</sup> Pormann and Savage-Smith, *Medieval Islamic Medicine*, 20.

<sup>74</sup> Dols, "The Origin of Islamic Hospitals," 369.

<sup>75</sup> Mohammad H. Azizi. "Gondishapur School of Medicine: The Most Important Medical Center in Antiquity." *Archives of Iranian Medicine* 11, no. 1 (2008): 117.

<sup>76</sup> Miri Shefer-Mossensohn and Keren Abou Hershkovitz. "Early Muslim Medicine and the Indian Context: A Reinterpretation." *Medieval Encounters*, 19 (2013): 10.

<sup>77</sup> Pormann and Savage-Smith, *Medieval Islamic Medicine*, 20.

<sup>78</sup> Dols, "The Origin of Islamic Hospitals," 377-378.

<sup>79</sup> Pormann and Savage-Smith, *Medieval Islamic Medicine*, 20.

technically possible, may be less reliable than previously assumed. In any case, the Islamic hospital did not spring into being out of thin air, and the Nestorian Christians who participated in the translation movement under the ‘Abbāsids may well have kept books at Gondēšāpur, among other places.

### The Myth of Gondēšāpur and the Reality of Medieval Hospitals

In examining the role of Gondēšāpur in medical situations, it seems appropriate to turn briefly to the question of hospitals in the medieval Islamic context. While Elgood’s claim that “to a very large extent the credit for the whole hospital system must be given to Persia” is debated,<sup>80</sup> some medicine was practiced at Gondēšāpur and certainly was practiced in the ninth century.<sup>81</sup> Dols suggests that Islamic hospitals and perhaps also medical teaching institutions were modelled after the Byzantine Christian *xenodocheion*, which the Church used to provide shelter and care for the needy, and *nosokomeion*, a place specifically for the sick.<sup>82</sup> Syriac Christians who acted as a bridge between Greeks and Sasanians were educated at the city of Nisibis, in modern day Turkey, an institution which was occasionally funded by Sasanian administrators as in the early sixth century.<sup>83</sup> He believes that whatever did exist at Gondēšāpur was not a school, but merely “a seminary like the one in Nisibis, where medical texts were read, and an infirmary where Galenic medicine may have been practiced.”<sup>84</sup> His argument defines a hospital not as “an institution that possessed physicians or medical staff,”<sup>85</sup> but as, “a public charitable institution that affords care to the sick.”<sup>86</sup> While such institutions existed in fourth century Byzantium, his definition is unusually narrow.

Shefer-Mossensohn and Abbou Hershkovits define hospitals as “a place where physicians were present and medical care and cures were administered,”<sup>87</sup> which allows for a broader examination of the formation of these institutions; certainly, many of them were charitable, and physicians would not be physicians if there were no patients, but it dodges the debate about what qualifies as public or charitable. Shefer-Mossensohn and Abbou Hershkovits, under this less-stringent definition, question Dol’s model of hospital history by exploring the Indian-Arab exchange during the ‘Abbāsīd Caliphate, and suggest “considering the Islamic hospital as an institution in its own right and on its own terms.”<sup>88</sup> They examine the three suggested candidates for the earliest Islamic hospitals, and suggest that the two under Hārūn al-Rašīd, one Galenic and one Indian, both could vie for the title. The Indian hospital was founded by the prominent Indian Barmakid family, well known for

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<sup>80</sup> Azizi, “Gondishapur School of Medicine,” 118.

<sup>81</sup> Dols, “The Origin of Islamic Hospitals,” 377.

<sup>82</sup> *Ibid.*, 371.

<sup>83</sup> *Ibid.*, 374.

<sup>84</sup> *Ibid.*, 375.

<sup>85</sup> *Ibid.*, 371.

<sup>86</sup> *Ibid.*, 370.

<sup>87</sup> Shefer-Mossensohn and Abbou Hershkovitz. “Muslim Medicine and the Indian Context,” 291.

<sup>88</sup> *Ibid.*, 284.

patronizing the arts and sciences.<sup>89</sup> There are relatively few sources on this fascinating site of cultural exchange, unfortunately; however, the Barmakid hospital was very plausibly modeled after Indian Buddhist hospitals, which have a distinct tradition unlike the organization of Christian hospitals, wherein rulers patronized the institutions as a sign of prestige and charity.<sup>90</sup> Byzantine Christian hospitals had religious goals, while some of those in India were arguably formed out of a sense of duty on behalf of the rulers, or for the purpose of political gain; hospitals in Baghdād seem to better match the latter case.<sup>91</sup>

These hospitals were, of course, far before the time of Maṣṣūr ibn Ilyās; we now return to the question of Maṣṣūr ibn Ilyās' potential interaction with hospitals. Two scholars, Hasan Tadjbakhsh and Willem Floor, examine Safavid and Qajar hospitals, and assume that these later accounts may reflect an earlier reality. There were institutions endowed to take care of the sick and staffed with pharmacists and doctors in Tehran, Qazvīn, Yazd, Ardabīl, Tabrīz, Mašad, and Iṣfahān in the Safavid Era and even as early as 1300.<sup>92</sup> Floor points out that these hospitals did not necessarily serve rural populations, as most of the population of Iran did not live in cities, or work as modern or even research hospitals do.<sup>93</sup> By his later accounts, most hospitals were attached to shrines or mosques, severely underfunded, and the pharmacists could be quite expensive.<sup>94</sup> One might advance the hypothesis that these hospitals were financed by the vaqfs, or inalienable charitable foundations, similar to those which the kings and notable Iranians habitually founded for the institution and founding of mosques, mausoleums, schools, hammans, and other establishments. Tadjbakhsh notes:

However, so far today we only know a few documents (asnād, vaqf-nāma) of this kind, especially from in the Safavid era. Another remarkable case is that of the charitable dispensary established in Tehran by someone under Šāh Ṭahmāsp: at that time Tehran was only a center of medium importance which had developed alongside the ancient city of Rey, and Ḥakīm Yār 'Alī Tihrānī had founded a dispensary there called šarbat-ḥāna-yi ḥayrī in which medicines were offered to the poor.<sup>95</sup>

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<sup>89</sup> Ibid., 287.

<sup>90</sup> Ibid., 290-292.

<sup>91</sup> Ibid., 293.

<sup>92</sup> Hasan Tadjbakhsh, "Hôpitaux et médecins avicenniens en Iran à l'époque safavide," in *Hospitals in Iran and India, 1500-1950s*, ed. Fabrizio Speziale (Brill, 2012): 28.

<sup>93</sup> Willem Floor, "Hospitals in Safavid and Qajar Iran: An enquiry into their number, growth and importance," in *Hospitals in Iran and India, 1500-1950s*, ed. Fabrizio Speziale (Brill, 2012): 38.

<sup>94</sup> Floor, "Qajar and Safavid Hospitals," 45. Floor's overall focus is much later than that of this paper, so drawing conclusions must be done with care, but he demonstrates that the shrines with attached hospitals, while they had endowments, were not necessarily able to collect the income from these investments; as such, what were meant to be pro-bono treatment might instead cost patients.

<sup>95</sup> Tadjbakhsh, "Hôpitaux et médecins en Iran," 31. "On peut avancer l'hypothèse que ces hôpitaux étaient financés par des vaqf (fondation de mainmorte) similaires à ceux que les souverains et les notables iraniens fondaient habituellement pour l'institution et le fonctionnement de mosquées, mausolées, madrasas, hammans et autres établissements. Cependant, nous ne connaissons jusqu'à aujourd'hui que peu de documents (asnād, vaqf-nāma) à cet égard, pour ce qui concerne notamment l'époque safavide. Autre cas remarquable, celui du

Some were called “houses of death,” because, like many early hospitals, people only went there to die.<sup>96</sup> While some notable physicians staffed these hospitals, like ‘Imād al-Dīn Maḥmūd Šīrāzī, a physician of Šāh Ṭahmāsp,<sup>97</sup> it seems likely that most doctors, like Maṣṣūr, were not educated there and served mostly private, wealthy clients. While Maṣṣūr’s book may have been at some of these hospitals, given the severe underfunding, acquiring his book of anatomy likely would not have been a top priority.

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dispensaire de bienfaisance établi à Téhéran par un particulier, sous Šāh Ṭahmāsp : à cette époque Téhéran n’était qu’un centre de moyenne importance qui s’était développé à côté de l’ancienne ville de Rey et Ḥakīm Yār ‘Alī Tīhrānī y avait fondé un dispensaire du nom de šarbat-ḥāna-yi ḥayrī dans lequel les médicaments étaient offerts aux pauvres.” Translations are my own.

<sup>96</sup> Tadjbakhsh, “Hôpitaux et médecins en Iran,” 35. “La maison de mort.”

<sup>97</sup> Ibid., 28. According to Floor, “Safavid and Qajar Hospitals,” 40, this esteemed physician was also an opium addict.



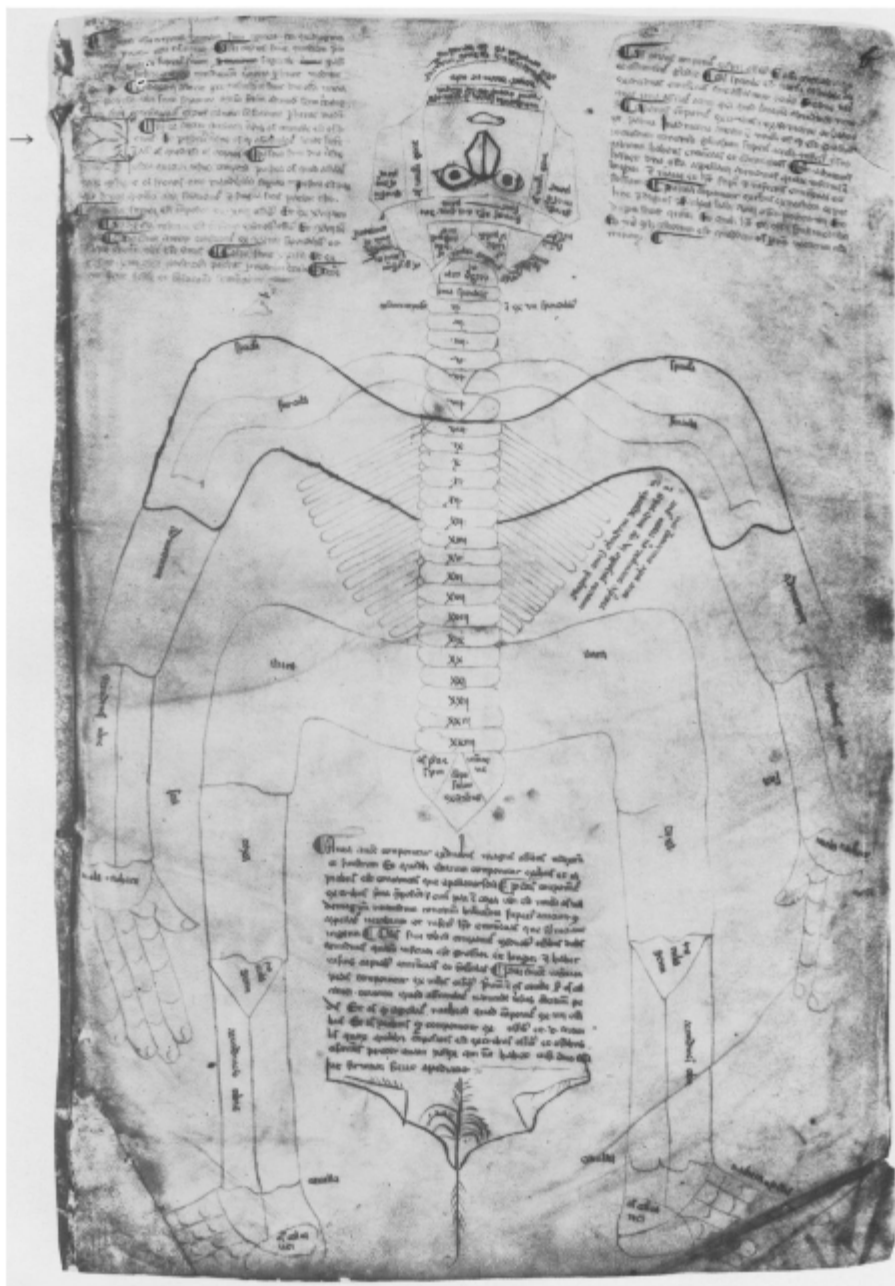


Figure 2: Vatican Palat. Lat. 1110, Bone Man.

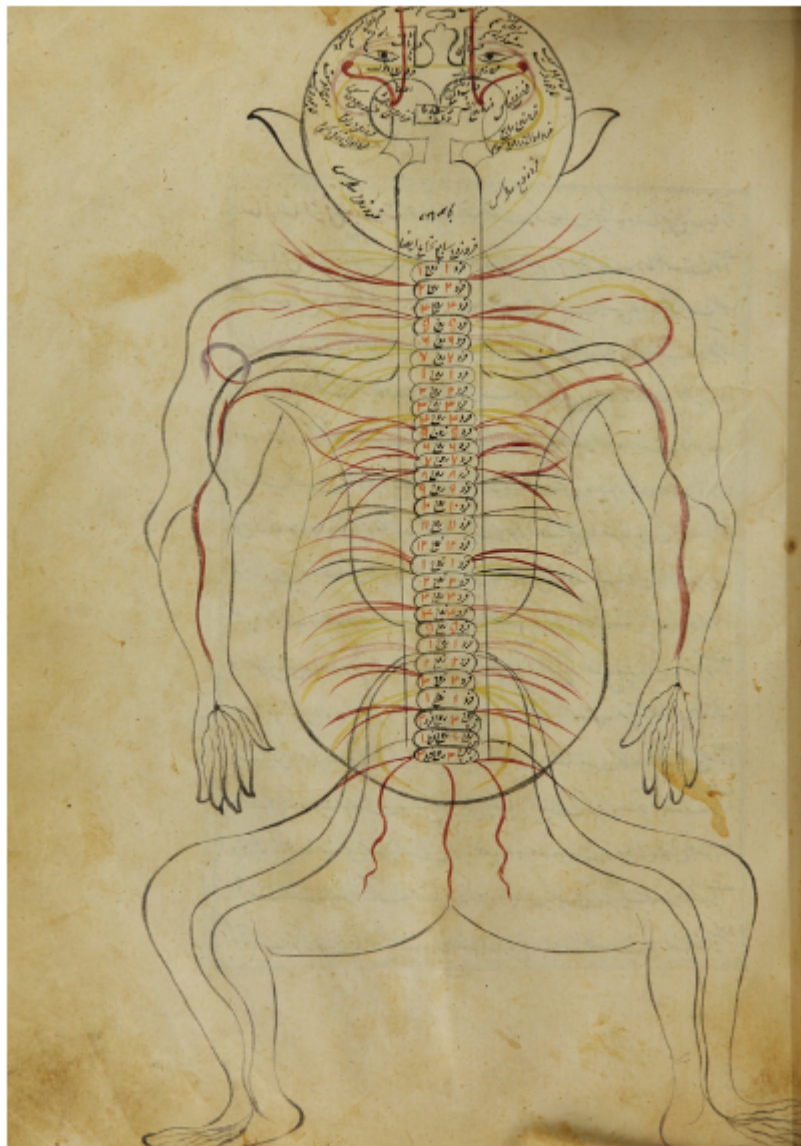


Figure 3: MS P 18, Maṣṣūr's Nerve Man.

### Revisiting Proposed Origins

Maṣṣūr's bone man pictures 32 vertebrae and two bones forming the sacrum, the triangular base of the spine. The coccyx, or tailbone, does not appear to be differentiated. Because of this absence Maṣṣūr's account of the vertebrae is off from modern anatomy by one. Maṣṣūr's nerve man also has the distinctive pronated head and a vertebral column. However, in this case, the purpose of the pronated head is made clear by the labels; the label of the nerves connecting to the eyes reads *أول*, read *amwal* or *amval* in Arabic and Persian, respectively, which means first. The nerves throughout the head are also given ordinal numbers. The label at the base of the spinal column contains the Arabic word *سابع*, *sabah*, meaning seventh. Medieval Arabic and Persian medical terminology diverges slightly from

modern uses, but Manṣūr appears to be labeling the nerves connecting from the eyes and brain to the spine and the rest of the body. Each of the 30 vertebrae depict spinal nerves joined to them. There are 31 nerves of the spine, the last of which is the coccygeal nerve; Manṣūr's omission is, at least, consistent. Earlier scholars such as al-Rāzī did describe the coccyx accurately, but Manṣūr likely just followed the reigning Galenic consensus.

Vatican Palat. Lat. 1110, from the fourteenth century, is one of the few European manuscripts that features a pronated head. Basel D.II.11, a Provençal manuscript that features French's long bone text and the bone man, is sadly unavailable online. Munich MS Lat. 13042 (undated, 14th c.) also shares the hyperextended head.<sup>98</sup> Vatican Palat. Lat. 1110, in contrast to Manṣūr, lists a total of twenty-seven vertebrae. The *prima spondilis*, or first vertebra, is drawn beneath the *paxillus cupitis*, or peg of the head, and *cardo cupitis*, the hinge of the head. The vertebrae are then listed as ii-xxiii, bringing the total to twenty-four. At the base of the spine, the label reads *os postremum spinne, compositum ex tribus*, or final bone of the spine, composed of three bones.<sup>99</sup> The image shows a roughly drawn triangle divided into three smaller triangles, which begin from the base of the final numbered vertebra. The largest and widest triangle is in the center, continuing to the end, and the triangles on the sides do not reach the base of the spine. While this is not an illustration of the coccyx, the division, to my mind, opens up the possibility of its existence. The visual similarity between the two images is undeniable, but the difference between the number of vertebrae and the understanding of the spine's formation is quite pronounced.

## The Originality Thesis

It is worth mentioning that these images may have been developed independently, without transmission from Byzantium or from Arabic sources into Europe. Michael Frampton, after discussing the possibility of a shared origin, states: "My own speculation is that the manuscript illustrations are actually indigenous to twelfth century Western Europe, which was then beginning to assimilate Latin versions of Arabic texts summarizing Galenic and Alexandrian learned medicine."<sup>100</sup> Savage-Smith notes that "nearly every" early culture depicts humans in the squatting pose that unites all the Fünfbilderserie manuscripts, and concludes that Manṣūr's figures either were derived from an earlier European tradition or from a common original source.<sup>101</sup> Frampton also reminds us that there have been no Greek or Byzantine Fünfbilderserie discoveries to date.<sup>102</sup> The long bone text that French identified does seem to likely be derived from an Arabic original, and O'Neill posits several

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<sup>98</sup> Savage-Smith, "Arabic Anatomical Illustration," 157.

<sup>99</sup> Loren C. MacKinney and Boyd H. Hill, Jr., "A New Fünfbilderserie Manuscript: Vatican Palat. Lat.1110," *Sudhoffs Archiv für Geschichte der Medizin und der Naturwissenschaften* Bd. 48, H. 4 (1964) offers all the Latin in text, as it is not necessarily legible from the figure. Translations are my own.

<sup>100</sup> Michael Frampton. "Embodiment Theories in Late Antiquity and Early Middle Ages." In *Embodiments of Will: Anatomical and Physiological Theories of Voluntary Animal Motion from Greek Antiquity to the Latin Middle Ages, 400 B.C.-A.D. 1300*, 211-313. Saarbrücken: VDM Verlag Dr Müller Aktiengesellschaft, 2008: 265.

<sup>101</sup> Savage Smith, "Arabic Anatomical Illustration," 158.

<sup>102</sup> Frampton, "Embodiments of Will," 265.

plausible translators who brought Galenic medicine from the Arabic context to the European. However, as to the images, Manṣūr's were made two centuries after the earliest European ones and improve upon the anatomical accuracy. An original ancestor image from the Greeks cannot be ruled out, even as the lack of such an image from our Byzantine manuscripts persists and the outsized legend of Gondēšāpur shrinks. Moreover, we have yet to trace a flow of European manuscripts in the thirteenth and fourteenth centuries into Iran, so it is unclear if any of the European Fünfbilderserie manuscripts might have been in his possession. The Arabic labels in a Persian text should not be seen as puzzling, because Arabic had been the lingua franca for centuries; they do not suggest some Arabic origin to the image that deviated sharply from the prior tradition of geometric and abstract anatomical illustration. While the origin of the Fünfbilderserie images is still an open question, I suggest that a convergent evolution, leading to similar images by chance, or even a European origin, are both options worth considering.

### Conclusion

The *Taṣrīḥ-e manṣūri* has been considered significant for two reasons, the first being its status as the first Islamic text with more naturalistic illustrations, and second because of the controversy and mystery surrounding these images. The book itself is distinctly Galenic and follows Galen's division of the body's systems, the bones, nerves, muscles, blood vessels, and arteries. Manṣūr ibn Ilyās lived during the Tīmūrid period and after the fall of Baghdād, which some view as the end of a "golden age," but he contributed to scientific knowledge and his anatomy book and illustrations were very popular. Scholars have suggested that Manṣūr's images were not his own original work, but perhaps reproductions of Alexandrian drawings. Others examining the European Fünfbilderserie manuscripts believe that their text must have been derived from the work of Arab scholars, but fail to offer a convincing argument that the images also came from the east.

The *Taṣrīḥ-e manṣūri* has raised a number of questions for the past century of scholarship; I would like to raise a few more. Shefer-Mossensohn and Abbou Hershkovits's injunction to study Islamic hospitals in their own context holds relevance for the *Taṣrīḥ-e manṣūri*. The use of Prophetic medicine alongside Galen in the book could be interesting for the history of Prophetic medicine's development; much of the scholarship has been focused on pharmacology of certain herbs more than their history. Although Newman began a translation of Manṣūr's greatest work, it has yet to be published; opening the field of Persian anatomy to more English scholars could be quite fruitful. I was unable to place Manṣūr into the context of the Tīmūrid Renaissance as fully as I would have liked, and speculating about what books he might have read, European or otherwise, aside from classics like ibn-Sīnā's *Canon of Medicine*, is difficult. The interchange of knowledge between the Fāṭimids, Ottomans, and Tīmūrids as well as with European powers is worth studying in further depth. Moreover, a thorough index of the Fünfbilderserie manuscripts would allow for useful comparisons of the illustrated anatomical features and the differences in the text. My

analysis of the *Taṣrīḥ al-Badan* and Vatican Palat. Lat. 1110 has revealed differences between the two that have not been explored elsewhere, and a deeper and broader study would allow us to draw firmer conclusions. Ultimately, I suggest that the concept of the Fünfbilderserie, while insightful because of the similarity between the European and Islamic images, is due to either convergent evolution or a shared common source. While I am sympathetic to the idea that these images may have evolved independently, a further exploration both of potential origin images and of the differences between the Christian and Islamic texts might lend more credence to a transmission route and, at last, lead us out of the unknown.

## BIBLIOGRAPHY

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- Alghamdi, Malak A., Janine M. Ziermann, and Rui Diogo. "An Untold Story: The Important Contributions of Muslim Scholars for the Understanding of Human Anatomy." *The Anatomical Record* 300, no. 6 (2016).  
<https://anatomypubs.onlinelibrary.wiley.com/doi/full/10.1002/ar.23523>.
- Azizi, Mohammad H. "Gondishapur School of Medicine: The Most Important Medical Center in Antiquity." *Archives of Iranian Medicine* 11, no. 1 (2008): 116 – 119.  
<https://www.ncbi.nlm.nih.gov/pubmed/18154434>
- Bethesda, National Library of Medicine, MS P 18 (NLM 9506458), fols 1-39.  
<http://resource.nlm.nih.gov/9406458>
- Dols, Michael W. "The Origins of the Islamic Hospital: Myth and Reality." *Bulletin of the History of Medicine*, 61 (1987): 367–391.
- Floor, Willem, "Hospitals in Safavid and Qajar Iran: An enquiry into their number, growth and importance," in *Hospitals in Iran and India, 1500-1950s*, ed. Fabrizio Speziale (Brill, 2012). DOI: <https://doi.org/10.1163/9789004229198>.
- Frampton, Michael. "Embodiment Theories in Late Antiquity and Early Middle Ages." In *Embodiments of Will: Anatomical and Physiological Theories of Voluntary Animal Motion from Greek Antiquity to the Latin Middle Ages, 400 B.C.-A.D. 1300*, 211-313. Saarbrücken: VDM Verlag Dr Müller Aktiengesellschaft, 2008.
- French, Roger K. "An Origin for the Bone Text of the 'Five-Figure Series'." *Sudhoffs Archiv* Bd. 68, H. 2 (1984): 143-156. Stable URL: <https://www.jstor.org/stable/20776928>.
- Iskandar, A. Z. "An Attempted Reconstruction of the Late Alexandrian Medical Curriculum," *Medical History* 20 (1976): 235-58.
- Khalili, Majid, Mohammadali M. Shoja, R. Shane Tubbs, Marios Loukas, Farid Alakbarli, and Andrew J. Newman. "Illustration of the heart and blood vessels in medieval times." *International Journal of Cardiology*, Volume 143, no. 1 (2010).  
<https://doi.org/10.1016/j.ijcard.2009.11.061>.
- MacKinney, Loren C. and Boyd H. Hill, Jr. "A New Fünfbilderserie Manuscript: Vatican Palat. Lat.1110." *Sudhoffs Archiv für Geschichte der Medizin und der Naturwissenschaften* Bd. 48, H. 4 (1964).  
[https://www.jstor.org/stable/20775122?seq=3#metadata\\_info\\_tab\\_contents](https://www.jstor.org/stable/20775122?seq=3#metadata_info_tab_contents).

- Newman, Andrew J, “Tashrīḥ-i Manṣūr-i: Human Anatomy between the Galen and Prophetical Medical Traditions,” in *La Science dans le Monde Iranien à l'époque Islamique*, ed. Vesel, Ž., H. Beikbaghban, and Thierry de Crussol des Epesse B (Institut Français de Recherche en Iran, 1998), 253-271.
- O'Neill, Ynez Violé. “The Fünfbilderserie—A Bridge To The Unknown.” *Bulletin of the History of Medicine*, 51, no. 4 (1977): 538-549.  
<https://www.jstor.org/stable/44450466>.
- O'Neill, Ynez Violé. “The Fünfbilderserie Reconsidered.” *Bulletin of the History of Medicine* 43, no. 3 (1969), 236-245. <https://www.jstor.org/stable/44449939>.
- Pormann, Peter E. “Medical Education in Late Antiquity, From Alexandria to Montpellier.” In *Hippocrates and Medical Education*: 419-441.  
<https://doi.org/10.1163/ej.9789004172487.i-566.122>.
- Pormann, Peter E. and Emilie Savage-Smith. *Medieval Islamic Medicine*. Washington, DC: Georgetown University Press, 2007.
- Richter-Bernburg, Lutz, A. Shapur Shahbazi. “Gondēšāpur.” *Encyclopædia Iranica*, XI/2 pp. 131-135; available online at <http://www.iranicaonline.org/articles/gondesapur>.
- Russell, Gul A. “Ebn Elyās, Manṣūr,” *Encyclopædia Iranica*, VIII/1 pp. 16-20; available online at <http://www.iranicaonline.org/articles/ebn-elyas>.
- Savage-Smith, Emilie, “Anatomical Illustrations in Arabic Manuscripts,” in *Arab Painting: Text and Image in Illustrated Arabic Manuscripts*, ed. Anna Contadini (Brill, 2007), 145-159.
- Savage-Smith, Emilie. “Catalogue: Medical Encyclopedias. *Zakḥīrab-i Khvārazm' Shāhī*.” Islamic Medical Manuscripts at the National Library of Medicine. January 15, 2004.  
<https://www.nlm.nih.gov/hmd/arabic/mon6.html>.
- Savage-Smith, Emilie. “Catalogue: Medical Monographs.” Islamic Medical Manuscripts at the National Library of Medicine. January 15, 2004.  
<https://www.nlm.nih.gov/hmd/arabic/mon6.html>.
- Shefer-Mossensohn, Miri, and Keren Abbou Hershkovits. “Early Muslim Medicine and the Indian Context: A Reinterpretation.” *Medieval Encounters*, 19 (2013): 274-299.

- Shoja, Mohammadali M. and R.Shane Tubbs. "The History of Anatomy in Persia." *Journal of Anatomy* 210 (2007): 359–378. <https://doi.org/10.1111/j.1469-7580.2007.00711.x>.
- Tadjbakhsh, Hasan, "Hôpitaux et médecins avicenniens en Iran à l'époque safavide," in *Hospitals in Iran and India, 1500-1950s*, ed. Fabrizio Speziale (Brill, 2012). DOI: <https://doi.org/10.1163/9789004229198>.
- "The Treasure of Khvarazm'Shah." World Digital Library, March 30, 2015. <https://www.wdl.org/en/item/10608/>.
- West, John B. "Ibn al-Nafis, the pulmonary circulation, and the Islamic Golden Age." *Journal of Applied Physiology* 105, no. 6 (2008). DOI: [10.1152/jappphysiol.91171.2008](https://doi.org/10.1152/jappphysiol.91171.2008).
- Zarshenas, Mohammad M., Arman Zargarán, and Alireza Mehd. "Mansur ibn Ilyas (1380–1422 AD): A Persian anatomist and his book of anatomy." *Journal of Medical Biography* 24, no. 1 (2016):67-71. DOI: 10.1177/0967772013479474.