

## THE LIMITS OF ARTISTIC EXCHANGE IN FOURTEENTH-CENTURY TABRIZ: THE PARADOX OF RASHID AL-DIN'S BOOK ON CHINESE MEDICINE, PART I

Among the most striking artifacts of the extraordinary cross-cultural encounters that took place in the fourteenth-century Mongol Empire stretching from China to eastern Europe is an illustrated manuscript from Tabriz on Chinese medicine. The manuscript is the *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khatā'i* (Treasure Book of the Ilkhans on the Branches of the Chinese Sciences), known as the *Tansūqnāma*.<sup>1</sup> Based on various Chinese medical texts, but produced for readers of Persian, it contains cosmological and medical images unlike any other known images from the Islamic world. Surviving as a unicum, i.e., in only one known manuscript, now in the Süleymaniye Library in Istanbul, it ends with a colophon documenting its completion by the scribe Muhammad b. Ahmad b. Mahmud in 713 (1313) (fig. 1 [figs. 1–30 are grouped together at the end of this article]).<sup>2</sup> It also begins with a preface by Rashid al-Din (d. 1318), from which we know that it was produced at his behest.<sup>3</sup>

Rashid al-Din is one of the most famous figures of medieval Islamic history, and well known as a patron of the arts. He trained as a medical physician, but served as vizier to two Mongol Ilkhanid rulers of the eastern Islamic lands, Ghazan (r. 1295–1304) and Uljaytu (r. 1304–17). In that capacity, he instigated major financial reforms in the Ilkhanid realm. He also wrote a horticultural treatise, and patronized numerous architectural projects, such as those of an entire suburb of Tabriz, including a research hospital and a manuscript workshop.<sup>4</sup> Further, he authored a universal history, *Jāmi' al-tawārikh* (Compendium of Chronicles), and directed its production and distribution in multiple illustrated manuscripts. The production of his universal history is

unusually well documented; the work contains paintings striking for their stylistic eclecticism, making it a canonical monument of Islamic arts of the book.<sup>5</sup> Yet Rashid al-Din's other illustrated work, the *Tansūqnāma*, is hardly known to art historians. The exception that proves the rule is that, in 2007, it was included in the Mongol art exhibition that appeared in Istanbul and Berlin, and was mentioned briefly in the Turkish version of the catalogue for that exhibition, though not in the German one.<sup>6</sup>

A brief description of the manuscript indicates both (a) just how striking it is as an example of the introduction of Chinese visual forms into the Islamic milieu, and (b) that Rashid al-Din did not have it produced as an exotic curiosity, but as a results-oriented project, with the audacious goal of radically transforming Islamic culture through translation. This description paves the way for the main arguments of this article: first, that in fourteenth-century Tabriz, the visual properties of the *Tansūqnāma* did more to position it as an authentic record of Chinese medical traditions than they did to effectively translate those traditions for a new audience in the Islamic world; and, consequently, that in our own time, the *Tansūqnāma* testifies not only to the tremendous breadth of Iran's encounter with Chinese culture during the Mongol period, but also, and more unusually, to the limits of its depth.

The *Tansūqnāma* begins with Rashid al-Din's preface, in which he explains and comments on the project as a whole. The main section that follows is a compilation of various texts and commentaries on specific topics in Chinese medicine, many of them illustrated. The images in the main section may be crudely divided into

cosmological diagrams (figs. 4, 7, and 19) and representations of the body or of parts of the body. The latter include organs (figs. 9–14), the hands, wrists, and full body (figs. 20–22), and the head (fig. 24). Like the text, all are penned in bold strokes. Black ink dominates, while red ink provides contrast. Each appears against a plain ground. Though one would not mistake these for images actually produced in China, they are obviously related to Chinese traditions of cosmological and medical illustration (figs. 5, 6, 8, 15–18, 23, 25, and 26). On the other hand, one is hard pressed to find comparanda for them from the entire history of the arts of the book in the Islamic world.

The highly unusual look of the manuscript is also distinguished by the formal presentation of the text. After the preface, which is in Persian, the main body consists largely of passages translated into Persian from various Chinese medical texts. However, this section also includes several Chinese words and passages that are not translated, but rather phonetically transcribed. The Arabic alphabet (in which Persian is also written) is used for this, with additional shapes to signify Chinese sounds for which Arabic or Persian letters are lacking. Below some of the transcribed Chinese passages, Persian words glossing the Chinese terms are written on the diagonal. Together, the additional shapes for Chinese sounds and the diagonal layout of the Persian glosses give the transcribed passages an unexpected appearance (figs. 27 and 29). This renders any paleographic analysis of the writing problematic; at the same time, it invites engagement with the text at not only a verbal but also a visual level.

With a text including an otherwise unknown system for transcribing Chinese into Persian, and with images lacking obvious comparanda from the Islamic world, the *Tansūqnāma* is a singular object. Indeed, it has such an odd appearance that the question of its authenticity must be addressed from the outset. In light of Rashid al-Din's famous stipulation in the endowment deed for his scriptorium that all manuscripts produced there should use "large-size, fine Baghdadi paper of extremely good quality,"<sup>7</sup> it is somewhat surprising that at 34.2 x 26.4 centimeters, the *Tansūqnāma* folios are smaller than those in the *Compendium of Chronicles* (43.5 x 30 cm). However, in Rashid al-Din's endowment

deed for the scriptorium, the *Tansūqnāma* does not appear among the list of titles to be produced there. If this manuscript was produced in Rashid al-Din's hospital rather than in the scriptorium, it may have been that the specific stipulations regarding paper size did not apply. There are several additional reasons to accept that it is what it says it is. First, what motive would a forger have for producing an object that sticks out from the rest of the history of Persian painting like a sore thumb? Second, both the style of the illuminated roundel at the start of the manuscript (fig. 2) and the quality of the paper on which the manuscript is written are comparable to those in the *Compendium of Chronicles* (fig. 3).<sup>8</sup> Third, if the *Tansūqnāma* was not made in Rashid al-Din's Tabriz, where else could it conceivably have been made? Early fourteenth-century Tabriz was remarkable for its cosmopolitanism and energetically innovative cultural life.<sup>9</sup> At the crossroads of a Mongol world empire stretching from eastern Europe to China, it was a center in which intellectuals, painters, architects, doctors, cooks, missionaries, merchants, bureaucrats, and envoys from throughout Eurasia met.<sup>10</sup> It uniquely offered exactly the confluence of circumstances that could allow the production of this manuscript.

At one level, an initial glance at the visually provocative folios of the manuscript clearly shows that, even within this exceptional context, it represented a bold attempt to challenge cultural boundaries. Indeed, Rashid al-Din's own explanation of why and how the *Tansūqnāma* was made invites this interpretation—at least when it comes to intentions. In his preface, Rashid al-Din noted that just as the great Abbasid caliph Harun al-Rashid (r. 786–809) had made Greek knowledge available to Islamic scholars through translation (*tarjama*) into Arabic, so he, Rashid al-Din, intended to make Chinese knowledge available to Islamic scholars through translation into Persian.<sup>11</sup> To this end, he chose a particularly promising Persian scholar of medicine who had been sent to study Chinese, Safi al-Dawla wa-l-Din. Rashid al-Din would periodically question Safi al-Dawla wa-l-Din, not just about Chinese medicine, but, more broadly, about the Chinese language. Rashid al-Din also found "the best of the Chinese doctors here," Siyū Sha, noting that "no one knows writing better than he." In addition, he found a good interpreter.<sup>12</sup> He does

not comment on who actually produced the illustrations, but we know from the colophon that the scribe was Muhammad b. Ahmad b. Mahmud. It is not known whether the illustrations were done by any of the above-named members of the team, either separately or collaboratively, or whether additional individuals were brought in specifically to work on the illustrations. What is clear is that the finished manuscript was the result of a team effort. The varied and collectively wide-ranging cultural expertise of the identifiable members within the team demonstrates the degree to which the very decision to attempt this project did challenge cultural boundaries.

But, at another level, the manuscript starts to look much different when we try to assess how far it actually furthered Rashid al-Din's goal of transforming Islamic culture through translation. In explicitly identifying Harun al-Rashid and the Abbasid translation movement as his models, Rashid al-Din set the bar for his project outrageously high. Just how high will become clear below, when we sketch out an initial comparison between the awkward place that the single *Tansūqnāma* manuscript occupies within the history of Islamic art and the established position held by the multiple manuscripts of *Kitāb Ṣuwar al-kawākib al-thābita* (Book of Fixed Stars) by 'Abd al-Rahman b. 'Umar al-Sufi (d. 986) within that same history. Considered in Rashid al-Din's own terms, the *Tansūqnāma* starts to look less like an effective challenge to cultural boundaries, and more like a demonstration of just how formidable those boundaries can be.

The paradox of the *Tansūqnāma*, then, is the gap between its great achievement, which was truly impressive, and the extraordinarily ambitious goals that Rashid al-Din articulated for it and of which it fell short. In this article, I focus on that paradox as it played out in the context of the manuscript's production in early fourteenth-century Tabriz. In a subsequent article, I will delve into the question of how the same paradox frames the manuscript's anomalous position in the broader history of Islamic manuscript painting. In the current article, I explain that part of the problem, even within the context of fourteenth-century Tabriz, was that although the presentation of images and ideas in this manuscript did depart significantly from the Chinese sources, and even

though the *direction* of that departure was towards the expectations of a new intended audience of medieval Islamic doctors and intellectuals, nonetheless, the *degree* of departure was not sufficient to make those images and ideas conceptually accessible in their new milieu. Yet ironically, the look of the manuscript conveyed precisely the opposite message: it communicated a promise of access to authentic Chinese knowledge, even as it failed to make that knowledge understandable, thereby marking the limits of effective cultural exchange in the Mongol Empire.

Exactly how accessible the *Tansūqnāma* did make knowledge of Chinese medicine must, of course, have varied by reader. Considering that the *Tansūqnāma* was produced by a team whose members brought very distinct knowledge bases to the project, it seems likely that different aspects of the completed manuscript were accessible to the members of that team to varying degrees. In fact, it seems highly unlikely that any single member of the team had the breadth of knowledge that the completed object seems to assume of its readers.

The same is true of scholars who attempt to study the *Tansūqnāma* today. Just as a full realization of the goal of radical cultural transformation through translation likely eluded Rashid al-Din's handpicked team in the fourteenth century, so, I suspect, will a full understanding of the *Tansūqnāma* likely elude modern scholars. But the very characteristics that make the *Tansūqnāma* inherently difficult to study also make it of great art-historical interest, and they result directly from the boldness that motivated the project. The only way to improve our understanding of this manuscript is for scholars working in different fields to engage with it from different angles.

Like Rashid al-Din, I do not know Chinese. It is both striking and fortuitous that in many cases what was transcribed rather than translated in the *Tansūqnāma* remains what is transcribed rather than translated in English-language discussions of Chinese cosmology and medicine today, and that several of the diagrams and images also recognizably correspond to those found in that literature. Striking, because it demonstrates how difficult it has remained, over centuries, to translate these terms and diagrams without disrupting the knowledge

systems to which they belong. Fortuitous, because it suggests that my own challenges in studying this manuscript might be oddly parallel to the ones faced by its original audience.

For translations of specific terms from the Chinese imprints, navigation of unfamiliar bibliographic conventions, and references to pertinent articles from Japanese, I have been fortunate to get some targeted help from specialists.<sup>13</sup> But of necessity, I have relied heavily on secondary sources for pertinent information about Chinese medical illustration and medicine. When it comes to several of the transcribed Chinese words in the *Tansūqnāma*, I have been able to access them myself, in a limited way, by sounding them out, noting their context and recognizing that they correspond to Chinese words transcribed into the Roman script in English-language discussions of Chinese cosmology, medicine, and related images. This would obviously be an imperfect method for accessing any kind of text, but particular caution is warranted here, as many translators of Chinese medical texts into English have drawn special attention to the degree to which the same Chinese term can mean very different things in different contexts.<sup>14</sup> Although I have tried to guard against this, the necessarily circuitous nature of my method has no doubt led to some unfortunate oversimplifications concerning the rich and varied history of Chinese medical imagery and medicine.

In other words, though I hope this article may be of interest to sinologists, it is not written from the vantage point of Chinese medicine, cosmology, history, or art history. Rather, it comprises the comments of a historian of Islamic art who sees in the *Tansūqnāma* a rare delineation of the scope of Iranian engagement with Chinese visual culture in the fourteenth century. With singular clarity, this manuscript helps to define not only the tremendous breadth, but also the limits of the depth, of that engagement. It does this precisely because, as an extraordinarily ambitious project, it confronted the boundaries of what was possible in a way that less ambitious (and therefore more easily accessible) projects did not.

#### COMPARING QI TO PERSEUS? ARTS OF THE BOOK IN THE GREEK-INTO- ARABIC TRANSLATION MOVEMENT

To appreciate fully the audacity of Rashid al-Din's goal, it is helpful to consider a specific example of what he was holding up as a standard of comparison. Al-Sufi's *Kitāb Ṣuwar al-kawākib al-thābita*, which was dedicated to the Buyid sultan 'Adud al-Dawla (d. 983), offers itself as a suitable example. This illustrated book of constellations, initially composed in Arabic and based heavily on Greek astronomy in the tradition of Ptolemy, is seen as a classic of the Greek-into-Arabic translation movement. The images in al-Sufi's book, as in the *Tansūqnāma*, are of a formal type that we now tend to label, anachronistically, as scientific: visually forthright, with a minimum of narrative elements, and tending towards a diagrammatic clarity often enhanced by something very close to a monochromatic presentation. The Book of the Fixed Stars, then, was to the Greek-into-Arabic translation movement what Rashid al-Din hoped the *Tansūqnāma* would be to the proposed Chinese-into-Persian translation movement. But whereas only one manuscript of the *Tansūqnāma* survives, there are numerous extant manuscripts of the Book of the Fixed Stars.<sup>15</sup> From one manuscript to the next, the images vary perceptibly, but they nonetheless belong together within a recognizable visual tradition that flourished well into the seventeenth century. Moya Carey's recent work on the closely related images in the astronomical text by al-Sufi's son shows that the tradition was sufficiently deeply rooted in Islamic visual culture that it could serve as a reference point for the illustration of additional texts.<sup>16</sup>

Nothing comparable happened to the images from the *Tansūqnāma*. It was produced by a small team of experts, all of whom had been handpicked by Rashid al-Din, suggesting that even in early fourteenth-century Tabriz, its audience was quite limited. If we allow the possibility that a handful of other copies may have been made, but have been lost, the fact that the *Tansūqnāma* only survives in one known manuscript shows that whatever status it did achieve within Islamic culture did not rival that of al-Sufi's Book of the Fixed Stars. While the adage that "absence of evidence is not evidence of absence" is well taken, it does seem that, in this case, relative absence of evidence does constitute evi-



dence of relative absence. That is, although we cannot know how many manuscripts of the *Tansūqnāma* were ever made, we can see clearly that they were not produced nearly as frequently or as widely as manuscripts of the Book of the Fixed Stars. Further, the *Tansūqnāma* manuscript itself does not bear the marks of wear and tear that would normally occur over eight centuries of use. The paper and binding are in excellent condition, and the Arabic pagination suggests that only two folios are missing from the original text block.

In a subsequent article, I will delve into this comparison in more detail, exploring how the images in the al-Sufi manuscripts were visually “translated” and how this allowed the work to become established within Islamic arts of the book. But even this brief initial consideration of what Rashid al-Din was holding up as a standard of comparison shows that neither the medical nor the visual legacy of the *Tansūqnāma* in the Islamic world ever approached what he envisioned. In this respect, it must be admitted that this spectacularly innovative project ultimately failed to bring its instigator’s radically ambitious and clearly stated goal to fruition.

#### MODERN APPROACHES TO THE TANSŪQNĀMA

This interpretation is somewhat at odds with the bulk of the scholarly bibliography on the *Tansūqnāma*, which comes from the histories of medicine and science, and tends towards supporting an intellectual agenda laid out by Joseph Needham. In his pioneering and monumental multivolume reference work, *Science and Civilisation in China*, Needham drew attention to ways in which scientific knowledge can be seen as having disseminated from China to the West. He mentioned the *Tansūqnāma* in a subchapter that inventories known scientific contacts between the Islamic world and China and India.<sup>17</sup> Needham’s main source for this discussion was a short booklet published in 1939 by Süheyl Ünver that included several of the images from the manuscript, along with Turkish translations of Rashid al-Din’s preface and the detailed table of contents.<sup>18</sup> It is worth noting that although Ünver often wrote about such art-historical topics as calligraphy, miniatures, and marbled papers, he was actually based in the medical history program at

Istanbul University. Historians of medicine and science who have written about the *Tansūqnāma* since Needham have tended to discuss it in terms of the diffusion of Chinese scientific knowledge. Needham’s intellectual legacy is palpable, for example, in the very title of Saburo Miyasita’s article, “A Link in the Westward Transmission of Chinese Anatomy in the Later Middle Ages.”<sup>19</sup> One also senses it, in a milder form, in a series of articles by Felix Klein-Franke and Zhu Ming, who note that “the dissemination of Chinese medicine to the countries west of China is closely connected with the book named *Tansuqnamah*.”<sup>20</sup>

Compared with most of the work done within the histories of science and medicine, the few cultural historians who have worked on the *Tansūqnāma* have been more cautious in their assessment of its impact. Karl Jahn left the whole question of the project’s success aside when he used the preface to the *Tansūqnāma* as an important source for his article on Rashid al-Din’s attitudes towards Chinese culture, although he did frame his discussion in terms of the irrefutable observation that the effects of Central Asia and the Far East on Iran in the Mongol period lasted for centuries.<sup>21</sup> And although Thomas Allsen’s *Culture and Conquest in Mongol Eurasia* sports an illustration from the *Tansūqnāma* on its cover, he was concerned with the manuscript not as a visual object but as a written source in a text-based history of cultural exchange. Allsen noted the *Tansūqnāma* as one of several examples of how medical knowledge crossed the Mongol Empire. But in a typically prescient aside, he also pointed out that despite exposure to Chinese medicine, “there is little evidence that Muslim or Eastern Christian physicians abandoned or altered the inherited, Galenic theory of medicine.” He urged that future research be undertaken to determine what impact the encounter had on subsequent medicine in Iran, concluding that, “even if these investigations demonstrate that there were no such influences, the effort will not have been in vain since such successful resistance will tell us something important as well.”<sup>22</sup>

There is an art-historical parallel to Allsen’s point. The fact that Chinese medical images were introduced into Iran in the early fourteenth century does not mean that they were conceptually accessible, gained traction, or replaced other modes of medical illustration there. And it is precisely because the *Tansūqnāma*’s images

did not become an organic part of the history of Islamic medical illustration that one must begin by studying them in reference to the Chinese image traditions to which they are more obviously related.

#### THE VISUAL SOURCES OF THE *TANSŪQNĀMA* AND THE PROBLEMS OF THEIR MATERIAL FORM

The Chinese tradition of medical imagery to which the *Tansūqnāma* is heir is vast. Just how vast is clear from Catherine Despeux's article "Visual Representations of the Body in Chinese and Daoist Texts from the Song to the Qing Period (Tenth to Nineteenth Century)," which offers an overview of the full tradition.<sup>23</sup> Two questions then arise. First, which images within that large corpus constitute the most pertinent comparanda? And second, how much can we learn from the comparison? Addressing these questions requires (a) a basic understanding of the characteristic contexts of these images within Chinese books, and (b) some background knowledge of general patterns in the material history of book production and preservation in China.

The images and diagrams from this tradition typically belong within tightly defined text-image units called *tu*. Several of the *tu* are so thoroughly recognizable from one rendering to the next that they can be referred to with the equivalent of proper names. For explanatory purposes, it may be useful to invoke a rough analogy with a well-known text-image unit example from the contemporary visual culture of the United States: "the food pyramid," which is used to educate the public on dietary recommendations. The Chinese *tu* of relevance to the *Tansūqnāma* are composed of what we might think of as a highly conventional visual component along with specifically associated textual elements such as captions. In a similar vein, the food pyramid consists of a pyramidal shape with captions labeling its various sections: e.g., the small space at the top is conventionally labeled "fats and sweets," from which the public is supposed to understand that these should be eaten only in small quantities, whereas the broad space across the bottom is labeled "grains," implying that they should be the foundation of the daily diet. When two diagrams of similar form are accompanied by different textual

labels, they are regarded as different *tu*, and have different names. Or, in terms of our analogy, a formally very similar pyramid accompanied by a different text might be an organizational chart for a specific corporation, in which case it would be simply incorrect to call it "the food pyramid." Just as the graphic elements were constituent parts of the *tu*, the *tu* were in turn constituent parts of specific books—even as those books were produced in multiple editions, whether in manuscript or in print, from one century or dynasty to the next. Lucille Chia, a scholar of Chinese printed books who has been particularly interested in the unstable relations between texts and images that can emerge over time, has noted that in the case of printed medical books in particular, "even when later printers of the Yuan [1279–1368] and Ming [1368–1644] claimed to have...added new annotations, they still used the same or similar *tu* as appeared in the Song [960–1279] editions."<sup>24</sup> Earlier books are often preserved only in later compilations and commentaries.

The starting point for finding appropriate visual comparanda for the *Tansūqnāma* images is to determine which *tu* were most likely used as sources, and this is therefore how sinologists have proceeded. However, partly because these *tu* are not traditionally classified as art in Chinese historiography, the kinds of sensitivities that art historians are most suited to bring to the discussion have not yet been considered. Specifically, the problem of how material rather than purely conceptual aspects of different renderings of the same *tu* might impact how they look has received minimal attention.

For example, Miyasita's article includes visually compelling comparisons between the *Tansūqnāma* images of organs and corresponding Chinese images. Tantalizingly, but misleadingly, Miyasita identifies his Chinese visual comparanda as having come from a Yuan-period edition of a medical treatise that, according to a Chinese tradition rejected by modern scholars, was attributed to the Han dynasty-period (206 B.C.–A.D. 220) author Hua Tuo (d. 208): *Hua Tuo Neizhaotu* (Hua Tuo's Illuminating Illustrations of Internal Medicine).<sup>25</sup> From an art-historical point of view, the intriguing thing about this reference is that it would seem to suggest that prints of Chinese comparanda for the *Tansūqnāma* images, or at least the images of the organs, survive in Yuan-period editions—in other words, in editions that date

from roughly the same period as the *Tansūqnāma* itself.

However, my research assistant, Catherine Stuer, was able to determine that Miyasita's reference to the Yuan edition is a seriously misleading oversimplification. Miyasita mentions that he learned about this edition from an article by the Japanese scholar Kozo Watanabe, who traces the history of the text in question and explains that, despite the Han-dynasty attribution, the work actually dates to about 1095, under the Song.<sup>26</sup> But even more importantly for the purposes of the current discussion, he explains that the earliest surviving imprints of this text date from the Ming period—the oldest one from the second half of the fifteenth century.<sup>27</sup>

To see how such historical elisions can happen within a scholarly bibliography dominated by the histories of medicine and science, it is worth considering the implications of some aspects of Despeux's highly insightful overview of the relevant tradition of Chinese medical imagery. In that discussion, she shows with subtlety and acuity that in the Chinese context the images are inseparable from the broader medical discourse in which they appear. As part of that larger argument, she describes them as “coded representations, composed of conventional signifying elements.” These representations, she goes on, “are meant to be *read*, in the same way that one reads a Chinese character” (her emphasis).<sup>28</sup>

Given that the medical images were both highly conventional and highly integrated into their textual context, I do not dispute that on some level they could be read like a text. But that does not mean that there was no significant change from one material rendering of a conventional image—or as Despeux would have it, coded representation—to the next. Consider that the script, mode, and style of calligraphed, hastily written, or printed words, rendered with different inks on different papers, can have an impact on how those words signify at the visual register of form, even as the same words simultaneously continue to signify at the linguistic register of semantics.<sup>29</sup> Likewise, the visual particularities of different renderings of the same conventional image might signify at registers other than the textual. I hasten to point out that Despeux does not say otherwise. Nonetheless, her argument that the representa-

tions should be read like texts may be easily construed as support for a manner of thinking about these medical images that has allowed sinologists to discuss Ming-dynasty versions of older images not as later examples of lost images, but as if they were the earlier images themselves.

There are also inherent aspects of the material histories of the books that encourage the tendency of modern scholars to conflate the historical differences between an earlier *tu* and a later rendering of it. Chia notes that within the history of Chinese printed books the fact that an image and its accompanying text were often carved onto the same wood block gave them a tighter relationship than existed in the western printing tradition that utilized moveable type.<sup>30</sup> Chia could have extended the point further: it also gave them a tighter relationship than in the medieval Islamic manuscript tradition, where images were often transferred by pounces, and text was separately penned.

Ideally, therefore, the appropriate visual comparanda for the *Tansūqnāma* images would be identifiable not only as the appropriate *tu*, but also as renderings of those *tu* that could have circulated within the Mongol Empire in the early fourteenth century, when China was under the rule of the Yuan dynasty. However, as we shall see, it turns out that unfortunately the only versions of the relevant *tu* that survive are preserved in books produced in the Ming period. On the one hand, the fact that the Chinese comparanda for the *Tansūqnāma* images date from the late fifteenth century at the earliest puts Rashid al-Din's fourteenth-century Persian book in an oddly seminal position within visual traditions of Chinese medicine.<sup>31</sup> On the other hand, it considerably limits the conclusions that we may draw from those comparisons.

Because the *tu* were integral parts of texts, the identification of the appropriate *tu* goes hand in hand with the identification of the textual sources of the *Tansūqnāma*. Fortunately, the problem of identifying them has received, and continues to receive, considerable scholarly attention.

In the late 1990s, Felix Klein-Franke and Zhu Ming pointed out that the transliterated proper noun “*wank shū khū*” in the *Tansūqnāma* refers not to a title, as Süheyl Ünver had previously concluded,<sup>32</sup> but to a

person, Wang Shuhe, the author of the *Mai jing* (Canon of the Pulse), ca. 280. This text was later simplified in verse form into a work called *Mai jue* (Pulse Poem). The later, simplified poem was available in many editions in the Yuan period, and was used as the principal source of the main text of the *Tansūqnāma*. Although Klein-Franke and Zhu Ming were not able to identify which precise edition of the Pulse Poem was used, they focused on a particularly useful point of comparison, the commentary *Mai jue kan wu* (Correction of the Pulse Poem), by the writer Dai Qizong, who was active in the Yuan period. Comparison with this text allowed them to identify additional Chinese sources.<sup>33</sup> Further research on the problem is currently being undertaken by Wang Yidan of the Institute of Iranian Culture Studies at Beijing University. Vivienne Lo of University College London has generously brought to my attention the recent studies on relevant Chinese sources that have been published in Japanese,<sup>34</sup> and advised me that several of the *Tansūqnāma* images must have been based on *tu* in a book by Li Jiong (d. 1269). *Bashi yi nanjing* (Canon of Eighty-One Problems), including its images, is only accessible through the Ming edition of the Taoist Canon, which was published in facsimile in Shanghai in 1925.<sup>35</sup> The Ming edition includes useful comparanda for several of the *Tansūqnāma* images that do not come from the chapter on organs.

The earliest surviving imprints of the visual Chinese comparanda for the *Tansūqnāma* images therefore postdate it by over a century. As an Islamicist who has devoted particular attention to the manner in which the texts and images of the same title change in different manuscripts over time, even as successive generations of scribes continue to defer to the authority of the original author, I cannot help being suspicious about the idea that a volume materially produced in the late fifteenth century can be taken as a reliable source for an eleventh-century image, or even for a fourteenth-century one. But as no Chinese comparanda for the *Tansūqnāma* images survive from the Yuan period, there is no choice but to resort to images that are preserved in Ming-period imprints. In pursuing such comparisons, however, we must be mindful of the fact that we are not actually looking at the same images that served as sources for the *Tansūqnāma* team, but rather at later renderings.

The most important question concerning possible differences between the later Ming renderings and their lost earlier sources pertains to the position of print within the material history of Chinese books. The Ming versions survive in wood-block printed books. Were the works available to the *Tansūqnāma* team also printed books, or were they in manuscript form? The limited available evidence does not permit firm conclusions on this question, but it seems most likely that the team was looking at a combination of printed books and manuscripts.

Although it does not survive, a printed edition of the Taoist Canon did circulate in the Yuan period; it was one of the first publication projects that the Yuan supported.<sup>36</sup> Further, Rashid al-Din was evidently familiar with the Chinese book-printing process and its advantages, which he explained in the preface to the *Tansūqnāma* as well as in the introduction to his History of China. In the former, he says that Chinese books are written with the utmost care on wooden pages (*ṣaḥīfahā-i chūb*), corrected, and then pressed onto very thin sheets of paper. Interestingly, he specifically mentions *naqqāshān* in connection with this process. Jahn interpreted *naqqāshān* in this passage as “painters,” but “engravers” might be a more apt translation.<sup>37</sup> In any case, Rashid al-Din comments that this process allowed the Chinese to produce as many books in a day as would otherwise take a year. He points out that the Chinese method of printing books is an effective form of quality control for works written in the difficult Chinese character system, which few people could master. Allsen notes that Rashid al-Din’s comments “constituted, in their own day, and for some time thereafter, the fullest and most detailed statements about the methods of Chinese printing in any language, including Chinese!”<sup>38</sup>

Given Rashid al-Din’s familiarity with Chinese printed books, and the publication of a printed Yuan edition of the Taoist Canon, it seems likely that some of the older sources available to the *Tansūqnāma* team would have been in wood-block printed form. For example, as discussed earlier, even though the *Neizhaotu* (Illuminating Illustrations of Internal Medicine) falsely attributed to Hua Tuo was actually produced under the Song, it was thought of as a Han-period book. This attribution would have given it special status



as a book that preserved the wisdom of the ancients, and may have resulted in its inclusion in the Yuan edition of the Taoist Canon. On the other hand, Li Jiong lived in the early Yuan period. In the early fourteenth century, his *Bashi yi nanjing* may have represented, instead, the latest thinking on medicine from the Chinese sages. There is no evidence that it was printed before the fifteenth century,<sup>39</sup> and it seems more likely to have been available to Rashid al-Din's team in manuscript form.

Given the probability that at least some of the sources the *Tansūqnāma* team had at its disposal were wood-block prints, and given Rashid al-Din's evident appreciation of Chinese wood-block printing, the decision to avoid printing any part of the *Tansūqnāma* manuscript requires some comment. In the specific case of Rashid al-Din and Ilkhanid Iran, it may be relevant to mention the 1294 attempt to introduce printed currency there, which ended disastrously. The Ilkhan Gaykhatu (r. 1291–95) printed money with both Chinese and Arabic writing and ordered that it be accepted as currency in the Ilkhanid realm. However, the people rejected it and it had to be withdrawn. Rashid al-Din comments that the failure of this paper money in Iran was regrettable.<sup>40</sup> The significant differences between printed money and printed books notwithstanding, Rashid al-Din's direct remarks on that failed experiment with print in Iran suggest that he may have realized that an entirely penned manuscript would be much more accessible to the intended audience of the *Tansūqnāma* than either a printed book or a penned manuscript enhanced by wood-block printed images would have been.

As is well known, printing was not widely adopted for Islamic books until very late—starting in the nineteenth century (the products of the few eighteenth-century presses were not widely disseminated).<sup>41</sup> This was not just because calligraphy was considered a great art—as, of course, it was in China. It was also because the task of maintaining the status of any given book, and ensuring its authenticity, was vested in the person and character of the calligrapher.<sup>42</sup> For a medieval Islamic bookish audience, the rendering of both images and text with the pen rather than the wood block conveyed the authority of Chinese tradition, because it highlighted the personal process upon which authenticity depended.

## COSMOLOGICAL DIAGRAMS AND BODILY IMAGES IN THE *TANSŪQNĀMA*

The main text of the *Tansūqnāma* begins on folio 40a, immediately following Rashid al-Din's preface. It starts with the table of contents, and with mention of the name Wang Shuhe. Since commentaries of ancient canonical texts were a widespread medieval phenomenon throughout Eurasia, Rashid al-Din and his team probably understood what they were translating to be Wang Shuhe's work, supplemented and improved by the most up-to-date commentary of Chinese doctors. After the table of contents, there follow roughly twelve chapters. Between chapters three and six, the text does not follow the table of contents with precision—that is, no sections specifically identified as chapters four or five appear between those labelled three and six.<sup>43</sup>

All of the diagrams and images evidently based on Chinese *tu* fall in the first two chapters, the first of which lays out the fundamentals of Chinese cosmology and contains versions of two classic diagrams that conventionally present the underlying cosmological paradigms on which Chinese medicine is based. The subject of the second chapter is identified in Persian as *a'zā'i andarūn* (interior organs). However, in addition to seven images of organs, the chapter also contains a series of five circular diagrams, four images of the full body, six images of wrists, and one of a head. I will treat first the diagrams that fall in both chapters, and then the images of the body or parts of the body that fall in the second chapter.

### *Cosmological diagrams*

In general, the *Tansūqnāma* team presented the diagrams in a manner that makes them readily identifiable as depictions of Chinese *tu*. But the degree to which the *Tansūqnāma* versions remain anchored in Chinese cosmology varies, as is evident in how three paradigmatic diagrams known as the *Taiji* diagram, the *Hetu* diagram, and the Wen Wang arrangement of the trigrams, do and do not appear in the *Tansūqnāma*. In some cases, the *Tansūqnāma* versions of the diagrams seem, at least initially, to preserve the underlying cosmological paradigms classically expressed by the *tu* on which they are based. But in other cases, unobtrusive details in the forms or explanations of the diagrams in



the *Tansūqnāma* obscure, or even undermine, their Chinese cosmological roots.

Given the impressive extent to which the *Tansūqnāma* team *did* effectively preserve numerous aspects of Chinese cosmology, we should not necessarily jump to the conclusion that they simply did not understand what they were translating. The paradigms that these diagrams expressed confronted them with a paradoxical challenge. The diagrams were, on the one hand, essential prerequisites for understanding the practical information on Chinese medicine that would follow later in the book. But they were also an uncomfortable fit with even the most flexible Islamic models of revelation and monotheism. While it is entirely possible that the *Tansūqnāma* team as whole, or some of its members, did not understand the diagrams, there is also good reason to posit that aspects of the diagrams or their explanations that most abruptly challenged these foundational cornerstones of medieval Islam may have been deliberately obscured.

The first section of the first chapter covers the five Chinese phases, also sometimes referred to in English as elements: metal, wood, water, fire, and earth. These five are classically understood in terms of how they destroy or generate each other:

Water overcomes fire; fire melts metal; metal—in the form of a knife, for instance—overcomes wood; wood—as in a space—overcomes soil; soil—as in a dike—subdues water.

Water/watering produces plants and trees, that is, wood; wood brings forth fire; fire produces ashes, that is, soil; soil brings forth metal; when heated, metals produce steam, that is, water.<sup>44</sup>

The *Tansūqnāma* chapter on the five phases begins with a diagram identified by a transcribed label in a circle at the top as “*Taygī*,” with no Persian gloss (fig. 4).<sup>45</sup> This recognizably corresponds to the diagram known in secondary Anglophone literature as the “*Taiji* Diagram,” or the “*Taijitu*” of Zhou Dunyi (d. 1073), a Song-period scholar who left posterity a classic explanation of this diagram. Despeux explains that Taoist texts include a closely related *tu* composed of a formally identical diagram and a different textual explanation, which represents the body.<sup>46</sup> However, the Persian letters and text in the *Tansūqnāma* confirm that this is not the Taoist ver-

sion, but the “*Taijitu*” of Zhou Dunyi, whose work was foundational for Neo-Confucianism, which continued to flourish under the Yuan.<sup>47</sup> Five small, interconnected circles representing the five Chinese phases appear at the center of the diagram. In the *Tansūqnāma*, these are labeled in Persian, with no transcribed Chinese. Water (*āb*) and fire (*ātish*) appear at the top, metal (*zar*) and wood (*dirakht*) at the bottom, and earth (*khāk*) in the middle. In secondary Anglophone renderings of this diagram today, including one whose Chinese characters have been translated by Robin Wang (fig. 5),<sup>48</sup> the phases are similarly identified in English translations. Above the five phases, there appears a circle with nested black and white stripes alternating on the right and left sides of the circle. In the *Tansūqnāma*, this is flanked with transcribed and glossed labels. To the right, the red transcription in Arabic letters reads “*yin ming*” [*sic*]; to the left, “*yang dung*.” *Yin ming* is glossed as “*barūdat sukūn*” (“still coldness”); and *yang dung* as “*harārat harakat*” (“moving heat”). In Wang’s presentation of the diagram and accompanying discussion, the corresponding glosses are transcribed and translated as follows: *yinjing* (“*yin* is rest”) (right); and *yangdong* (“*yang* is motion”) (left).<sup>49</sup> As *yin* is associated with coldness and *yang* with heat, one can see the logic of the Persian gloss, but also the lack of a recognition of *yin* and *yang* as discrete concepts beyond their associations.

The *Tansūqnāma* contains a brief explanation of this diagram on the next page. We read that *Taygī*, i.e., *Taiji*, “is the name of the movement,” which has “nothing greater than it, and before which there was nothing,” and that *yin* and *yang* are the basis of everything useful. The explanation ends with the customary concluding remark, “God knows best.”

It is interesting to compare this rather terse explanation with the classic explanation of the author of the diagram, Zhou Dunyi, which was well known in China in the Yuan period. According to him, *Taiji* is the “supreme ultimate,” from which first *yin* and *yang*, then the five phases, and then everything else are generated in turn:

...The supreme ultimate moves [and] therefore generates *yang*, when movement reaches its extreme, it generates rest. Rest generates *yin*. When rest reaches its extreme, it will return to motion. Motion and rest alter-

nate and become the root of each other. Thus the distinction between *yin* and *yang* is made and two forms are established. The transformation of *yang* with the unity of *yin* generates water, fire, wood, metal, and soil....Five elements are generated with their own character...; their profound unity gives rise to all emergent things....The myriad things engender and renovate, there are boundless changes and infinite transformations.<sup>50</sup>

In a medieval Islamic context in which a Neoplatonic model of creation by emanation was both widely known and highly controversial, it is difficult to imagine that the idea behind the *Taiji* diagram would not sound very much like a description of creation by emanation. Islamic Neoplatonists held that all of creation had emanated from God, whom they identified with “The Good” in Platonic thought.<sup>51</sup> Indeed, commenting on Zhou Dunyi’s explanation, Fung Yu-lan has noted that, “[s]poken of in this way, the Supreme Ultimate is very much like what Plato called the Idea of the Good, or what Aristotle called God.”<sup>52</sup> Just as the medieval Islamic world had adapted Plato’s model of emanation from “the Good” to a monotheistic framework by equating it with God, the *Tansūqnāma* team could have explained the *Taiji* diagram in a manner that adapted it to a model of creation by emanation. To do so would have radically changed the philosophical basis of Zhou Dunyi’s thought, but it might have made sense in an Islamic milieu. Instead, the team seems to have opted for a less radical, but also less accessible explanation. The explication of the *Taiji* as “the name of the movement” does not directly contradict Zhou Dunyi’s classical explanation. At the same time, the lack of a detailed discussion of the sense in which it is a “movement,” coupled with the comment that it is “that which has nothing greater than it, and before which there was nothing,” seems like an attempt to make the idea of the *Taiji* palatable in a monotheistic context without equating it with God. But it is difficult to imagine how a cosmological model that evaded any mention of God could have made any sense in a milieu whose unquestioned foundational premise was a monotheistic cosmos.

The next section covers “what is handed down in their books, which they call ‘*hū tū shū*’; this expression is from a Book of Mathematics (*hisāb*).” The section begins with the comment that the meaning of *hū tū shū* “is not known, for the reason that the Chinese

also do not know the meaning!”<sup>53</sup> On the next page, the phrase *hū tū shū* is transcribed in red in the center of a diagram (fig. 7, right page).<sup>54</sup> This diagram is recognizably a version of the *tu* known as *Luoshu*,<sup>55</sup> which is also found in a Ming-period imprint of the astrological compilation *Tianyuan fawei* (Astronomical Phenomena) of the thirteenth-century author Bao Yunlong (fig. 6).<sup>56</sup> The *Luoshu* diagram is often accompanied by another one, called *Hetu*, which does not appear in the *Tansūqnāma*. However, some Song-period scholars complained of historical confusion about the names of these two diagrams.<sup>57</sup> We should not dismiss the possibility that the comment in the *Tansūqnāma* that the Chinese could not explain the meaning of *hū tū shū* might have something to do with that confusion or with complaints among Chinese scholars about it.

In the diagram that appears on folio 55b of the *Tansūqnāma* (fig. 7, right page), clusters of circles surround the phrase *hū tū shū* from above and below, to the right and left, and diagonally. Persian glosses written in black comment on how many circles should appear where, and associate the different areas of the page with the cardinal directions. At the top, there are nine circles, along with the label “south” (*janūb*); at the bottom, one circle, and the gloss “north” (*shamāl*). To the left, three circles are glossed “east” (*mashriq*). There are also seven circles on the right, but without any gloss. Circles with associated glosses are also found in the corners: four in the top right; six in the bottom right; two in the top left; and eight in the bottom left.

The quantity and placement of these circles do not quite match those of the standard *Luoshu* diagram, even if we allow that clusters of circles might be arranged in a single row rather than stacked. The top row of circles in the *Tansūqnāma* might initially suggest that the diagram has been translated into a visual mirror image, but this does not work for either the bottom row, in which the quantities of circles appear in the same rather than the opposite sides, or for the center row, in which the standard *Luoshu* has five circles in the middle that are entirely missing in the *Tansūqnāma* version. Also, none of the circles in the *Tansūqnāma* version of the diagram are filled in, whereas in the standard *Luoshu* diagram, some are and others not. Though none of these differences causes any confusion in identifying the *Luoshu* as

the visual source for the *Tansūqnāma* diagram, the differences are nonetheless significant, as they disconnect the diagram from its significance in Chinese cosmology.

Scholarly and popular discussions of the *Luoshu* diagram alike agree that it is traditionally associated with a legend that circulated in medieval Chinese commentaries on ancient writings. According to this story, the diagram appeared on the shell of a tortoise that emerged from the Luo River in the time of either the legendary Huangdi (the Yellow Emperor) or the mythical King Yu. The appearance of the *Luoshu* diagram on the tortoise's shell is usually associated with the emergence of the *Hetu* on a dragon horse that came out of the Yellow River.<sup>58</sup>

Crucially for its subsequent significance in Chinese cosmology, the ancients who studied the *Luoshu* on the tortoise discovered it to be a mathematical magic square. That is, if one divides the diagram into a 3 x 3 grid, counts the dots in each of the nine resulting areas, and adds them up in any direction, along the horizontals, the verticals, or the diagonals, one gets 15 as follows:

|   |   |   |
|---|---|---|
| 4 | 9 | 2 |
| 3 | 5 | 7 |
| 8 | 1 | 6 |

The magic square has various implications, both mathematical and cosmological. It demonstrates the concept of the mathematical mean, since five, the mean of the numbers one through nine, must be in the middle for the square to work. This is the simplest of the ways in which the diagram may be linked to the five phases. It also depends on the balance between the odd and even numbers, indicated by consistent convention in white and black circles, which also refer to *yin* (even) and *yang* (odd). In Chinese cosmology, the magic square therefore further alludes to the balance between *yin* and *yang*. Thus, in giving the diagram, the river imparted awareness of addition and subtraction, mathematical means, and odd and even numbers; it thereby also conveyed the principles of two of the fundamental pillars of Chinese cosmology: the five phases and *yin* and *yang*.<sup>59</sup>

The version in the *Tansūqnāma*, though obviously based on a *Luoshu* graphic, either obfuscates or misses the magic square and the distinction between odd and even; it also fails to include the crucial (and literally central) number five. In other words, it misses the essential mathematical and cosmological properties of the diagram.

On the next page of the *Tansūqnāma*, we find an arrangement of circles that shares the peculiarities of the previous diagram but has different words and glosses (fig. 7, left page). The appearance of the two versions on facing pages invites comparison.<sup>60</sup> The most striking difference between the two is that in the second version, rather than the phrase *hū tū shū*, eight transcribed Chinese words appear in the middle of the page. They are written in red and accompanied by Persian glosses in black. These words are the proper names of the eight Chinese trigrams. In the *Tansūqnāma*, the standard graphic presentation of the trigrams does not appear until later in the book (fig. 19, right page),<sup>61</sup> but before discussing the second of the two peculiar versions of the *Luoshu* in the *Tansūqnāma*, it is useful to explain what trigrams are and why they are significant in this context.

Trigrams are so-called because each is a unit consisting of three parallel lines, either solid, representing *yang*, or broken, representing *yin*. Eight combinations of three solid or broken lines are possible. The eight trigrams are conventionally arranged in a circle according to two standard configurations, one associated with the *Luoshu*, the other with the *Hetu*.<sup>62</sup> In either arrangement, the circular motif of the trigrams puts the systems of correspondences central to Chinese cosmological thought into visual form. When the circle of trigrams does appear in the *Tansūqnāma* (fig. 19), the relative positions of the trigrams follow the organization associated with the *Hetu*, which is known as the Wen Wang. The presentation of the eight trigrams in the *Tansūqnāma* may be compared to the Wen Wang arrangement as it appears in a Ming imprint (fig. 8).<sup>63</sup> The main difference is that in the traditional Wen Wang presentation, as seen in the Ming imprint, the circle is aligned so that the vertical and horizontal axes of the page are marked by particular trigrams. By contrast, in the *Tansūqnāma* presentation, the circle is

rotated counterclockwise about 22 degrees, so that it is the spaces between the trigrams, rather than the trigrams themselves, that fall on the vertical and horizontal axes. The dark and light sections in the center of the *Tansūqnāma* rendering formally follow a convention for representing *yin* and *yang* within the trigrams;<sup>64</sup> this is also found in Li Jiong's *Bashi yi nanjing*.

Each of the eight possible combinations of solid or broken lines has a proper name, as well as an associated nature, sometimes called an image, which is occasionally used in translations instead of the proper name. Thus, the trigram consisting of a broken line between two solid lines (top in fig. 8) is named "*Lǐ*"; the nature of the trigram *Li* is fire, and in some English translations of Chinese texts, this trigram is simply called "Fire."<sup>65</sup> Further, each trigram signals a set of correspondences between variables including the five phases, the seasons, and parts of the body, as well as colors, family members, *yin* and *yang*, and numbers. For example, *Kun*, whose nature is earth, is represented by three broken lines (upper right in fig. 8). It refers to an association between earth, autumn, and spleen. It is also sometimes associated with beige, mother, mountain, *yin*, and/or the number two. Each trigram should be understood not as the equivalent of any single term but as a reference to the entire group of corresponding terms.

With this in mind, it is interesting to return to the second (i.e., the left) of the two facing versions of the *Luoshu* diagram in the *Tansūqnāma* (fig. 7), in which the proper names of the trigrams, but not the trigrams themselves, appear. Here, the circles at the edges of the page are accompanied by glosses referring to clusters of correspondences. For example, by the seven circles near the right of the page, we read "west, fall, lung, gold" (*maghrib kharīf riḥ dhahab*). In the middle, the transcribed Chinese proper names of the trigrams appear in two columns, with five on the left, and three on the right.

The two columns seem to reflect a distinction in what the team felt had to be accomplished by way of translation in the accompanying Persian gloss. While some names of trigrams are the same as the names of the phases with which they are associated, others are not. Trigram names can therefore present one of two possible scenarios for the translator, and the two columns appear to reflect these two different possibilities.

Although the right to left nature of the script invites readers to start with the right column, I will begin with the left one because it represents the simpler case. The five trigrams listed on the left have natures that are one and the same with the phases with which they are associated; they are glossed by a single word that indicates both simultaneously. Thus, starting at the top of the list, the trigram *Kan*, transcribed "*kān*" in red, is accompanied by the black gloss "*āb*" (water). *Li*, here "*lǐ*," is glossed "*ātish*" (fire), while *Zhen*, here written "*tchin*," is glossed "*chūb*" (wood). *Dui*, here "*dūk*," is associated with metal, and is glossed "*zar*" (gold). The last of the trigrams listed on the left is *Kun*, here "*kun*," glossed "*khāk*" (earth). As there are only five phases but eight trigrams, the natures of the other three trigrams do not correspond to the phases. These three are listed in the right column, with longer Persian glosses that indicate the nature and the phase separately. The nature of the first, *Qian*, here "*kīn*," is heaven, and its phase is metal; it is glossed "*āsmān wa zar*" (heaven and gold). The nature of the second, *Gen*, is mountain, and its phase is earth; it is transcribed "*kun*"—the same as the transcription for the trigram *Kun* at the bottom of the left column, but the one in the middle right is identifiable as *Gen* because of the Persian gloss, "*khāk bar kūh*," which means "earth on mountain." Finally, the nature of *Xun*, here "*sūn*," is wind, and its phase is wood; it is glossed "*chūb, hawā*" (wood, wind).

These transcribed trigram names and accompanying glosses were clearly done with great care, but they sit in the middle of a peculiar rendering of the *Luoshu* diagram that does not present a mathematical magic square. Further, they are completely dissociated from the graphic of the trigrams themselves, and lack even the kind of rudimentary explanation I have given above. In other words, despite the obvious care that went into rendering them, the trigram names and glosses assume so much prior knowledge that it is difficult to imagine how they could have been accessible to a reader in fourteenth-century Tabriz. In China, it went without saying that such things as trigrams existed and had names, natures, and associations. But the fact that people in China accepted these concepts was hardly common knowledge in fourteenth-century Tabriz.



On one level, then, the *Tansūqnāma* seems to be precisely the book that introduces trigrams to medieval Iran; but on another level, it lacks the kind of explanation that could have made that introduction even minimally effective. One really wonders how puzzled the scribe Muhammad b. Ahmad b. Mahmud might have been as he penned the phonetic transcription, or whether the translator providing the gloss wished he knew more about why he was translating those particular words. The inconsistency of the syntax in what we might call the compound glosses in the right column—if “earth on mountain,” then why not also “gold on heaven” and “wood on wind”?—suggests a lack of conviction about the relationship between the two terms in each case. Even if, despite the lack of a magic square, the members of the *Tansūqnāma* team engaged in enlightening and clarifying conversations about this diagram, few indeed would have been privy to what was discussed.

The *Tansūqnāma* does not explain how the names of the trigrams that appear in the middle of the *Luoshu* diagram are connected to the diagram as a whole. Such an explanation would have been illuminating for the manuscript’s audience in fourteenth-century Tabriz, because they would not have known that in classical Chinese thought the trigrams were understood to be an implicit part of the mathematical mysteries of the *Luoshu* diagram.<sup>66</sup> From the point of view of Chinese scholarly culture, the derivation of the trigrams from the *Luoshu* was essential, because the trigrams, in expressing systems of correspondence, convey the complexity of fluctuating relations between microcosm and macrocosm, governor and governed, body and environment.

But in the medieval Islamic milieu, it is difficult to imagine how the close link between the trigrams and the *Luoshu* could have been palatable. The idea that systems of correspondence underlay the organization of the cosmos would have been familiar. Such systems, though different in how they mapped relations between clusters of associated materials, planets, directions, and so forth, were well established in Islamic Neoplatonism. But the idea that a dragon horse and a tortoise emerged from ancient rivers to display diagrams that allowed the discovery of great and timeless mysteries? The whole legend must have sounded squeamishly close to blasphemy.

It could have been heard as coming dangerously close to suggesting that, according to the Chinese, diagrams emerged from rivers as divine revelations.

The problem would not have been the idea of a revelation other than the Koran so much as the claim of a revelation that did not fit the Islamic model of what one was and how it should be revealed. Any revelation that did not conform to that model cast doubt on monotheism, and such doubt was the ultimate blasphemy. Then, as now, Muslims accepted that there were revelations before the Koran, which is positioned in Islam as the final revelation that superseded the earlier ones to the Jews and the Christians. But according to the Islamic model, divine revelations were books, not diagrams; they were delivered through the mouths of prophets, not on the backs of animals; and most importantly, they came from the one and only God worshipped by all the recognized “peoples of the book,” not from rivers.

We need to take this into account when we consider what conclusions we might draw from the mathematical mistakes in the *Tansūqnāma* version of the *Luoshu*. On the one hand, the diagram itself has been visually translated in a manner that renders it mathematically wrong. But on the other hand, there is much evidence that the members of the team paid careful attention to their sources. Much of the information that the *Luoshu* was thought to contain in Chinese cosmology, including the Chinese system of correspondences, the names of the trigrams through which those correspondences can be discussed, and even (later in the manuscript) the arrangement of the trigrams, is carefully preserved in both verbal and visual aspects of the translation. How can this apparent discrepancy be explained?

Perhaps the *Tansūqnāma* team tried to render any possibility of interpreting the *Luoshu* diagram as a revelation of mysteries impossible, while still preserving what emerged from that diagram, i.e., the system of trigrams. But since the *Luoshu* and the *Hetu* diagrams were identified as the ultimate basis of the trigrams in Chinese thought, this would have been a contradictory aim. If the *Luoshu* was not actually a magic square, the whole system of trigrams lacked a solid foundation. Sabotaging the *Luoshu* diagram, while preserving the trigrams, would not have been just a matter of resolving, as the idiom goes, not to throw the baby out with

the bathwater. It would have been more like resolving to throw out the bathtub, while keeping the water.

Whether by mistake or by design, the *Tansūqnāma* versions of some of the most important diagrams of Chinese cosmology undermined the system upon which the rest of the knowledge purportedly made accessible in this book was based—without offering an alternative system.

*Bodily images: Organs, standing figures, wrists, head, and limbs*

All of the *Tansūqnāma* images of bodies or parts of bodies appear in the second chapter of the main text, which is devoted to the interior organs (*a'zā'i andarūn*). The first six of the fifteen subchapters treat the interior organs in detail. This knowledge functions as a prerequisite for a general understanding of how the different parts of the body, interior and exterior, are cosmologically related to each other, subjects developed in the subsequent subchapters.

Seven images of organs appear in the first six subchapters. The first two appear on facing pages, and each shows the mass of organs between the trachea and the rectum, as viewed from, respectively, the front and back, with the leaf-like forms at the top representing the lungs; they are accompanied by an introductory discussion of the bodily organs in general (fig. 9).<sup>67</sup> In the third image, which appears in the subchapter on the heart, one can discern the pulmonary system, with the aorta near the top, a kidney near the bottom left, and the small intestine at the bottom (fig. 10).<sup>68</sup> Other images accompanying similar subchapters show the diaphragm, with channels above and below (fig. 11),<sup>69</sup> the stomach and spleen (fig. 12),<sup>70</sup> and the large intestine (fig. 13).<sup>71</sup> The last image of the group shows the intestines, the right kidney, and the bladder (fig. 14).<sup>72</sup> In the third, fourth, and seventh images (figs. 10, 11, and 14), the spinal column appears on the left.

All these images are startling because, without a framing outline of the general contours of the exterior human form with head, torso, and limbs, the organs appear to have been removed from the body. Indeed, they are historically linked to instances of dissection in China, and this is the aspect that has attracted the most attention in the modern world.<sup>73</sup>

The visual separation of the organs from the body's exterior outline may also have been important to how the *Tansūqnāma* was understood in fourteenth-century Tabriz, but not unambiguously so. A visual interpretation emphasizing the separation of the organs from the body is at odds with the salient point of the chapter within the framework of Chinese medicine, which would have mattered to at least some members of the *Tansūqnāma* team. That point was to detail the relations between these organs and the rest of the body. With this in mind, it becomes clear that it is also possible to interpret the images of the organs in a manner that emphasizes the relations between them. The *Tansūqnāma* versions of these images were more open to such interpretations than an initial glance might suggest. But at the same time, they were also more open to alternate interpretations than were their probable Chinese sources.

In order to better understand the ambiguous position of the *Tansūqnāma* images of the organs within that larger project of relating them to the body as a whole, it is helpful to start by reviewing some basic points about these organs in Chinese medicine, which are paradigmatically termed *zang fu* organs. *Zang* and *fu*, literally “depots” and “palaces,” are, first and foremost, classifications. *Zang* organs include the liver, heart, spleen, lungs, and kidneys, as well as, in some sources, the pericardium, which surrounds the heart. *Fu* organs include the stomach, gall bladder, small intestines, large intestines, and bladder, and sometimes also the “triple burner”—the only organ of Chinese medicine that cannot be identified with an anatomically recognized physical organ. The classification of the organs into these two groups is based on the roles they play with respect to *qi*, which is understood to move through the body through various channels, establishing important relationships between the organs. The *fu* organs are hollow: when *qi* passes into them, they decontaminate it, eliminating impurities. The *zang* organs, which are solid, retain *qi*. In addition to being a classification system, then, the concept of *zang fu* organs charts relationships among the various organs, both to one another and to the rest of the body.<sup>74</sup>

One indicator of the primacy of the total system in defining the individual organs is that each one is said

to correspond to a political office: the roles of officials within the body politic parallel the roles of the organs within the human body. Paul Unschuld has further argued that when the *zang fu* organs became established in Chinese medicine under the Qin (221–206 B.C.), the political economic system became not just an explanatory rhetorical device, but established the template for conceptualizing the body. He suggests that it was precisely because smelters and saltworks played a central role in the political economy of Qin China that there *had* to be a corresponding organ—the triple burner—even if that organ could not be physically observed.<sup>75</sup>

Within the *Tansūqnāma*, the images that most clearly convey the relationships between the organs are the two at the beginning of the second chapter, which show the mass of interior organs together (fig. 9). But the subsequent images can also be viewed as expressing the same point. Interestingly, although the organs are removed from the external outlines of the body, it would be inaccurate to characterize any of them as completely isolated from the rest of it. With the exception of the diaphragm, all the other organs are shown in groups. And in the image of the diaphragm, the diaphragm muscle appears almost as a stage for the three tubes that rise prominently above it (fig. 11).

At the same time, the differences between the *Tansūqnāma* images and their Chinese counterparts (exemplified by figs. 15–18) show that connections between the organs and the rest of the body receive comparatively less emphasis in the *Tansūqnāma*. Two aspects of the images of organs in the book set them apart from the corresponding images found in Chinese imprints in general. First, the *Tansūqnāma* images of organs have no captions. By contrast, the captions are integral parts of the *tu* preserved in the Ming imprints of the texts that include them.<sup>76</sup> This calls to mind Chia's observation that Yuan and Ming editions of earlier Song medical texts, even when updated, tended to preserve the pairing of images and captions as part of the same *tu*.<sup>77</sup> Second, the complete cycle of images that belong together in the book is conceived differently in the *Tansūqnāma* than in the available comparanda from Ming China.

To take up the second point first, the *Tansūqnāma* team excluded images of organs framed within an exterior outline of the human form. In the Ming editions, however, the images of organs like those in the *Tansūqnāma* were generally introduced by a representation of a torso and head that contained the *zang fu* organs (fig. 18).<sup>78</sup> Such images are sometimes called “the interior landscape.” They made it quite clear that the *zang fu* organs were to be seen as parts within the whole. By contrast, the images that are included in the *Tansūqnāma* version of the cycle are specifically those in which the organs seem to have been excised from the body. Located apart from any external outlines of the corporeal form, these are the images that are more easily viewed outside of the paradigmatic structure of the *zang fu* system.

The lack of captions in the *Tansūqnāma* images of the *zang fu* organs has the same effect. Based on readings of these captions by my research assistant Catherine Stuer, the ones in the Ming imprints are of two types: some are labels, and others explain directional movement. For example, figure 16 includes a central label identifying the heart, as well as captions for the various channels emerging from it, indicating the direction of the flow of *qi*. The two captions to the upper right of the heart indicate movement upward towards the lungs and the throat, while the pair to the upper left indicate movement downward towards such organs as the stomach and the liver. It is important to note that although the *qi* channels in this image are related to the circulatory system, the two are not synonymous. *Qi* channels are defined not so much by the physical structures themselves, as by the connections between different parts of the body subjectively experienced by many patients over time.<sup>79</sup>

The captions in the Chinese *tu*, then, function to reinforce the connection between the images of organs and the *zang fu* system. With these captions lacking in the *Tansūqnāma*, the connection between the images and the *zang fu* system is much less clear. It is as if the *Tansūqnāma* team were trying to pick and choose, perhaps making careful copies of what could easily be seen as anatomical records of how organs look, but leaving out the captions that place them securely within the conceptual framework of the *zang fu* system. The

viewer is left with much more freedom to interpret the *Tansūqnāma* organ images as depictions of anatomical structures, rather than as representations of nodes in an interconnected system.

The selective diagonal gloss translations in the *Tansūqnāma* of words from some Chinese poetic passages but not from others also reveal an attempt to extract information on specific organs that might fit it into a Galenic model of medicine, rather than an effort to engage with the Chinese medical conception of how the organs work together in a system. This point will be further explained below, in the section entitled “The Look of the Text.”

A similar ambiguity appears in the manner in which the *zang fu* system is treated in the *Tansūqnāma* text, which does indeed try to explain *zang* and *fu*, rendered as *shāng* or *jāng*, and *fū* or *shū*. It even attempts to describe the organs within the *zang fu* framework, though with palpable hesitancy. For example, it is noted that “the Chinese sages have given the liver a *zang fu* name, that is, the Minister of Finance, according to a figure of speech, since the nourishment for all of the organs comes from the liver.”<sup>80</sup> Compare this with the following statement from the *Huangdi neijing* (Inner Canon of Huangdi): “The liver is the general; planning and deliberation have their origin there.”<sup>81</sup> The significance of the comparison lies as much in the tone as in the content: the *Tansūqnāma* text offers an elaborate circumlocution, whereas the Inner Canon of Huangdi offers an uncluttered assertion.

The seventh, eighth, and ninth subchapters build on this somewhat tentative foundation to explain how the human body relates to the larger cosmic system. The circulatory system is compared to the orbits of heavenly bodies and to the movements of earthly bodies of water; the timing of breath is related to the timing of day and night. A series of circular diagrams, possibly unfinished, accompanies these comparisons.

The tenth subchapter is unusual within the context of the manuscript in that it is almost entirely visual. Its six images (figs. 19–21) link the earlier subchapters with subsequent ones. The first two echo the circular diagrams of the preceding subchapter, and the rest introduce the image types of wrists and full bodies that also appear in the eleventh, twelfth, and thirteenth

subchapters. Just as the images of organs are not framed by the outline of the body, the pictures of full bodies do not include indications of specific organs.

The first image in the tenth subchapter is the diagram of the trigrams explained in the discussion of cosmological diagrams above (fig. 19, right). This is followed on the facing page by a closely related diagram of twelve of the sixty-four possible hexagrams, which are composed of pairs of trigrams (fig. 19, left). The trigrams diagram is introduced by a transcribed Chinese phrase that is not glossed, and by Persian text which reads, “The appearance of the first and the last; increase and decrease; heat and cold.” The only other text in the chapter is the phrase “the explanation of *yin* and *yang*,” which introduces the fifth image (fig. 21, right). The detailed table of contents for the main text also suggests that *yin* and *yang* are important themes of the subchapter as a whole, describing it as “the explanation of *yin* and *yang* (*yim yānk*), remedies for them, and their manifestations in the body and the hands, in the places of good pulse (*nabz*).”<sup>82</sup>

The third image in the tenth subchapter (fig. 20, right) is one of three in the manuscript related by type and proximity, the other two being the fifth image of the tenth subchapter (fig. 21, right) and the first image of the eleventh subchapter (fig. 22, right). All three depict a human figure wearing a short skirt, standing straight with arms extended to the sides, and marked by a clearly demarcated narrow band running vertically down the center. There is no text above the first picture, but the image at the start of the eleventh subchapter is introduced by a transcribed Chinese passage, which begins with *yin* and *yang* (*yim yānk*). Occurring on folios 77b, 78b, and 79b, the three standing figures appear in direct succession as one turns the manuscript pages. All three are positioned across from the images of hands and wrists found on folios 78a, 79a, and 80a. (In the 1972 facsimile, the printed pages are bound in a manner that reverses the a and b sides of the folios in this section,<sup>83</sup> but in the manuscript the three successive pairs of images on facing pages actually have standing figures on the right [i.e., the “b” sides of the folios], and hands on the left [i.e., the “a” sides].) The same pairing is also found in the Ming imprint of Li Jiong’s text (fig. 23). Additional images of wrists appear without stand-



ing figures in the twelfth and thirteenth subchapters of the *Tansūqnāma*,<sup>84</sup> and in subsequent pages of Li Jiong's text (fig. 26).

All three sets of standing figures paired with hands and wrists in the *Tansūqnāma* (figs. 20–22) clearly follow several Chinese conventions evident in figures 23 and 26. The posture of each standing figure is defined by a vertical bar that, with its clearly indicated demarcations, resembles a bar graph. Anchored vertically along the axis of the bar, each figure faces straight ahead, the inner legs apparently held tight together under the bar graph and terminating in feet turned out about 45 degrees. Arms extending straight down the sides of the body, ending with wrists turned distinctively outwards to open the palms away from the hips, delimit the outer bounds of these images. The outlines of the *Tansūqnāma* bodies are notably more plump and less contoured than in the example in the Ming imprint, but without being certain of the stylistic relationship of the Ming image to its early Yuan-period source, it is difficult to conclude much from this difference. In the case of the hands, the similarities can be found not only in the position of the hand and wrist, but also in the manner in which they are rendered. The lower arm and hand rise vertically from the bottom of the page, the inner wrist faces the viewer, and the thumb is slightly opened and the fingers loosely extended to reveal the inside of the palm. Nested, curved lines indicate the nails, the inner joints of the digits, and the folds of the palm. Bars like those found on the bodies here extend along the vertical axis of each wrist. In all, the conventions that these images follow clearly signal their close relationship to Chinese traditions of medical imagery, and separate them from other known depictions of Islamic art.

Yet, as in the case of both the cosmological diagrams and the images of organs considered earlier, the *Tansūqnāma* renderings of the full bodies and wrists differ from their Chinese counterparts in ways that obscure the cosmographic paradigms upon which their medical relevance depends. To see this, it is useful to begin by considering figure 23, which is the first pairing of body and wrist in the Ming imprint of Li Jiong's text. There, both the standing body and the wrist are clearly situated within the system of trigrams.

In the *Tansūqnāma*, the first of the standing bodies paired with wrists, shown in figure 20, may appear in a photograph to be superimposed onto a fading arrangement of hexagrams; and it appears even more that way in the 1972 facsimile edition. However, this is not the case. In fact, the red ink has bled through the paper from the previous page on the other side of the folio (fig. 19). In fact, none of the figures in the sequence are visually located within the trigrams arrangement (figs. 20–22). Likewise, none of the hands and wrists are clearly oriented within the arrangement of trigrams. The wrist implicitly below the hand in figure 20, like that in figure 23, is covered with a circle containing a vertical bar graph and thin, red, horizontal lines bent at the ends. However, in figure 23, this circle is surrounded by text and by the full Wen Wang arrangement of the trigrams. In figure 20, only three of the eight trigrams appear, and though the two on the top are situated according to the Wen Wang arrangement, the one on the bottom is not.

In the Chinese medical tradition, however, the situation of the body and wrists within the framework of the trigrams is critical. This is evident in Paul Unschuld's discussion of the diagnosis of the condition of the inner organs from the appearance and feel of the wrists, as presented in the Chinese classic *Baishiyi nanjing*. Unschuld begins his discussion by explaining the system of Five Phases, which details the organs that are most susceptible to harm from external forces. For example, "cold and lung are associated with the phase of metal; hence cold will always harm the lung first."<sup>85</sup> He then continues the explanation with a pair of diagrams: as here, the first of these shows the full body, facing forward, and the second represents the wrists.<sup>86</sup> He then lays out the implications of how the interior *zang fu* organs are simultaneously mapped onto the body and onto the system of correspondences theorized in *yin, yang*, and the five phases. "The fact that the body has an upper half (*yang*) and a lower half (*yin*), a left side (*yang*) and a right side (*yin*), as well as the location of the lung (top), heart (next to top), spleen (center), liver (next to bottom), and kidneys (bottom), should be reflected in the movement of the influences [*qi*] through the conduit circuit at any given location."<sup>87</sup> For example, according to one system, the health of the lung and heart manifests in the *yang* near the surface of the wrist, the health of

the spleen a bit deeper, and the health of the liver and kidneys in the *yin* even deeper down, near the bone.<sup>88</sup> Thus, by checking the movement of *qi* at the wrists, the practitioner should be able to diagnose which organs are the source of illness, and which others may be adversely affected by them. But in order to correctly interpret what he feels at the wrist, the practitioner must be able to understand where it fits within the system of correspondences. It therefore makes perfect sense that the trigrams surround both the full body and the wrist in figure 23. The trigrams, after all, encapsulate the Five Phases systems of correspondence, according to which the health of the *zang fu* organs can be ascertained by external indications. The Ming imprint of Li Jiong's text includes one additional paired set of a full standing figure of this type, immediately followed by a wrist: the figure is surrounded by all eight trigrams and the wrist by the four trigrams that mark the top, bottom, left, and right coordinates of the Wen Wang arrangement.

Interestingly, the second of the human figures in the sequence of forward facing figures paired with wrists in the *Tansūqnāma* (fig. 21) is the closest to the Chinese figure shown in figure 23. The similarities are evident in the delineation of the chest, the thickness of the sash of the cloth around the waist, and the demarcation of dark and light areas of the bar defining the vertical axis of the body. But if these details of form clearly suggest that the *Tansūqnāma* team paid close attention to their Chinese sources, and thus make the manuscript look convincingly authentic, they do nothing to explain Chinese medicine to the viewer. In figure 21, the only text on the page is, ironically, the word "explanation" (*sharh*) at the upper right-hand corner of the image. While this may mean that this picture is supposed to explain the previous one, or the chapter as a whole, or what trigrams and hexagrams have to do with medicine, the image itself is hardly self-explanatory to an audience lacking the prerequisite knowledge.

Because the trigrams and the hexagrams appear immediately before the sequence of paired sets of standing figures and wrists, they might be said to introduce these paired sets codicologically. But given a complete lack of either verbal or visual explanation as to how the former are supposed to relate to the latter, they cannot be said to introduce them conceptually. The peculiar

alignment of the full arrangement of the trigrams in the *Tansūqnāma* (fig. 19), in which the vertical and horizontal axes intersect with spaces between the trigrams, rather than with the trigrams specifically associated with those directions, makes it even harder to conceptually superimpose the system onto the vertically mapped body.

The first image of the fourteenth subchapter is a head (fig. 24).<sup>89</sup> Whereas there is a marked consistency in the captions that accompany the Ming imprints of the organs, heads similar to the *Tansūqnāma* head appear within a variety of Chinese medical texts. Wide foreheads below hairlines indicated by short vertical black lines are surmounted by lotus-like crowns. The eyes, nose, cheeks, and pronounced lips on the faces are framed by strong eyebrows, square jaws, and long narrow ears. Images of this type can be found in conjunction with discussions of topics in Chinese medicine ranging from the relationship between the microcosm of the body and the macrocosm of the universe, to an art of diagnosing the complexion by examining its colors and expressions called *se* diagnosis. Shigehisa Kuriyama has explained that "colors" in this case were understood as much in terms of vibrancy and glow as in terms of hues.<sup>90</sup> Several examples of these faces, whose different diagnostically pertinent zones are identified with captions, appear in the early Ming-period treatise *Shenxiang quanbian* (Complete Compilation on the Wondrous Art of Physiognomy) (e.g., fig. 25).<sup>91</sup>

The *Tansūqnāma* image appears in the fourteenth subchapter, which concerns the twelve veins or arteries (*'irq*), their names, and their classification as warm, cold, or moderate. The depiction of the head falls at the point in the text that discusses how the six warm veins flow from the head and neck to the extremities. Because the face is presented without captions delineating specific zones, its appearance in this chapter calls attention to the general connection between the head and the circulation system.

This review of the cosmological and bodily images in the *Tansūqnāma* has shown that to describe these pictures as having an ambiguous relationship with the text would be too simple. At a more fundamental level, these images appear in the context of indefinite relationships between text, image, medical tradition, and underly-

ing paradigms for conceptualizing the body, the cosmos, and the connection between the two. Although we do not have direct access to the *Tansūqnāma* team's Chinese sources, later Ming imprints of the likely Yuan materials do provide a good sense of the tradition to which their source images belonged. They also point to how images from an earlier period of the same tradition likely functioned within Chinese medicine and cosmology. The comparison with the Ming imprints reveals both that the *Tansūqnāma* team clearly put considerable effort into making sure that the images in the manuscript were faithful to their Chinese sources and that at the same time the relevance of Chinese cosmology to the *Tansūqnāma* images was visually obscured. The nature of the obfuscation eludes description in constructive terms. In and of themselves, these images do not explain Chinese medical traditions, confront them directly, or transform them into an alternative model that made more sense in the Islamic cultural sphere.

It seems therefore most likely that for the majority of viewers—whether in subsequent generations or in early fourteenth-century Tabriz—the primary effect of the images in this section was that they marked the book as an authentic record of Chinese medical knowledge. What the images would have effectively conveyed to that audience, then, was not an understanding of Chinese medicine, but proof of privileged access to authentic Chinese sources.

#### THE LOOK OF THE TEXT

The transcribed Chinese text considered thus far has consisted of terms or proper names. However, the later chapters of the book also include several transcribed poetic passages. These first appear in the untitled text between the third and the sixth chapters, and continue through the twelfth and last chapter. Their basic layout suggests that the *Tansūqnāma* team heard the poetic rhythm of these passages in terms of the *bayt* (verse) system of Arabic and Persian poetry, wherein each *bayt* has a first and a second part. The shortest of the poetic passages, therefore, are written along a single line, with a space between the two parts. If a given verse was too long to be written in this way, it was arranged along two lines of text, with the part analogous to the first half of

the *bayt* starting at the right-justified edge of the page and the part analogous to the second half written on the subsequent line, with a slight indent. In longer poetic sections, the pattern is repeated as necessary (fig. 27).

The transcribed Chinese poetic passages are interesting in two respects. First, they offer us a glimpse of the process of verbal translation and in so doing they help us to better envision the range of levels of access to knowledge of Chinese medicine among the members of the *Tansūqnāma* team. The lines of poetry thereby lend support to the assumption of the previous section that the images may have been seen differently by different individuals of the team, thus revealing which topics within the *Tansūqnāma* were considered worth pursuing in more detail in fourteenth-century Tabriz. Second, the distinctive layout of the most fully translated of these passages resonates with that of cross-lingual Korans from the same period. They therefore raise interesting questions about the status of the Chinese text.

The appearance of these passages suggests that the Persian text was written in black first, with space left for the transcribed Chinese lines. The evidence for this comes from the few folios in chapters nine and ten in which transcribed Chinese passages seem to be missing altogether (fig. 28). Next, the transcribed Chinese lines were added in red. Many of them do not seem to have received further attention after the transcribed Chinese was added (fig. 29). Last, in some cases, Persian explanatory glosses were inserted in a small black hand, written on the diagonal under the corresponding transcriptions (fig. 27).

From this we can see which chapters and passages attracted the most interest. These tended to be the passages on topics that resonated with the framework of medical knowledge as it was already established in Islamic medicine. Specifically, most such passages were either on the external manifestation of the pulse or on the organs. Even the specific understandings of what parts of the text pertained to those topics seem to have been viewed through the prism of Islamic rather than Chinese medicine. For example, the eye is not classified as a *zang fu* organ in the Chinese system and is therefore not discussed along with the *zang fu* organs in the *Tansūqnāma*. However, the eye was an organ that had long attracted attention in the study of Islamic medicine, and so some Chinese poetic passages concerning

the eye are glossed even though they occur in chapters that were largely left otherwise unglossed. The sections of text between the third and the sixth chapters, as well as chapter six, deal with blood and organs, and with the external places where the pulse manifests. Almost all the poetic passages in these chapters are glossed. Chapters seven through nine treat different qualitative categories of the pulse. Apart from a few poetic sections at the start of the ninth chapter, the other poetic passages in these chapters are not glossed. Chapter ten and the first part of chapter eleven generally treat the diagnosis of fatal disease, and are not glossed,<sup>92</sup> except for specific sections dealing with the locations for feeling different pulses,<sup>93</sup> or with the eye.<sup>94</sup> The twelfth chapter addresses pregnancy, the fetus, and nursing, and is glossed sporadically. Looking through which Chinese poetic passages are glossed and which are not, this reader imagines Rashid al-Din quickly flipping through the manuscript after the poetic passages had been added and identifying the places where he wanted more detailed information. Of course, this scenario can neither be proven nor disproven.

The layouts of the transcribed Chinese poetic passages that are glossed with Persian translations are also interesting because they specifically evoke the cross-lingual interpretations of the Koran that were produced in this period (fig. 30).<sup>95</sup> I refer to them as cross-lingual Korans rather than as translations because the revealed Arabic Koran is considered an untranslatable text. The lines in the original language appear in large letters on the horizontal, while the gloss in the target language is written on the diagonal in smaller letters of a contrasting color.

While one would not want to push the comparison too far, the use of this layout in the *Tansūqnāma* does visually emphasize that something about the Chinese poetic passages retained in transcription was considered untranslatable. To figure out what that something was, it is important to note that the Chinese text of the *Tansūqnāma* has been altered in a manner that the Arabic text of the Koran has not. In a cross-lingual Koran, the Arabic remains written in Arabic. In the *Tansūqnāma*, the Chinese characters have been removed, and replaced with a phonetic transcription.

The transcription of the Chinese into the Arabic alphabet preserves (albeit imperfectly) the specific

sounds of the Chinese language. In the case of the poetic passages, it retains the sound of poetry, which, for Chinese students, served a mnemonic purpose, making it easier for them to remember the Chinese medical texts. But what purpose did it serve for a medieval Islamic audience?

The spoken word, orally conveyed, was generally held in great esteem in medieval Islamic culture. The legal primacy of oral testimony over written evidence is one clear index of this as a general social principle. In the specific world of book learning, the official process by which texts were supposed to be taught also testifies to the importance of the spoken word. Theoretically, a text was not supposed to be copied but rather taken down as a dictation; it was subsequently supposed to be read back to check for accuracy. All of this suggests that, as with the images, the look and format of the transcribed Chinese text became a way to convey the authenticity of the knowledge in the *Tansūqnāma*.

## CONCLUSION

The *Tansūqnāma* may have been a failure on some level, but if so, what a gloriously bold failure! This is its paradox. Its survival testifies not only to Rashid al-Din's audacious sense of possibility, and the capacity and gusto for learning of the handpicked experts whom he assigned to it, but also to the inherent difficulty of their project. In one sense, that difficulty arose from the degree to which medieval Islamic medical theory was rooted in Galenic traditions and Chinese medicine was not. But in another, more general sense, it arose from the fact that the visual nature of medical imagery did not by any means imply that it was a universal language; on the contrary, it was only understandable through deeply rooted paradigms of ultimately cosmological thought.

The great achievement, and the great failing, of the *Tansūqnāma* seem to have been one and the same. When Rashid al-Din's team encountered something that was anathema in a medieval Islamic milieu, or even simply inaccessible, it refrained from radically reinventing it. Instead, the team obscured the difficulty, whether deliberately or by mistake. If the goal was to avoid misrepresenting the original sources, the fact that more familiar alternatives were generally not interpolated



into the translation was an achievement. But if the aim was to make Chinese medical knowledge and imagery accessible in a new milieu, the same choice was a failure. For the sake of the latter goal, the problem with the visual translation (and with what little I have been able to learn about the verbal translation) was not that it departed from the Chinese originals too much. Rather, it seems to have been that it departed from them too little. In other words, if we can say with confidence that the *Tansūqnāma* team visually translated the images from the cosmological paradigms that provided the theoretical underpinnings of Chinese medicine, it is not at all clear that it translated them *into* any alternative cosmological or medical models that would have been more familiar to its new target audience in a medieval Islamic milieu.

As a gloriously bold failure, the *Tansūqnāma* complicates the model of an open fourteenth-century Pax Mongolica, in which images across the Mongol Empire easily combined. On the one hand, there is no other context in which we can imagine this manuscript having been made in the first place. Any one of the images in this manuscript, unequivocally evoking Chinese visual traditions, rendered with a pen, and paired with text in the Persian script, visually expresses with instant clarity exactly what was so remarkable about this period. But, on the other hand, the same images show just as clearly

that the fact of encounter is not the same as the fact of exchange. The manuscript was produced not because Chinese culture was exotic but because Rashid al-Din wanted to enrich Islamic culture with centuries of Chinese learning. Even so, and even in its highly specialized original milieu among a handpicked team in early fourteenth-century Tabriz, the images probably functioned more as markers of authenticity than as vehicles of cosmological and medical knowledge. So did the look of the text.

Ultimately, the manuscript leaves us with a vivid sense of ambitious aims and formidable odds. Centuries later, the *Tansūqnāma* compels an exercise of historical imagination: a polymath vizier, a Chinese doctor, a Persian doctor, a translator, a scribe, and possibly an artist, gather in fourteenth-century Tabriz. They do not fully understand the words of one another's languages, the visual conventions of one another's images, or the foundational paradigms of one another's medical traditions—and yet they strive over long years to combine their ultimately incompatible knowledge. Together, they work at the precise limits of artistic exchange in fourteenth-century Tabriz.

*Department of Art History,  
The University of Chicago*

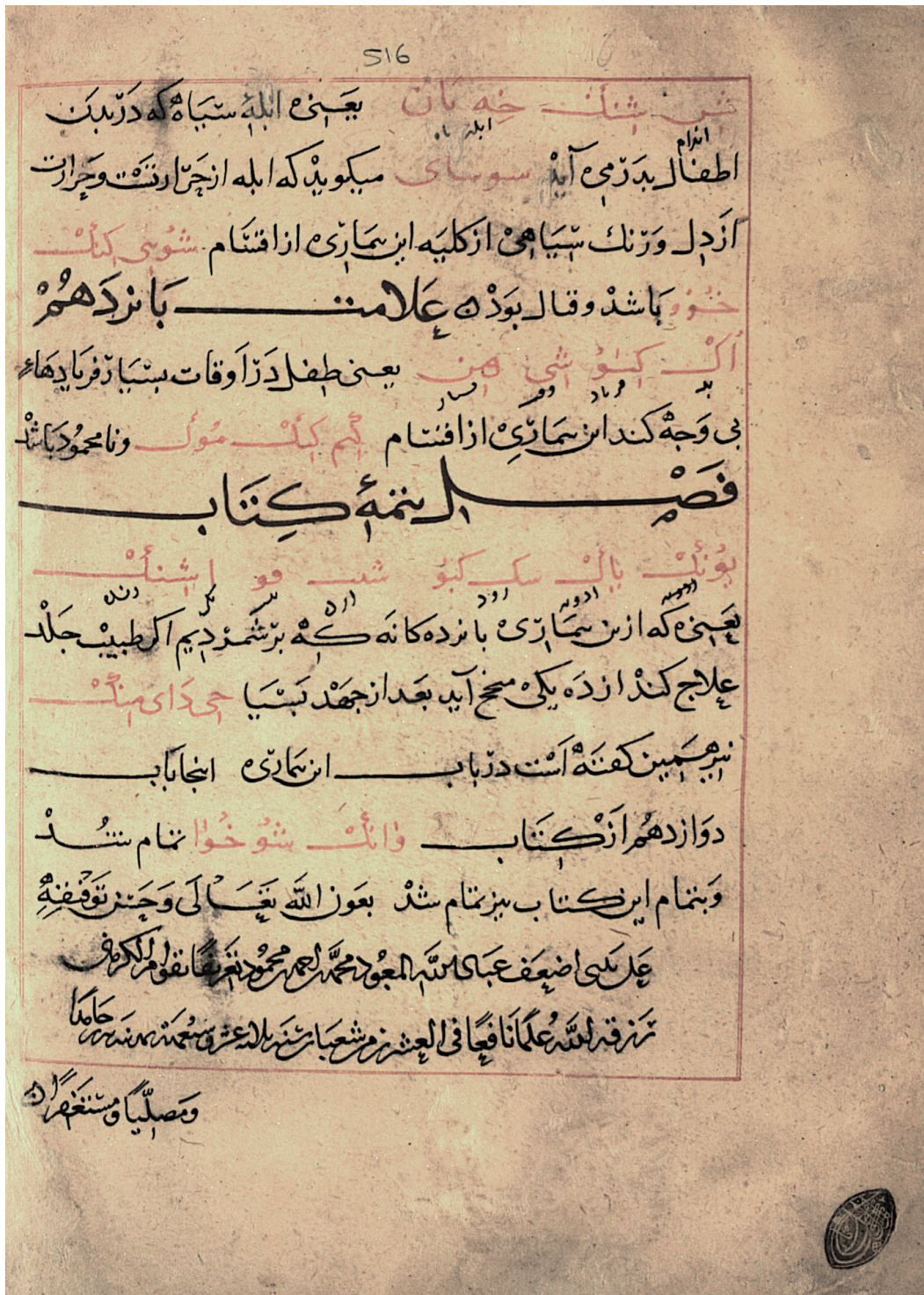


Fig. 1. Colophon. Rashid al-Din, *Tansūqnāma-i İlkhān dar funūn-i ‘ulūm-i Khatā’i* (Treasure Book of the Ilkhans on the Branches of the Chinese Sciences), Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fol. 261b (full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)





Fig. 2. Illuminated roundel. Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i ‘ulūm-i Khatā’i*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fol. 1a (full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)



Fig. 3. Illuminated roundel. Rashid al-Din, *Jāmi‘ al-tawārikh* (Compendium of Chronicles), Tabriz, 1314–15. London, The Nasser D. Khalili Collection of Islamic Art, Ms. 727, fol. 259a (43.5 x 30 cm). (Photo: courtesy of the Khalili Family Trust)

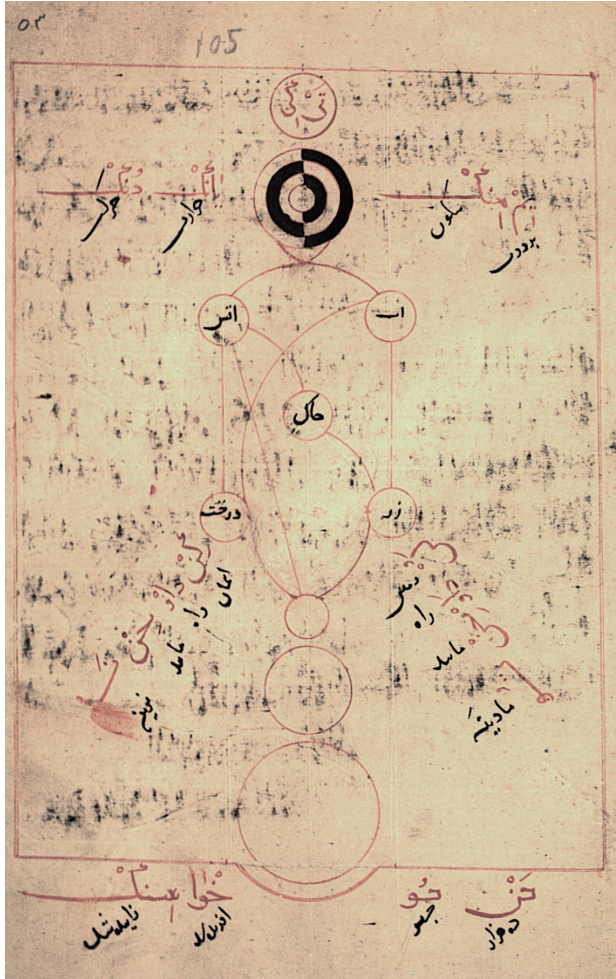


Fig. 4. The “Taygi” Diagram. Rashid al-Din, *Tansuqnāma-i Ilkhān dar funūn-i ‘ulūm-i Khatā’i*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fol. 53a (full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)

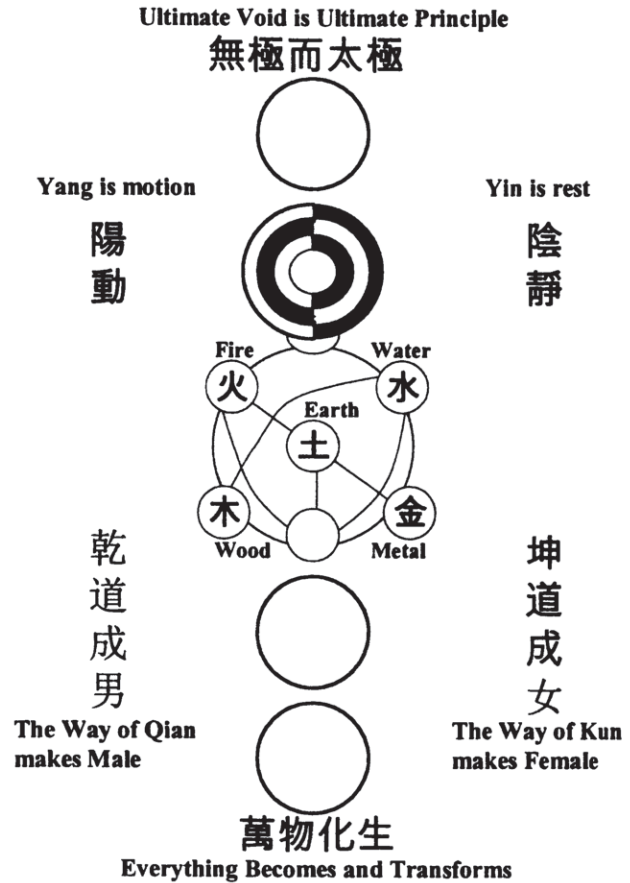


Fig. 5. Modern rendering of the *Taiji* diagram. (After Robin Wang, “Zhou Dunyi’s Diagram of the Supreme Ultimate Explained (‘Taijitu shuo’): A Construction of Confucian Metaphysics,” *Journal of the History of Ideas* 66, 3 [Jul., 2005]: 310; reprinted with permission of the author and the University of Pennsylvania Press)



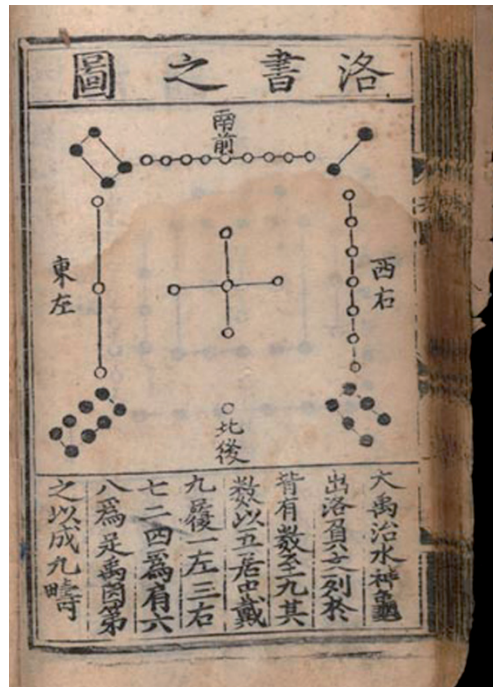


Fig. 6. The *Luoshu* diagram. *Tianyuan fawei* (Astronomical Phenomena), compiled by Bao Yunlong in the thirteenth century, Ming-dynasty edition, 1457–63. Washington, D.C. The Library of Congress, Chinese Rare Book Collection, Asian Division 79.1. (Photo: courtesy of The Library of Congress)



Fig. 7. Two facing renderings of “*hū tū shū*,” the right one identified as such. Rashid al-Din, *Tansūqnāma-i Ilkhān dar funūn-i ‘ulūm-i Khata’i*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fols. 54b–55a (each full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)





Fig. 8. The eight trigrams according to the Wen Wang arrangement. Zhang Huang, *Tushu bain* (Compendium of Diagrams) (China, 1613), vol. 11, p. 39 (26.3 x 15.5 cm). The University of Chicago Library, East Asian Collection. (Photo: courtesy of the East Asian Collection, the University of Chicago Library)



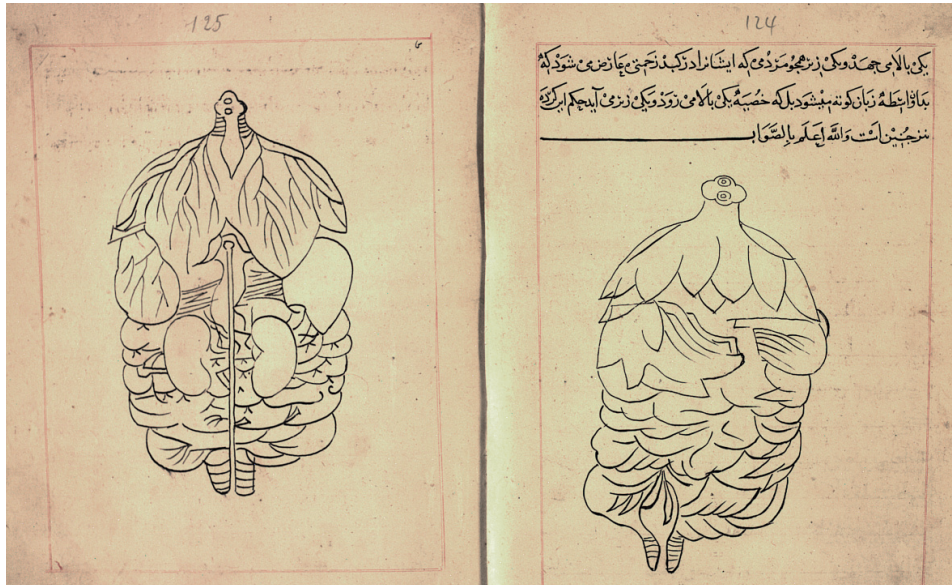


Fig. 9. The inner organs. Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khatā'i*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fols. 63b–64a (each full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)

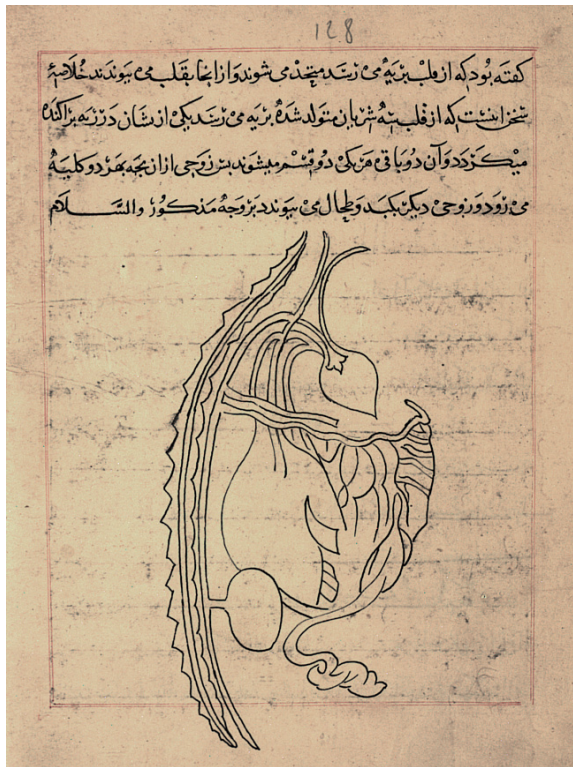


Fig. 10. The heart. Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khatā'i*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fol. 65b (full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)

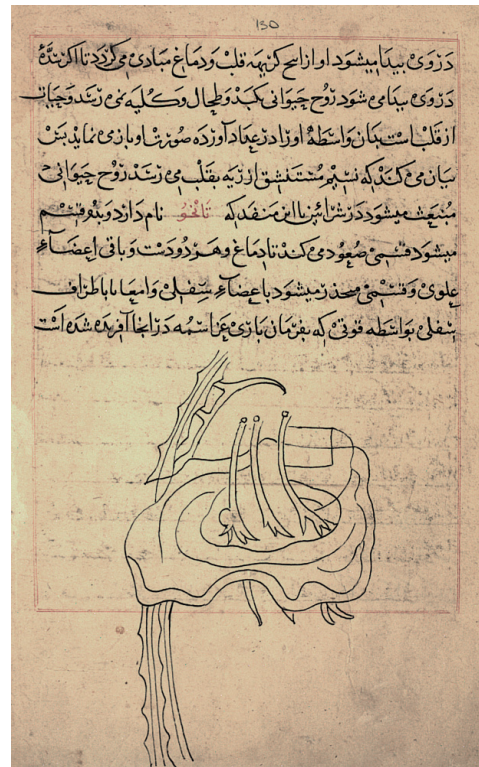


Fig. 11. The diaphragm. Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khatā'i*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fol. 66b (full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)



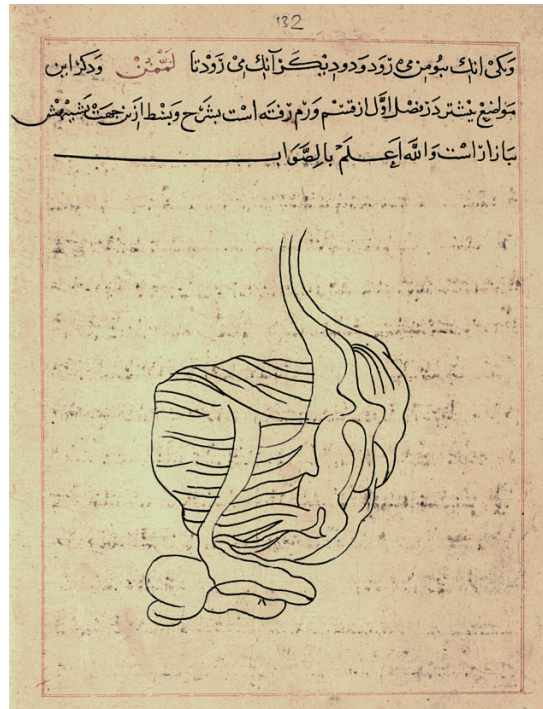


Fig. 12. The stomach and the spleen. Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khatā'ī*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fol. 67b (full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)

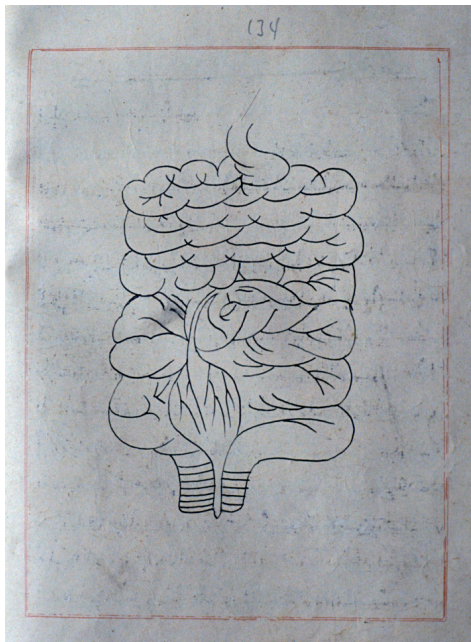


Fig. 13. The large intestine. Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khatā'ī*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fol. 68b (full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)

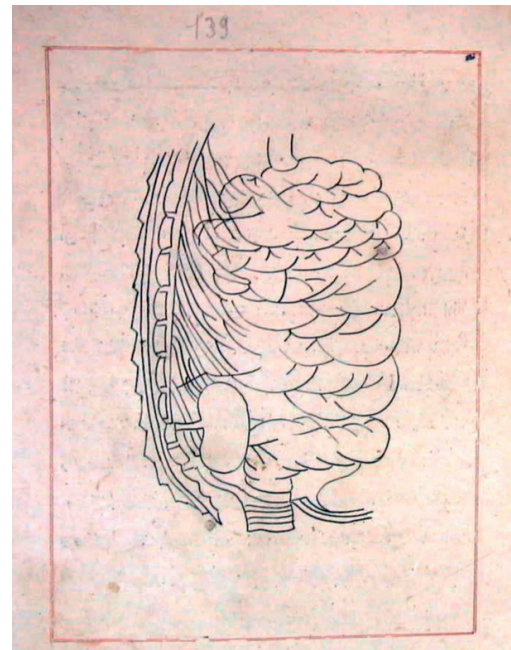


Fig. 14. The intestines, the right kidney, and the bladder. Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khatā'ī*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fol. 71a (full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)



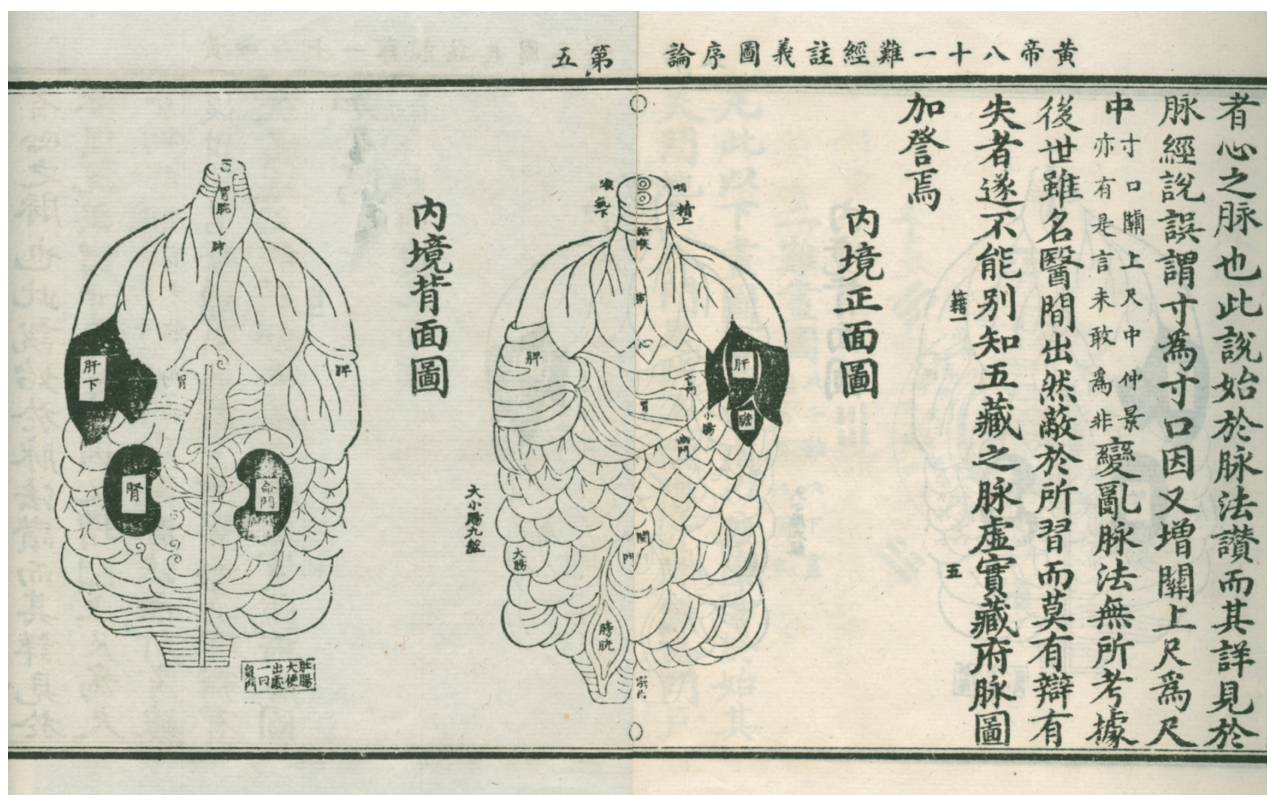


Fig. 15. The inner organs. Li Jiong, *Bashi yi nanjing* (Canon of Eighty-One Problems), preserved in the Ming edition of the Taoist Canon, which was published in facsimile as *Dao zang: Wu si ba wu juan* (The Taoist Canon: 5485 Volumes) (Shanghai: Shangwu yinshuguan, 1924–26), vols. 668–70.

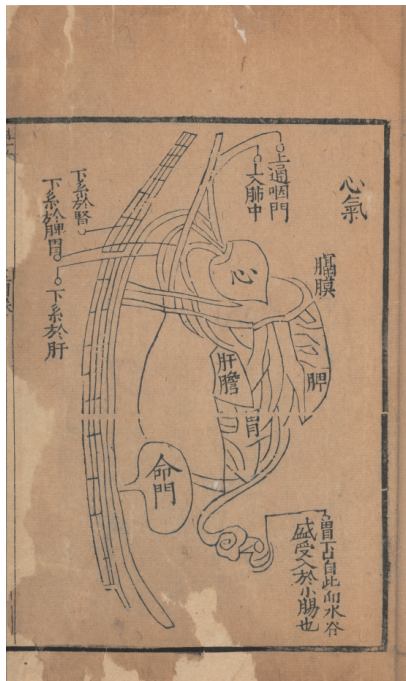


Fig. 16. The heart. From the text known as *Hua Tuo Neizhao jing* (Canon of the Inner Reflection by Hua Tuo), as preserved in the *Yangsheng jilan* (Collected Readings of Cultivating Life), China, Ming dynasty, 1513–1620 (14.1 x 23.5 cm). (Photo: courtesy of the Harvard-Yenching Library, Harvard University)



Fig. 17. The diaphragm. From the text known as *Hua Tuo Neizhao jing*, as preserved in the *Yangsheng jilan*, China, Ming dynasty, 1513–1620 (14.1 x 23.5 cm). (Photo: courtesy of the Harvard-Yenching Library, Harvard University)



Fig. 18. The interior organs in the body. From the text known as *Hua Tuo Neizhao jing*, as preserved in the *Yangsheng jilan*, China, Ming dynasty, 1513–1620 (14.1 x 23.5 cm). (Photo: courtesy of the Harvard-Yenching Library, Harvard University)



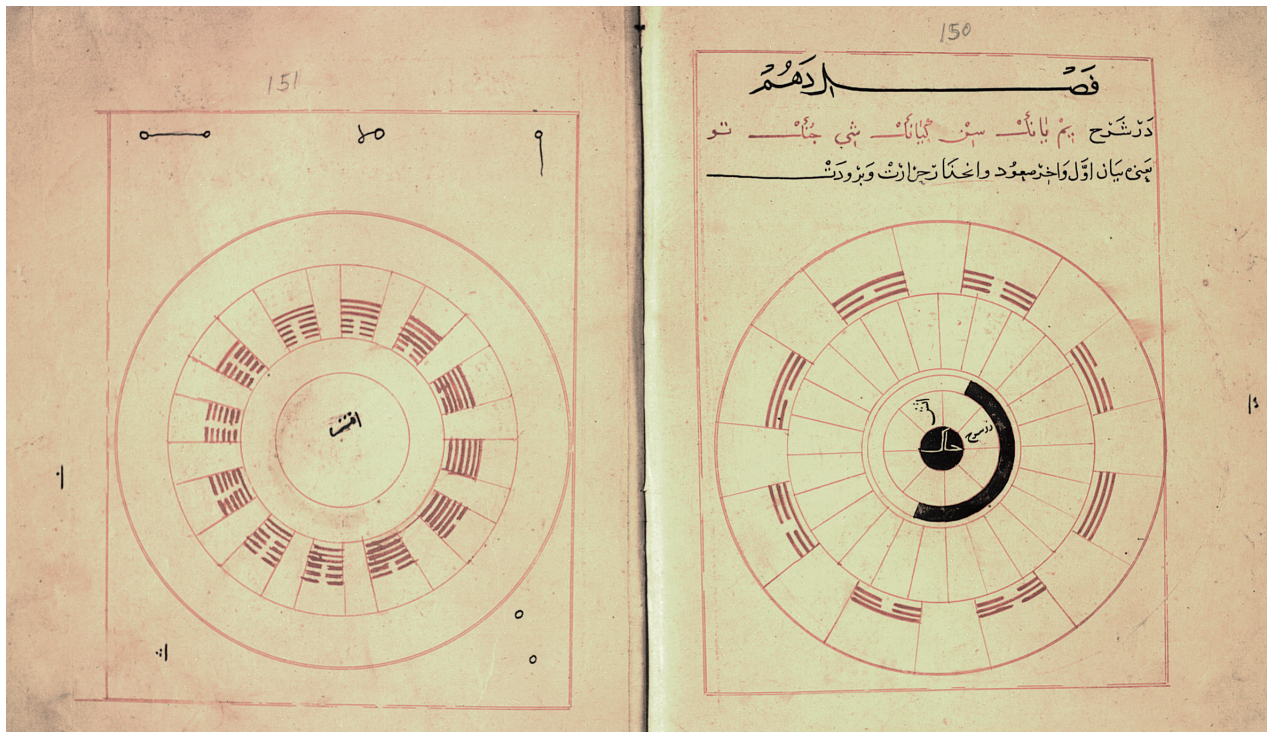


Fig. 19. The eight trigrams (right), and twelve hexagrams (left). Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khātā'i*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fols. 76b–77a (each full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)



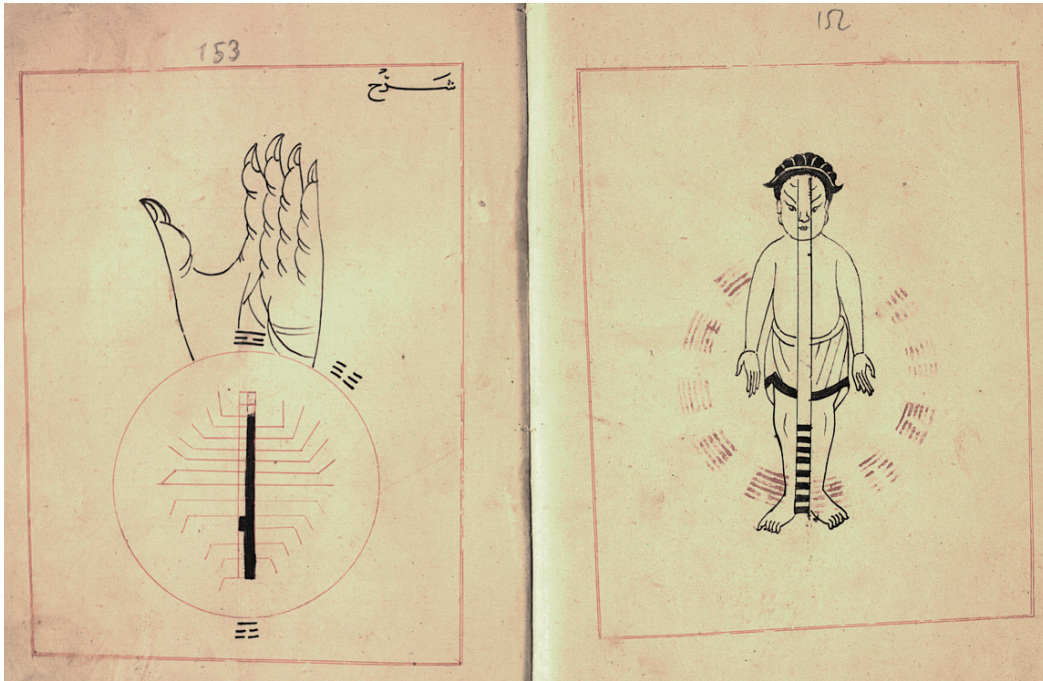


Fig. 20. Human figure (right) and wrist (left). Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khatā'ī*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fols. 77b–78a (each full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)

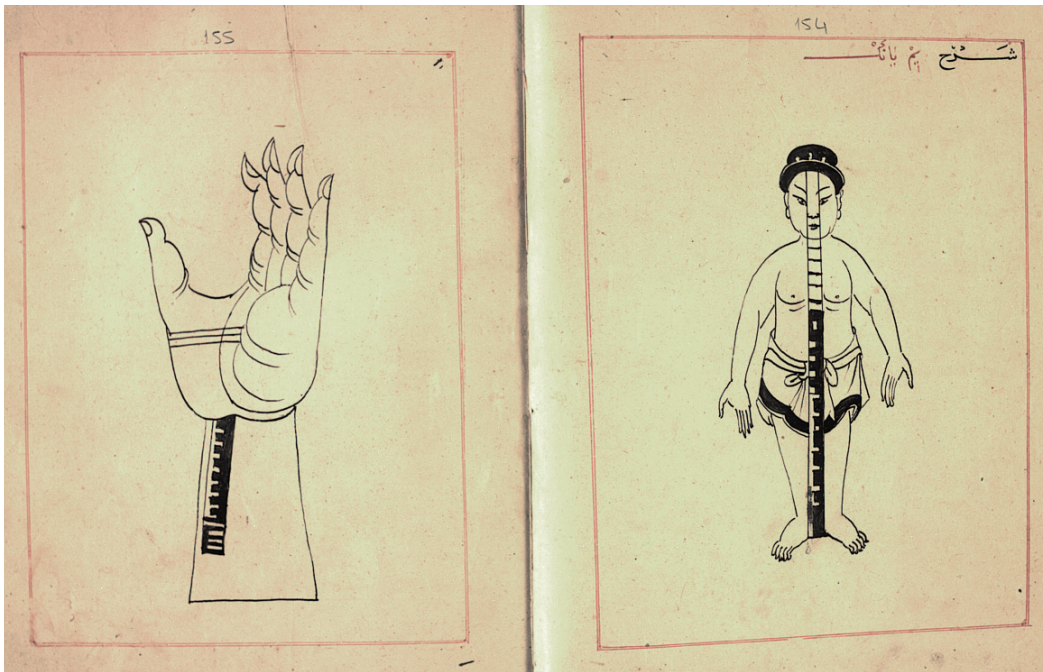


Fig. 21. Human figure (right) and wrist (left). Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khatā'ī*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fols. 78b–79a (each full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)





Fig. 22. Human figure (right) and wrists (left). Rashid al-Din, *Tansūqnāma-i Ilkhān dar funūn-i 'ulūm-i Khatā'i*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fols. 79b–80a (each full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)

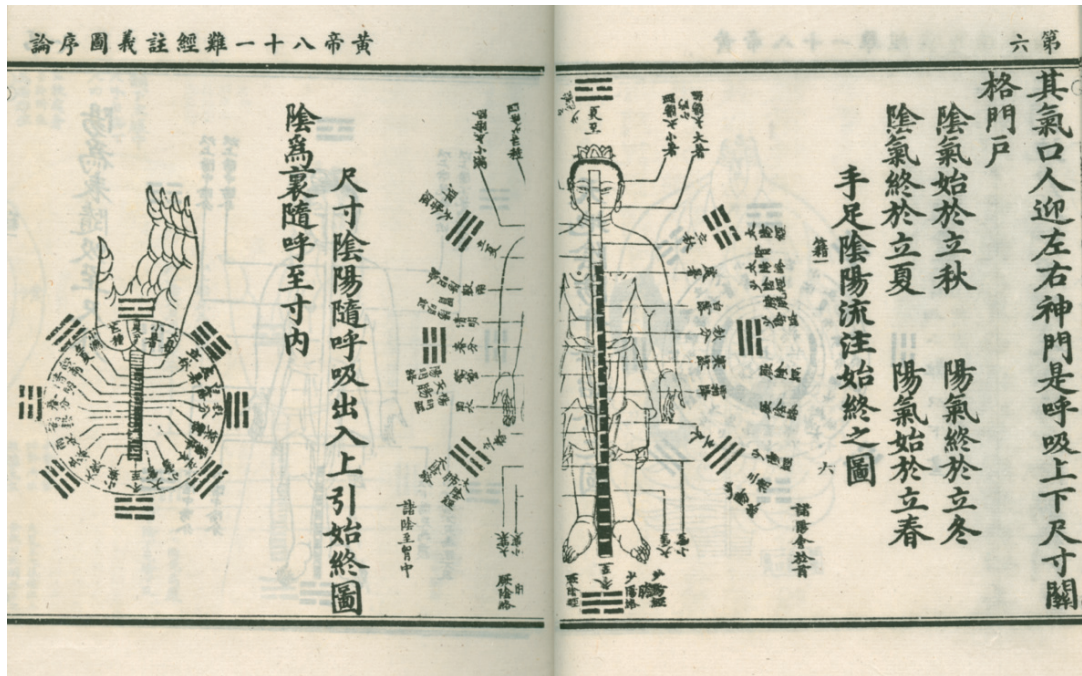


Fig. 23. Human figure (right) and wrist (left). Li Jiong, *Bashi yi nanjing*, preserved in the Ming edition of the Taoist Canon, which was published in facsimile as *Dao zang: Wu si ba wu juan* (Shanghai: Shangwu yinshuguan, 1924–26), vols. 668–70.





Fig. 24. The head. Rashid al-Dīn, *Tansūqnāma-i Ilkhān dar funūn-i 'ulūm-i Khātā'i*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fol. 83a (full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)



Fig. 25. Identification of specific areas of the face for physiognomy. From *Shenxiang quanbian* (Complete Compilation on the Wondrous Art of Physiognomy), first compiled by Yuan Zhongche (d. 1458), which is now preserved in a Ming edition in the National Central Library in Taipei, Taiwan. Parts of the Ming edition, including this image, are reproduced in the physiognomy section of the encyclopedia *Gujin tushu jicheng* (Complete Collection of Illustrations and Writings Old and New). This image is reproduced from the edition of that encyclopedia printed in Shanghai by the Gujin tushu jicheng Press in 1884. The image is found in volume 632, or in the fourth facsimile in case 171 of the 1884 encyclopedia.



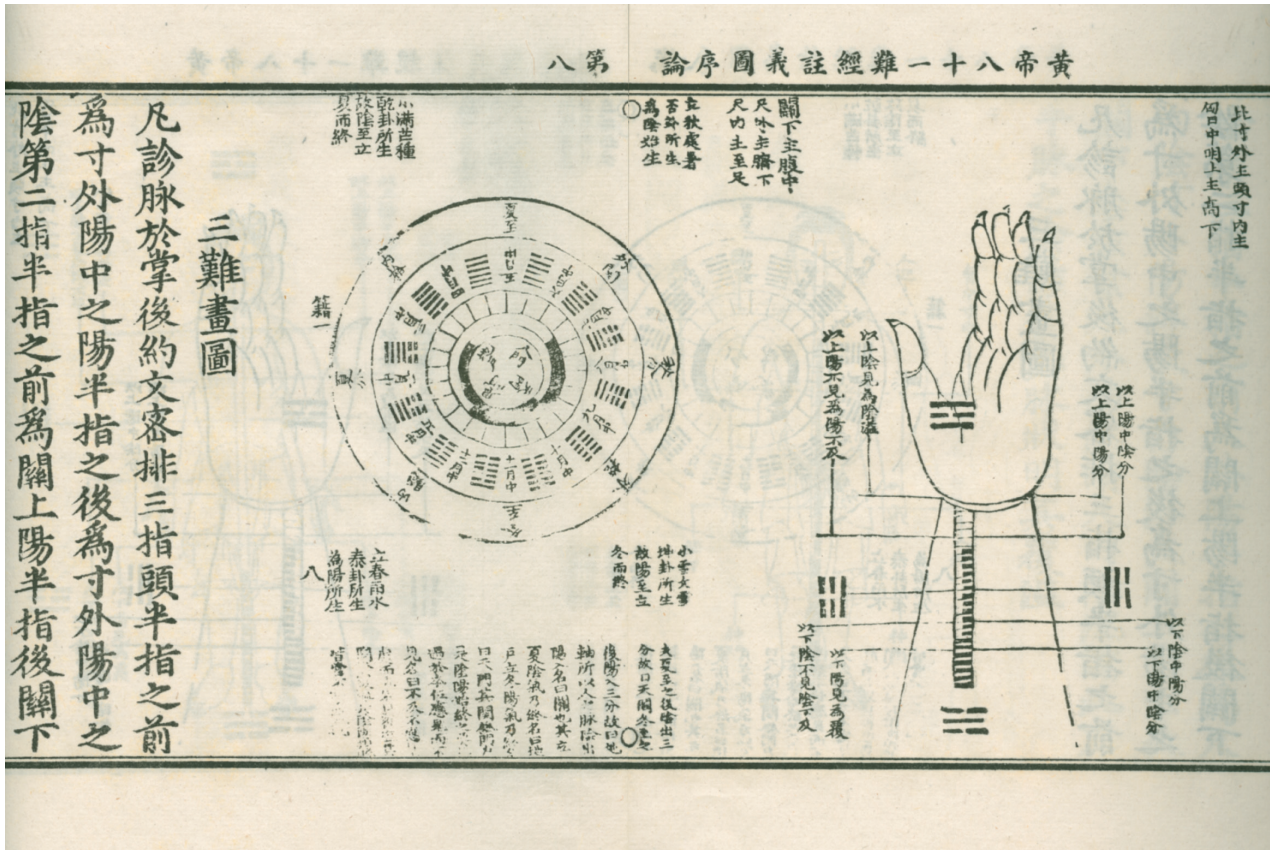


Fig. 26. Wrist with trigrams, shown next to hexagrams. Li Jiong, *Bashi yi nanjing*, preserved in the Ming edition of the Taoist Canon, which was published in print as *Dao zang: Wu si ba wu juan* (Shanghai: Shangwu yinshuguan, 1924–26), vols. 668–70.



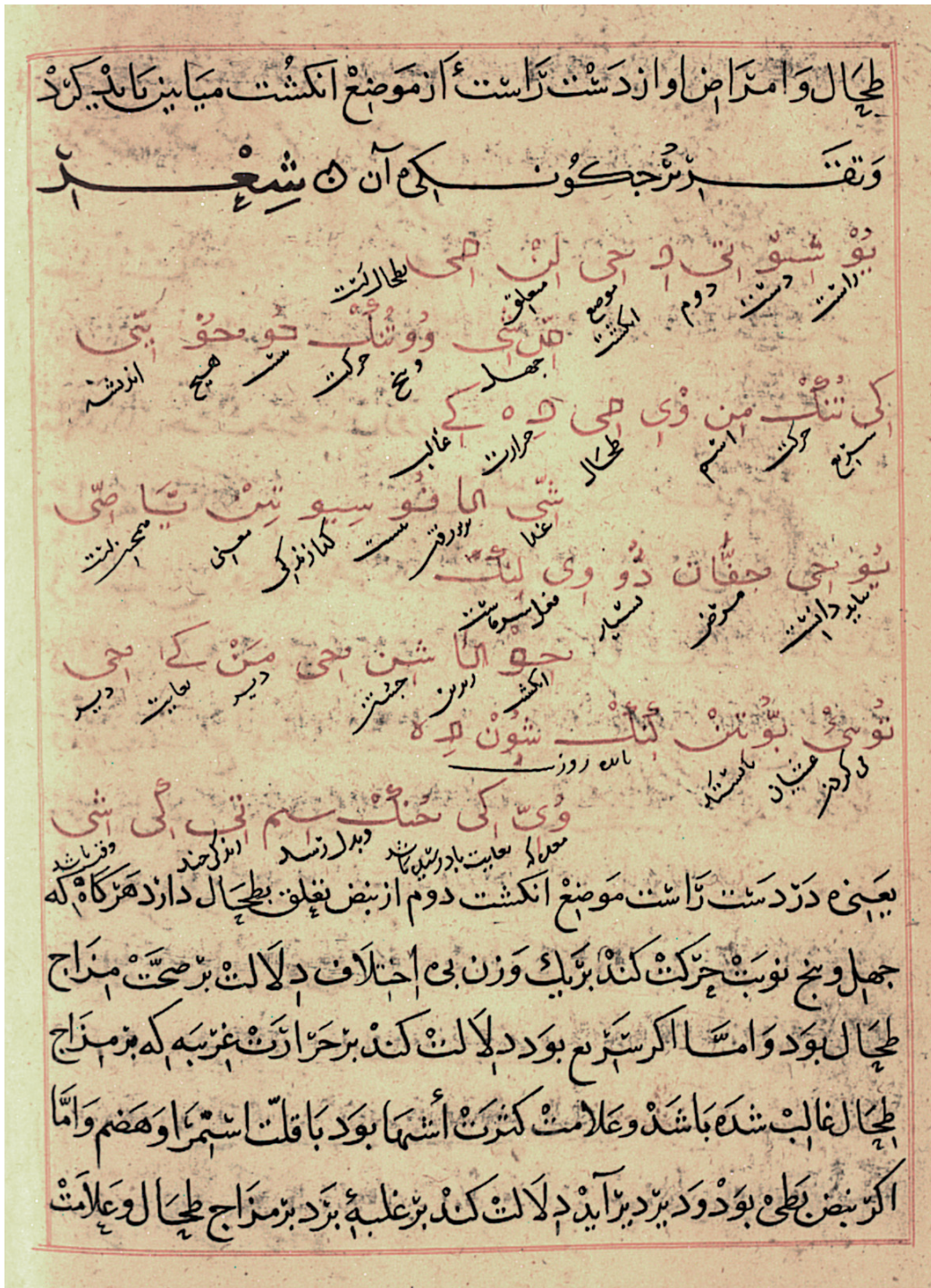


Fig. 27. Chinese poetry transcribed in paired lines, with specific terms translated into Persian, and written diagonally below. Rashid al-Din, *Tansūqnāma-i Īlhān dar funūn-i ‘ulūm-i Khatā’i*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fol. 146b (full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)



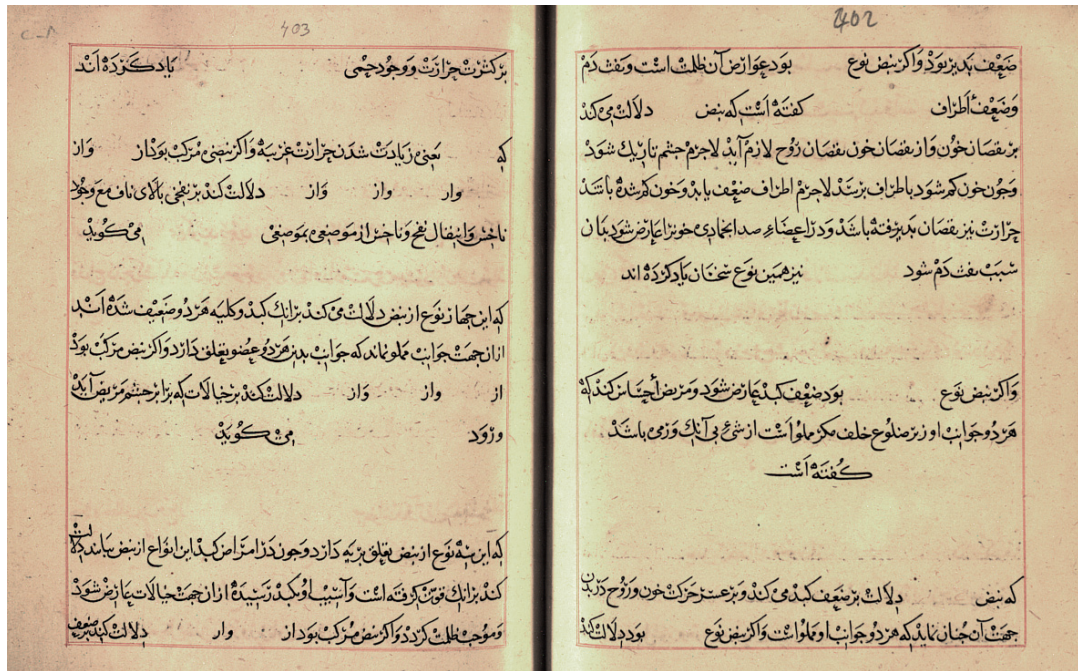


Fig. 28. Unfinished blank passages for transcription of Chinese poetry. Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khatā'ī*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fols. 204b–205a (each full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)

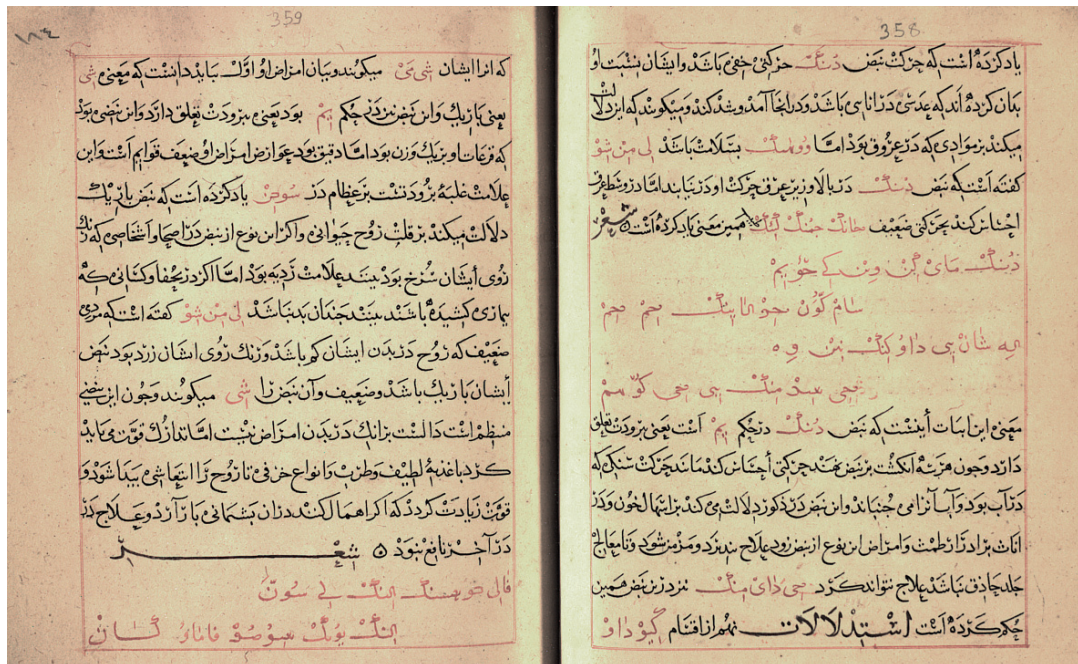


Fig. 29. Chinese poetic passages left unglossed. Rashid al-Din, *Tansūqnāma-i Īlkhān dar funūn-i 'ulūm-i Khatā'ī*, Tabriz, 1313. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596, fols. 182b–183a (each full folio 34.2 x 26.4 cm; written area 22.3 x 16.4 cm). (Photo: courtesy of the Süleymaniye Library)





Fig. 30. The cross-lingual Koran of Fars Malik Khatun, Shiraz, 1336–57. London, The Nasser D. Khalili Collection of Islamic Art, Ms. QUR 182, fol. 19b (42.6 x 31 cm). (Photo: courtesy of the Khalili Family Trust)



## NOTES

*Author's note.* For graciously facilitating research in the collections under their care, I would particularly like to thank Emir Eş, Director of the Süleymaniye Library; Nahla Nassar, Curator and Registrar of the Nasser D. Khalili Collection of Islamic Art; Mi Chu, Head of Scholarly Services, Asian Division, Library of Congress; and Raymond Lum, Librarian for Western Languages, Harvard-Yenching Library, Harvard University. Robin Wang generously provided me with her original rendering of fig. 5. Thanks are also due to Megan Macken, Amanda Rybin, and Sinem Eryılmaz.

This article would not have been possible without the help of several individuals who shared their expertise. I am grateful for the help of Catherine Stuer and Katherine Alexander, my research assistants for this project, and for useful comments from Yuming He and Quincy Ngan. Yuan Zhou, Curator of the East Asian Studies Collection at the University of Chicago's Regenstein Library, and Xiao-he Ma, Librarian for the Chinese Collection at the Harvard-Yenching Library, helped me to navigate the collections in their care, and, along with Eizaburo Okuizimi, Subject Specialist in Japanese at the Regenstein Library, kindly shared their knowledge with me. I am particularly grateful to Vivienne Lo, a historian of Chinese medicine, now at the Wellcome Trust Centre of University College London, who has also been working on this manuscript. She did a close reading of an earlier draft of this article, and generously shared her knowledge in her very helpful comments.

Unless noted, all transliterations from Persian are my own.

1. Istanbul, Süleymaniye Library, Ms. Aya Sofya 3596. A black and white facsimile edition was published in 1972: Rashid al-Din Tabib, *Tanksuqnāmah: Yā tibb-i ahl-i Khitā*, ed. Mujtabā Minuvī (Tehran: Intishārāt-i Dānishkada-yi Adabiyāt va 'Ulūm-i Insānī, 1350 [1972]).
2. Ms. Aya Sofya 3596, fol. 261b; Rashid al-Din Tabib, *Tanksuqnāmah*, 519. All folio numbers given in this article reflect the current order of folios in the manuscript. In some previous studies, scholars identified the folios according to reconstructed sequences, which attempted to account for the two or three folios that seem to be missing. See *Tanksuknamei İlhan der Fünunu Ulūmu Hatai Mukaddimesi*, ed. A. Süheyl Ünver, trans. Baki Gölpınarlı (Istanbul: Milli Mecmua Basımevi, 1939).
3. Ms. Aya Sofya 3596, fols. 1a–39b; Rashid al-Din Tabib, *Tanksuqnāmah*, 1–78; Karl Jahn, "Rashid al-Din and Chinese Culture," *Central Asiatic Journal* 14 (1970): 134–47.
4. Sheila S. Blair, "Patterns of Patronage and Production in Ilkhanid Iran: The Case of Rashid al-Din," in *The Court of the Il-khans, 1290–1340: The Barakat Trust Conference on Islamic Art and History, St. John's College, Oxford, Saturday, 28 May 1994*, ed. Julian Raby and Teresa Fitzherbert (Oxford: Oxford University Press, 1996), 39–59.
5. Sheila S. Blair, *A Compendium of Chronicles: Rashid al-Din's Illustrated History of the World*, Nasser D. Khalili Collection of Islamic Art 27 (London: Nour Foundation, in association with Azimuth Editions and Oxford University Press, 1995).
6. Filiz Çağman, "Tansukname-i İlhan," in *Cengiz Han ve Mirasçıları: Büyük Moğol İmparatorluğu* (Istanbul: Sakıp Sabancı Müzesi, 2006), cat. no. T7, 408.
7. Blair, *Compendium of Chronicles*, 114, 38.
8. Ibid., n.p.
9. Linda Komaroff and Stefano Carboni, eds., *The Legacy of Genghis Khan: Courtly Art and Culture in Western Asia, 1256–1353* (New York: The Metropolitan Museum of Art, 2002); Yuka Kadoi, *Islamic Chinoiserie: The Art of Mongol Iran* (Edinburgh: Edinburgh University Press, 2009).
10. Thomas Allsen, *Culture and Conquest in Mongol Eurasia* (Cambridge: Cambridge University Press, 2001).
11. Ms. Aya Sofya 3596, fol. 4a; Rashid al-Din Tabib, *Tanksuqnāmah*, 7; Jahn, "Rashid al-Din," 139.
12. Jahn, "Rashid al-Din," 143–44; Jutta Rall, "Zur persischen Übersetzung eines Mo-chüeh, eines chinesischen medizinischen Textes," *Oriens Extremus* 7 (1960): 152–57; Ms. Aya Sofya 3596, fols. 12a–12b; Rashid al-Din Tabib, *Tanksuqnāmah*, 23–24.
13. Please see the author's note above.
14. Paul U. Unschuld, ed., *Approaches to Traditional Chinese Medical Literature: Proceedings of an International Symposium on Translation Methodologies and Terminologies* (Dordrecht: Kluwer Academic Publishers, 1989).
15. Emmy Wellesz, "An Early al-Şūfī Manuscript in the Bodleian Library in Oxford: A Study in Islamic Constellation Images," *Ars Orientalis* 3 (1959): 1–26.
16. Moya Carey, "Al-Sufi and Son: Ibn al-Sufi's Poem on the Stars and Its Prose Parent," *Muqarnas* 26 (2009): 181–204.
17. Joseph Needham, *Science and Civilisation in China* (Cambridge: Cambridge University Press, 1954– ), 1:218–19.
18. A. Süheyl Ünver, "Esere bir Bakış" in Ünver, *Tanksuknamei İlhan der Fünunu Ulūmu Hatai Mukaddimesi*, 10–18. Although they are not referenced in this publication, the manuscript was already known to some other scholars such as Aleksandr A. Dragunov, "A Persian Transcription of Ancient Mandarin," *Bulletin de l'Académie des sciences de l'URSS: Classe des sciences sociales* (1931): 359–75.
19. Saburo Miyasita, "A Link in the Westward Transmission of Chinese Anatomy in the Later Middle Ages," *Isis* 58, 4 (Winter, 1967): 486–90.
20. Felix Klein-Franke and Zhu Ming, "Rashid ad-Din and the Tansuqnamah: The Earliest Translation of Chinese Medical Literature in the West," *Le Muséon* 111 (1998): 427–45, at 427. See also their article, "Rashid ad-Din as a Transmitter of Chinese Medicine to the West," *Le Muséon* 109 (1996): 395–404.
21. Jahn, "Rashid al-Din," 134.
22. Allsen, *Culture and Conquest*, 158.
23. Catherine Despeux, "Visual Representations of the Body in Chinese Medical and Daoist Texts from the Song to the Qing Period (Tenth to Nineteenth Century)," *Asian Medicine* 1, 1 (2005): 10–52.
24. Lucille Chia, "Text and Tu in Context: Reading the Illustrated Page in Chinese Blockprinted Books," *Bulletin de l'École française d'Extrême-Orient* 89 (2002): 242.

25. Miyasita, "Link in the Westward Transmission of Chinese Anatomy," 488.
26. Kozo Watanabe, "General Remarks on Dissection and Anatomical Figures in China" (in Japanese), *Nihon Ishigaku Zasshi* 7 (1956): 88–182.
27. Hu Wenhuan, ed., *Gezhi congshu* (China: Qiantang Hu Shi, Ming Wanli period [between 1573 and 1620]).
28. Despeux, "Visual Representations of the Body," 47.
29. Yasser Tabbaa, "The Transformation of Arabic Writing: Part I, Qur'anic Calligraphy," *Ars Orientalis* 21 (1991): 119–49.
30. Chia, "Text and Tu in Context," 242.
31. Vivienne Lo, a historian of Chinese medicine (see n. 13 above), is currently working on the *Tansūqnāma* images within the history of Taoist medical imagery.
32. A. Süheyl Ünver, "Recent Research on the Wang Shu Ho Text," *Tıb Fakültesi Mecmuası* (1944).
33. Klein-Franke and Zhu Ming, "Rashid ad-Din and the *Tansūqnāma*," 429.
34. Haneda Koichi, "On the Original Chinese Text of the Persian Translation of [Mochueh]" (in Japanese), *Journal of Asian and African Studies* 48–49 (1995): 719–26; Endo Mitsuaki, "Chinese Sound of the Early Fourteenth Century Reflected in the Persian Translation of Wang Shu's [Mojué]" (in Japanese), *Chūgoku on'ingaku ronshū* (Tokyo: Hakuteiha, 2001): 195–218, 337–38. I am grateful to Vivienne Lo for bringing these sources to my attention. Lo's work on this manuscript, along with Wang Yidan's, will appear in *Rashid al-Din as an Agent and Mediator of Cultural Exchanges in Ilkhanid Iran*, ed. Anna Akasoy, Charles Burnett, and Ronit Yoeli-Tlalim (London: Warburg Institute, forthcoming in 2010).
35. Li Jiong, *Bashiye nanjing*, preserved in the Ming edition of the Taoist Canon, which was published as *Dao zang: Wu si ba wu juan* (Shanghai: Shangwu yinshuguan, 1924–26). Li Jiong's text is found in vols. 668–70 of the 1924–26 publication.
36. Allsen, *Culture and Conquest*, 182.
37. Ms. Aya Sofya 3596, fol. 19a; Rashid al-Din Ṭabīb, *Tansūqnāmah*, 37; Jahn, "Rashid al-Din," 145–46.
38. Allsen, *Culture and Conquest*, 179. In addition to the references that Allsen cites on this topic, see Thomas Francis Carter and L. Carrington Goodrich, *The Invention of Printing in China and Its Spread Westward* (New York: Ronald Press Co., 1955), 130–31.
39. Personal communication from Vivienne Lo, October 2009.
40. Ms. Aya Sofya 3596, fol. 19a; Rashid al-Din Ṭabīb, *Tansūqnāmah*, 37; Jahn, "Rashid al-Din," 145–46; Allsen, *Culture and Conquest*, 178.
41. G. Oman, Günay Alpay Kut, W. Floor, G. W. Shaw, *Encyclopaedia of Islam, Second Edition* (Leiden: Brill, 1960–2004), s.v. "Maṭba'a." Brill Online, accessed March 1, 2010.
42. David Roxburgh, "On the Transmission and Reconstruction of Arabic Calligraphy: Ibn al-Bawwab and History," *Studia Islamica* 96 (2003): 39–53.
43. Klein-Franke and Zhu Ming, "Rashid ad-Din and the *Tansūqnāma*."
44. Paul U. Unschuld, *Medicine in China: A History of Ideas* (Berkeley: University of California Press, 1985), 59.
45. Ms. Aya Sofya 3596, fol. 53a; Rashid al-Din Ṭabīb, *Tansūqnāmah*, 105.
46. Despeux, "Visual Representations of the Body," 39–41.
47. Robin Wang, "Zhou Dunyi's Diagram of the Supreme Ultimate Explained ('Taijitu shuo'): A Construction of Confucian Metaphysics," *Journal of the History of Ideas* 66, 3 (Jul., 2005): 307–23, at 307; Unschuld, *Medicine in China*, 154–88.
48. Wang, "Zhou Dunyi's Diagram," 310.
49. *Ibid.*, 312.
50. As quoted and translated in *ibid.*, 314–15.
51. Majid Fakhry, *A History of Islamic Philosophy* (New York: Columbia University Press, 1970), 21–27.
52. Fung Yu-lan, *A History of Chinese Philosophy*, trans. Derk Bodde (Princeton, N.J.: Princeton University Press, 1952–53), 537.
53. Ms. Aya Sofya 3596, fol. 55a; Rashid al-Din Ṭabīb, *Tansūqnāmah*, 108.
54. Ms. Aya Sofya 3596, fol. 55b; Rashid al-Din Ṭabīb, *Tansūqnāmah*, 109.
55. Schuyler Cammann, "The Magic Square of Three in Old Chinese Philosophy and Religion," *History of Religions* 1, 1 (Summer, 1961): 37–80, at 38.
56. Ming-dynasty edition, 1457–63: The Library of Congress, Chinese Rare Book Collection, Asian Division, 79.1. The original wood-block-printed book is in the custody of the Asian Division, Library of Congress.
57. Cammann, "Magic Square of Three," 39, 59 n. 67.
58. Cammann, "Magic Square of Three," 38; Michael Saso, "What is the 'Hetu'?" *History of Religions* 17, 3–4 (Feb.–May, 1978): 399–416; John Major, "The Five Phases, Magic Squares, and Schematic Cosmography," in *Explorations in Early Chinese Cosmology: Papers Presented at the Workshop on Classical Chinese Thought Held at Harvard University, August 1976*, ed. Henry Rosemont, Jr., *Journal of the American Academy of Religion Studies* 50, 2 (Chico, Calif.: Scholars Press, 1984), 133–66, at 146.
59. Cammann, "Magic Square of Three."
60. Ms. Aya Sofya 3596, fols. 54b–55a; Rashid al-Din Ṭabīb, *Tansūqnāmah*, 108–9.
61. Ms. Aya Sofya 3596, fol. 76b; Rashid al-Din Ṭabīb, *Tansūqnāmah*, 149.
62. Schuyler Cammann, "The Eight Trigrams: Variants and Their Uses," *History of Religions* 29, 4 (May, 1990): 301–17.
63. Zhang Huang (d. 1608), *Compendium of Diagrams*, imprint 1623; published in Stephen Little and Shawn Eichman, *Taoism and the Arts of China* (Chicago: Art Institute of Chicago, 2000), 138.
64. François Louis, "The Genesis of an Icon: The *Taiji* Diagram's Early History," *Harvard Journal of Asiatic Studies* 63, 1 (June, 2003): 145–96.
65. See, for example, Thomas Clary's translation of Liu Yiming, *The Taoist I Ching* (Boston: Shambhala, 1986).
66. Cammann, "Eight Trigrams," 316; also Cammann, "Magic Square of Three."



67. Ms. Aya Sofya 3596, fols. 63b–64a; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 124–25.
68. Ms. Aya Sofya 3596, fol. 65b; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 128.
69. Ms. Aya Sofya 3596, fol. 66b; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 130.
70. Ms. Aya Sofya 3596, fol. 67b; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 132.
71. Ms. Aya Sofya 3596, fol. 68b; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 134.
72. Ms. Aya Sofya 3596, fol. 71a; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 139.
73. Watanabe, “General Remarks on Dissection and Anatomical Figures”; Miyasita, “Link in the Westward Transmission of Chinese Anatomy.” Miyasita argues that the *Tansūqnāma* might have instigated new interest in anatomy and dissection in Europe. The limits of the current article do not permit comment on the serious epistemological problems inherent to this kind of argument, but the interested reader should consider Shigehisa Kuriyama, *The Expressiveness of the Body and the Divergence of Greek and Chinese Medicine* (New York: Zone Books, 1999), 116–29, 155–60, 262. On the history of dissection in the Islamic world, see Emilie Savage Smith, “Attitudes Toward Dissection in Medieval Islam,” *Journal of the History of Medicine and Allied Sciences* 50, 1 (Jan., 1995): 67–110.
74. Unschuld, *Medicine in China*, 81; Kuriyama, *Expressiveness of the Body*, 265–66.
75. Unschuld, *Medicine in China*, 81.
76. This is based on my research assistant Catherine Stuer’s comparison of captions in imprints in the following Ming collations that include the *Hua Tuo Neizhao jing* (Canon of the Inner Reflection by Hua Tuo): (a) the imprints published by Miyasita without publication information, and (b) *Yangsheng jilan*, China, Ming dynasty, datable to 1513–1620.
77. Chia, “Text and Tu in Context,” 242.
78. For another example, see Li Jiong, *Bashiyi Nanjing*, as published in *Dao zang: Wu si ba wu juan* (Shanghai: Shangwu yinshuguan, 1924–26), vols. 668–70.
79. Unschuld, *Medicine in China*, 75–76; Kuriyama, *Expressiveness of the Body*, 42–43.
80. Ms. Aya Sofya 3596, fol. 60b; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 118.
81. As quoted and translated in Unschuld, *Medicine in China*, 100.
82. Ms. Aya Sofya 3596, fol. 43b; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 86. Kuriyama has convincingly explained that what Chinese physicians felt at the wrist was not only the movement of blood but also the movement of the nervous system, temperature, and degree of moisture. Kuriyama, *Expressiveness of the Body*, 37–38. Nonetheless, the Persian text refers specifically to pulse.
83. Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 149–54. The reversal starts in the 1972 publication after a chart that occurs across two facing pages in the actual manuscript (Ms. Aya Sofya 3596, fols. 72b–73a) was published on a single page in the facsimile: see Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 142. The relationship of the pagination in the 1972 facsimile to the current order of folios in the manuscript is further complicated by the fact that manuscript folios 57b–58a are not included in the 1972 facsimile, which skips them between pages 113 and 114. The manuscript folios are almost blank, containing only a later inscription.
84. Ms. Aya Sofya 3596, fols. 81a–82a; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 158–60.
85. Unschuld, *Medicine in China*, 87.
86. Ibid., 89–90.
87. Ibid., 88.
88. Ibid., 89–90.
89. The subchapter also includes an image of a person walking: Ms. Aya Sofya 3596, fol. 83b; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 163.
90. Kuriyama, *Expressiveness of the Body*, 188.
91. From *Shenxiang quanbian* (Complete Compilation on the Wondrous Art of Physiognomy), first compiled by Yuan Zhongche (d. 1458), which is now preserved in a Ming edition in the National Central Library in Taipei, Taiwan. Parts of this treatise, including this image, are reproduced in the physiognomy section of the encyclopedia *Gujin tushu jicheng*. This image is reproduced from the edition of that encyclopedia printed in Shanghai by the Gujin tushu jicheng Press in 1884. The image is found in volume 632, or in the fourth facsimile in case 171 of the 1884 encyclopedia. On the history of the text, see Livia Kohn, “A Textbook of Physiognomy: The Tradition of the *Shenxiang quanbian*,” *Asian Folklore Studies* 45, 2 (1986): 227–58. For a discussion of another one of the face images from this text as it relates to the art of complexion diagnosis, see Catherine Despeux, “From Prognosis to Diagnosis of Illness in Tang China: Comparison of the Dunhuang Manuscript P. 3390 and Medical Sources,” in *Medieval Chinese Medicine: The Dunhuang Medical Manuscripts*, ed. Vivienne Lo and Christopher Cullen (London: RoutledgeCurzon, 2005), 176–205, 180 n. 14.
92. Ms. Aya Sofya 3596, fols. 183b–249a; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 363–449.
93. Ms. Aya Sofya 3596, fols. 214b–216b; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 425–29.
94. Ms. Aya Sofya 3596, fols. 243b–244a; Rashīd al-Dīn Ṭabīb, *Tanksūqnāmah*, 483–84.
95. David James, *The Master Scribes: Qur’ans of the 10th to 14th Centuries AD* (Oxford: The Nour Foundation, in association with Azimuth Editions and Oxford University Press, 1992), 122–29; cat. 29, fol. 19b, p. 127.