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Knowledge transmission through translation: astronomy and astrology vocabulary in the Ming-period Persian–Chinese glossary

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Abstract

This article investigates the vocabulary of astral sciences preserved in the *Huihui Guan Zazi* (回回館雜字), a Persian–Chinese glossary commissioned by the Ming imperial court in the early fifteenth century. Situating the text within the broader context of Mongol and post-Mongol Eurasian intellectual exchange, this article analyzes the glossary’s technical astronomy and astrology terms with attention to their precision, methods of translation, and the direction of knowledge transmission. The findings suggest a high level of conceptual translation and a bidirectional flow of knowledge, pointing to a multilingual environment sustained by close engagement with scientific texts under Mongol rule and retained in the early Ming. By contrast, supplementary materials within the glossary produced in the late sixteenth century reveal the erosion of this intellectual vitality, signaling the decline of Persianate influence within the Ming imperial bureaucracy.

Keywords: Persian–Chinese glossary; *Huihui Guan Zazi* (回回館雜字); bilingual dictionary; astronomy and astrology; College of Foreign Translation (Siyi Guan, 四夷館); Persianate world; multilingualism; knowledge transmission

The age of the Mongol Empire and its successors was marked by an intensified interest in foreign languages, texts, and the circulation of knowledge across Eurasia. Among the languages circulating widely, Persian played a notable role in Mongol–Yuan and early Ming bureaucratic offices, functioning as a medium of communication linking the eastern and western reaches of the Mongol Empire. The demands of multilingual governance and diplomacy led to the creation of new institutions dedicated to translation and interpretation, which fostered the production of texts that carried the intellectual and administrative legacy of the Mongol Empire into its successor states and beyond.¹

I use traditional Chinese characters in this article, but I make exceptions for publications in Chinese, in which cases I adhere to the writing system used in each publication.

¹ Thomas T. Allsen, “The Rasulid Hexaglot in Its Eurasian Cultural Context,” in *The King’s Dictionary: The Rasûlid Hexaglot—Fourteenth Century Vocabularies in Arabic, Persian, Turkic, Greek, Armenian, and Mongol*, ed. Peter B. Golden (Brill, 2000).

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A longstanding debate concerns whether Persian functioned as a true *lingua franca* across Mongol-ruled Eurasia and how extensively it circulated in China. Scholarship has alternated between emphasizing the wide cross-regional uses of Persian and questioning its official status under the Yuan.² Nile Green suggests that while Persian likely never became a formal administrative language in Yuan China, it nevertheless traveled farther east than ever before, facilitated by the Mongol Empire's open diplomatic and intellectual frontiers.³ Richard Eaton provides another line of related discussion that frames Persian as a portable, prestige language of literary works in the cultural and demographic diaspora formed in the aftermath of the Mongol invasions of Central Asia and the Iranian plateau.⁴ Against this historical and historiographical backdrop, Graeme Ford examines Ming institutions for translating Persian, situating its linguistic presence within the eastern reaches of the Persianate cosmopolis.⁵

Existing studies have tended to either frame Persian in China within the broader context of cross-regional exchange under Mongol rule or focus on the institutional structures of the Yuan and Ming courts. What has been less pursued is the close reading of the Persian texts that were actually exchanged—a perspective that can yield direct evidence of how Persian appeared in this context, how it was translated, and how it functioned in the transmission of knowledge. Moreover, the question of how Persian's influence in China declined or changed its form remains underexplored. David Brophy's article, while valuable for examining the decline of Persian in Qing China, uncritically adopts Stephen Haw's position, which too readily dismisses Persian's presence in Yuan and Ming China, leaving a significant gap in understanding its changing status during the Ming period.⁶

Conversing with this body of work, this article examines Persian's linguistic presence and translation strategies in Mongol- and post-Mongol-era China through a set of astronomical and astrological vocabulary from the fifteenth-century Persian–Chinese glossary produced within the Ming bureaucracy. The article addresses the following questions: How were Persian and Chinese lexical items translated and compiled in the Yuan and Ming capitals? What do these translations reveal about the forms of Persian circulating in the eastern reaches of the Persian cosmopolis? And what legacy did Persian leave in China after the end of Mongol rule, and for how long did its influence persist?

The glossary

In 1407, the Yongle emperor created the College of Foreign Translation (Siyi Guan 四夷館) within the Hanlin Academy, in conjunction with his launch of large-scale maritime and overland diplomatic and exploratory missions, attesting to the continued importance of

² For studies related to Persian as a *lingua franca* of the Mongol Empire and its status in Yuan China, see Huang Shijian 黃時鑒, "The Persian Language in Yuan China" [波斯語在元代中國], in *Huang Shijian wenji II* (Zhong xi shuju, 2011), 143–53; David Morgan, "Persian as a Lingua Franca in the Mongol Empire," in *Literacy in the Persianate World*, ed. Brian Spooner and William L. Hanaway (University of Pennsylvania Museum of Archaeology and Anthropology, 2012), 160–70; Reza Moradzadeh, "The Position and Role of Iranians and Persian Language in Spreading Islam in China," *Iranian Journal for the History of Islamic Civilization* 50, no. 1 (2017): 71–92, <https://doi.org/10.22059/jhic.2018.269272.653952>; Stephen G. Haw, "The Persian Language in Yuan-Dynasty China: A Reappraisal," *East Asian History* (2014): 5–32.

³ Nile Green, "Introduction: The Frontiers of the Persianate World (ca. 800–1900)," in *The Persianate World: The Frontiers of a Eurasian Lingua Franca*, ed. Nile Green (University of California Press, 2019), 24.

⁴ Richard M. Eaton, "The Persian Cosmopolis (900–1900) and the Sanskrit Cosmopolis (400–1400)," in *The Persianate World: Rethinking a Shared Sphere*, ed. Abbas Amanat and Assef Ashraf (Brill, 2019), 63–83.

⁵ Graeme Ford, "The Uses of Persian in Imperial China: The Translation Practices of the Great Ming," in *The Persianate World: The Frontiers of a Eurasian Lingua Franca*, ed. Nile Green (University of California Press, 2019), 113–30.

⁶ David Brophy, "A Lingua Franca in Decline? The Place of Persian in Qing China," in *The Persianate World: The Frontiers of a Eurasian Lingua Franca*, ed. Nile Green (University of California Press, 2019), 175–92.

multilingual exchange.⁷ This college was divided into eight language sectors and was responsible for translating official documents and training translators.⁸ The *Huayi yiyu* 華夷譯語,⁹ a standardized series of bilingual glossaries, was produced by the college and used within each of its eight language sectors. In 1597, the college expanded to include two additional sectors, and the *Huayi yiyu* collection was subsequently supplemented with an expanded wordlist and compilation of diplomatic correspondence samples (*laiwen* 來文) in the respective languages.¹⁰ This study focuses on the output of the Persian sector, namely the *Huihui Guan Zazi* (回回館雜字) or *Huihui Guan Yiyu* (回回館譯語) (hereafter *HHZZ*).¹¹

Scholarly attention to the *HHZZ* has developed in stages across several dimensions. In the early twentieth century, references to the *HHZZ* appeared sporadically, largely due to the scattered state of its manuscripts across Europe, China, and Japan. Japanese scholars such as Kōdō Tazaka were among the first to investigate the vocabulary of the *HHZZ*.¹² Building on these earlier efforts, Honda Minobu published the first comprehensive examination of the *HHZZ* in 1963.¹³ His work includes an introduction to multiple manuscripts as well as a critical edition of both the wordlists and the bilingual correspondence texts, and remains a foundational resource on the topic to this day.

Later, several Chinese scholars further examined the extant types and manuscripts of the bilingual linguistic materials produced in China since the Yuan period.¹⁴ It has become increasingly recognized that the *HHZZ* is a Persian source and that its study benefits

⁷ Zhang, *Ming Shi*, juan 74, 6:1797–1798. Although the *Siyi Guan* has been previously rendered as the “Bureau of Translators” or “Office of Foreign Translation,” it in fact functioned more as an educational institute than a conventional government office. Emphasizing this role, Graeme Ford translates *Siyi Guan* as the “*Siyi* Translation College,” while Liu Yingsheng similarly observes that it operated like an “Oriental Institute.” See Ford, “The Uses of Persian in Imperial China: The Translation Practices of the Great Ming,” 115–16; Liu Yingsheng 刘迎胜, “*Huihui guan zazi*” yu “*huihui guan yi yu*” yan jiu [《回回館雜字》与《回回館譯語》研究] (*Zhongguo renmin daxue chubanshe*, 2008), 3–4. Liu’s monograph will hereafter be cited as Liu, *HHZZ*. For an example of earlier studies, see Norman Wild, “Materials for the Study of the *Ssü i Kuan* 四夷譯館 (Bureau of Translators),” *Bulletin of the School of Oriental and African Studies, University of London* 11, no. 3 (1945): 617–40.

⁸ The original eight language sectors were Mongolian, Jurchen, Tibetan, Xitian (Indian), *Huihui* (Persian), *Baiyi* (Tai), *Gaochang* (Uighur), and *Miandian* (Burmese), with two more—*Babai* (Northern Thai) and *Xianluo* (Siamese)—added later.

⁹ This should be distinguished from the earliest *Huayi Yiyu*, the standalone Mongolian-Chinese bilingual word-book. After the establishment of the *Siyi Guan*, Chinese-foreign language vocabulary lists were systematically compiled, forming a series that came to be collectively designated as the *Huayi Yiyu*. See Liu, *HHZZ*, 5–6.

¹⁰ Zhang, *Ming Shi*, juan 74, 6:1797–1798. Graeme Ford, “Persian Translating at the Ming Court” (PhD diss., Macquarie University, 2017), 149, <https://doi.org/10.25949/19428083>.

¹¹ These naming inconsistencies reflect their different production contexts, but all extant copies derive from two original types of source texts, type one recorded in Perso-Arabic script and type two consisting of Persian lexemes transcribed phonetically in Chinese characters. They are believed to have been produced respectively by the two Ming institutions: the *Siyi Guan* and the *Huitong Guan*. This article engages exclusively with the *Siyi Guan* version. For the discussion of the two institutes, see Ford, “Persian Translating at the Ming Court,” 23–29. For a study of existing manuscripts, see Liu, *HHZZ*, 14–22. While all known versions are manuscripts rather than printed editions, their entries are consistent enough to be treated as a single source for the purpose of vocabulary analysis.

¹² Kōdō Tazaka 田坂興道, “A Linguistic Study of the *Hui-Hui-Kuan-i-Yü* 回回館訳語 (I),” *Toyo Gakuho* 30, no.1 (1943): 96–131; Kōdō Tazaka 田坂興道, “A Linguistic Study of the *Hui-Hui-Kuan-i-Yü* 回回館訳語 (II),” *Toyo Gakuho* 30, no.2 (1943):232–96; Kōdō Tazaka 田坂興道, “A Linguistic Study of the *Hui-Hui-Kuan-i-Yü* 回回館訳語 (III Concluded),” *Toyo Gakuho* 30, no. (1944): 534–60. For a review of Japanese scholarship on the *HHZZ*, see Oyungguu-a 乌云高娃, “Ribei Xuezhè Dui Ming Siyiguan Ji Huayi Yiyu de Yanjiu Zhuangkuang” [日本学者对明‘四夷馆’及《华夷译语》的研究状况], *Zhongguo Shi Yanjiu Dongtai*, no. 6 (2002): 23.

¹³ Honda Minobu 本田實信, “On the *Hui-Hui-Kuan i-Yü* (Chinese-Persian Vocabulary),” *The Annual Reports on Cultural Science* 11 (1963): 224–150. Hereafter abbreviated as Honda, *HHZZ*.

¹⁴ Wei Yingbang 魏英邦, “‘Huayi Yiyu’ Yanjiu Shiling” [《华夷译语》研究拾零], *Qinghai Shehui Kexue*, no. 2 (1982), <https://doi.org/10.14154/j.cnki.qss.1982.02.027>; Chen Ming 陈明, “Holistic Studies on Chinese-Foreign Bilingual Dictionaries” [中外双语辞书的整体研究], *Foreign Language Teaching and Research* 52, no. 1 (2020): 139–43.

from being situated within the broader Persianate and Mongol context.¹⁵ Another line of research has focused on the phonetic transcription of Persian into Chinese, yielding notable insights into historical phonology and cross-linguistic transcription.¹⁶ Regarding the content of the *HHZZ*, Liu Yingsheng conducted a series of studies on the *HHZZ* in the late twentieth century, culminating in his monograph “*Huihui guan za zi*” *yu* “*huihui guan yi yu*” *yan jiu*, which remains the most comprehensive work on the subject in Chinese. In addition to a detailed survey of available manuscripts and existing scholarship, as well as commentary on the vocabulary, Liu’s significant contribution lies in his comparison of each Persian entry with its occurrences in contemporary Chinese sources.

Nevertheless, the *HHZZ* remains insufficiently explored in several critical respects. Beyond the fact that scholarship on the text has been conducted primarily in Japanese and Chinese, a number of significant gaps and issues warrant attention.

First, the semantic and historical implications of the vocabulary, particularly in relation to Islamic and Mongol history, call for more nuanced investigation. For instance, Honda identifies the linguistic origins of entries in the wordlists as including Arabic, Persian, Turkish, and Mongolian. While this information greatly enriches our understanding of the vocabulary, it also invites deeper inquiry into the historical processes by which Persian words, in various categories, came under such diverse linguistic influences. Second, a number of recent studies rely heavily on modern Standard Iranian Persian (Farsi) as a reference point when analyzing orthography and interpreting lexical meaning. This approach occasionally results in reading Persian terms out of context or misidentifying non-standard handwriting as erroneous.¹⁷ Such interpretations overlook the historical stage of Arabo-Persian development to which the *HHZZ* manuscript belongs—one that offers valuable orthographic and linguistic evidence in its own right.

Astronomy and astrology vocabulary

The *HHZZ*, like other glossaries within the collection of the *Huayiyi yu*, encompasses a range of lexical categories, including but not limited to astronomy and astrology, geography, time and seasons, personal names, fauna and flora, clothing, directions, and numbers. While each category reflects distinct linguistic features and contextual implications, and thus merits careful study in its own right, this article focuses on two specific categories: *tianwen* 天文 (celestial phenomena), which contains forty entries in the primary list and seven in the supplement, and *shiling* 時令 (times and seasons), which contains forty-one entries in the primary list and seven in the supplement.¹⁸ Together, these lists provide textual evidence for the transmission of astronomy and astrology knowledge between the Chinese and Islamic cultural spheres, as mediated through Persian and Chinese.

¹⁵ Liu, *HHZZ*, 1–4; Liu Yingsheng 刘迎胜, “Tangyuan Shidai Zhongguo de Yilang Yuwen Yu Bosi Yuyan Jiaoyu” [唐元时代中国的伊朗语文与波斯语文教育], *Xinjiang Daxue Xuebao* 19, no. 1 (1991): 18–23.

¹⁶ Zhou Yongjun 周永军, “Persian-Chinese Transcription and Collation of Huihuiguan Yiyu and Huihuiguan Zazi” [《回回馆译语》《回回馆杂字》对音及校释], *Minzu Yuwen*, no. 5 (2022): 105–14; Cheng Yaoshuai 成耀帅, “Hui Hui Guan Za Zi Persian and Chinese on the Sound and the Study of Chinese Phonetics in Ming Dynasty” [《回回馆杂字》波汉对音与明代汉语语音研究] (MA thesis, Beifang minzu daxue, 2018).

¹⁷ For example, assertions that the use of *kāf* and *jīm* in place of *gāf* and *che* constitutes an error appear frequently in Liu’s *HHZZ*, as well as in some other works, for instance, Ma Hao 马豪, “A Research on the Sino-Farsi Glossary: Annotation of A New Text” [《回回馆译语》再探:文献考释与研究] (MA thesis, Beifang minzu daxue, 2020), 18–19. Interpretive issues related to contexts will be visited later in this article in the discussion of specific entries in the *HHZZ*.

¹⁸ *Tianwen* is frequently translated as “astronomy,” see for example Ford, “Persian Translating at the Ming Court,” 152; Allsen, “The Rasulid Hexaglot in Its Eurasian Cultural Context,” 49. I emphasize, however, that this term historically encompassed both astronomy and astrology—two closely linked disciplines in both the Islamicate world and China throughout the medieval period. Thus, Nappi’s rendering of the *tianwen* category as “Heavenly Bodies and Phenomena” seems more appropriate in the context. Carla Nappi, *Translating Early Modern China: Illegible Cities* (Oxford University Press, 2021), 15.

This focus is closely tied to the historical context of knowledge exchange under Mongol and post-Mongol rule, where astral sciences held a special place: both the Yuan and Ilkhanid courts shared a deep interest in celestial observation, divination, and calendrical calculation. These common pursuits fostered the cross-regional movement of astronomers, the construction of observatories, and the translation and study of each other's texts and systems.¹⁹

One indication of this highly mobilized intellectual atmosphere was the collection of Arabic and Persian books once housed in the Yuan dynasty's Palace Library (Mishujian 秘書監) in Beijing, which was later transferred to the Ming capital at Nanjing after the dynastic transition.²⁰ In 1382, Emperor Hongwu ordered the translation of these works, beginning with texts on astronomy, divination, and calendrical science.²¹ Although the originals have not survived, the Mishujian catalogue remains extant, recording an inventory of twenty-two titles of Arabic and Persian texts and four astronomical instruments.²² Scholars generally agree that these included works such as Ptolemy's *Almagest*, Kūshyār ibn Labbān's *Kitāb al-madkhal fī šinā'ah aḥkām al-nujūm* (Introduction to the Art of Judgments of the Stars), al-Tūsī's *Zīj-i īlkhānī*, and 'Abd al-Raḥmān al-Šūfī's *Kitāb suwar al-kawākib thābita* (The Book of Fixed Stars), among others.²³ Sino-Islamic works derived from these translations, such as the astrological manual *Tianwen shu* 天文書 and the Islamic calendars *Huihui lifa* 回回曆法, further attest to this legacy.²⁴ Yet many links in this chain remain obscured by the absence of surviving Arabic or Persian source materials. Against this backdrop, relevant vocabulary in the bilingual glossary offers fresh, if limited, insight into the transmission of astral sciences across cultures.

In this context, the following sections examine the processes of translation and knowledge transmission as reflected in the lists themselves, rather than in institutional records, and trace the direction of their flow through textual analysis. This study is anchored in a close reading of the two lists, accompanied by an [appendix](#) containing a full transcription and annotation based on the Berlin manuscript—a high-quality source that has not been sufficiently engaged in prior scholarship.²⁵

As part of a series of bilingual glossaries produced within the College of Foreign Translation, the *HHZZ* shares the structural layout of other glossaries and likely draws from a common core vocabulary. To identify what sets the *HHZZ* apart, I concentrate on idiomatic

¹⁹ Thomas T. Allsen, "Astronomy," in *Culture and Conquest in Mongol Eurasia* (Cambridge University Press, 2001), 161–175; Qiao Yang, "Like Stars in the Sky," *Journal of the Economic and Social History of the Orient* 62, no. 2/3 (2019): 388–427; Yoichi Isahaya, "Islamicate Astral Sciences in Eastern Eurasia During the Mongol-Yuan Dynasty (1271–1368)," in *Routledge Handbook on the Sciences in the Islamicate Societies: Practices from the 2nd/8th to the 13th/19th Centuries*, ed. Sonja Brentjes et al. (Taylor & Francis, 2023), 688–695.

²⁰ Dror Weil, "Chinese-Muslims as Agents of Astral Knowledge in Late Imperial China," in *Overlapping Cosmologies in Asia: Transcultural and Interdisciplinary Approaches*, ed. Bill M. Mak and Eric Huntington (Brill, 2022), 118–19; Dror Weil, "Collation and Articulation of Arabo-Persian Scientific Texts in Early Modern China," in *Routledge Handbook on the Sciences in the Islamicate Societies: Practices from the 2nd/8th to the 13th/19th Centuries*, ed. Sonja Brentjes et al. (Taylor & Francis, 2023), 698.

²¹ Ma Mingda 馬明達 and Chen Jing 陳靜, eds., *Zhongguo Huihui lifa jicong* [中國回回曆法輯叢] (Gansu minzu chubanshe, 1996), 2.

²² Wang Shidian 王士點 and Shang Qiwen 商企翁, *Mingshujian zhi* [秘書監志], ed. Gao Rongsheng 高榮盛 (Zhejiang guji chubanshe, 1992), 129–31.

²³ For analysis and interpretation of these titles, see Wang Yidan 王一丹, "On Some Persian-Arabic Books Introduced into China during the Yuan Dynasty" [元代传入中国的波斯阿拉伯语典籍], *Silu Xue Yanjiu*, no. 8 (2020): 135–47; Lin Lijuan 林麗娟, "Yuandai Chuan Ru Zhongguo de Xila-Alabo Zhishi" [元代傳入中國的希臘—阿拉伯知識], *Wen shi* 146, no. 1 (2024): 154–87, <https://doi.org/10.19325/j.cnki.11-1678/k.2024.01.010>.

²⁴ Weil, "Chinese-Muslims as Agents of Astral Knowledge in Late Imperial China," 120.

²⁵ "華夷譯語," 1579, manuscript, 334615730X, Staatsbibliothek zu Berlin - Preußischer Kulturbesitz, Berlin, Germany, <http://resolver.staatsbibliothek-berlin.de/SBB000103AF00000000>.

This is the type A manuscript in Honda's article, which is only partially utilized in Liu's work, mostly likely due to issues with the availability of good quality copies at the time of his research. Honda, *HHZZ*, 222; Liu, *HHZZ*, 15.

and technical terms—both words and phrases—that are unique to it and absent from other glossaries in the same manuscript. The translation of idiomatic expressions offers insight into the compilers’ linguistic competence, collaborative practices, and the broader context of knowledge exchange. Words found only in the Persian glossary illuminate the particular importance or perceived uniqueness of Persian among foreign languages at the Ming court.

In addition, I contextualize these distinctive entries by tracing their appearance in relevant Persian and Chinese texts from the Mongol and post-Mongol periods. Unlike high-frequency, easily translatable terms, these technical entries require specific domain expertise and cultural literacy. They thus provide valuable evidence of the intellectual milieu of the Ming bureaucracy and the broader networks of knowledge exchange linking China and the Islamic world.

Approaching the *HHZZ* vocabulary with the stated methods and focus reveals key aspects of Persian in the Mongol and post-Mongol world. The original *HHZZ*, likely compiled during the Yongle reign (1403–1424), constitutes a layered corpus of lexical knowledge shaped across disciplines. In astronomy and astrology, specialized scientific terms are rendered with remarkable precision, reflecting sustained textual and conceptual exchange and demonstrating a bidirectional flow of knowledge between China and the Islamic world. In this way, the glossary preserves clear evidence of the Mongol legacy in intellectual exchange while bearing traces of multiple historical moments. By contrast, the supplementary glossary—completed more than a century later—shows signs of waning Persianate influence and a diminished intellectual engagement by the Ming bureaucracy with the “western regions.”

Knowledge transmission through translation

Precision

Translating terms in bilingual glossaries requires careful methodological choices, which not only affect linguistic accuracy but also reflect broader cultural and epistemological dynamics. In the two target lists, many of the more “uncommon” phrases cannot be interpreted literally in either language. In such cases, the dominant translation strategy employed is conceptual or functional equivalence. Remarkably, the glossary is effective in identifying close or exact Chinese equivalents of these Persian phrases without resorting to rigid literalism.

This approach is exemplified by a number of entries in the list of “celestial phenomena.” For example, four distinct types of winds are recorded: *ṣabā-dongfeng* (東風), *samum-xunfeng* (熏風), *dabur-jinfeng* (金風), and *ṣāyim-shuofeng* (朔風) (nos. 25–28). *Ṣabā* (P < A), often translated as “zephyr,” designates an east wind and shares with its Chinese equivalent the connotation of a gentle spring breeze. *Samum*, “hot wind,” is paired with *xunfeng*, “warm wind.” Although the Chinese term suggests pleasant warmth while the Persian conveys scorching heat, the conceptual overlap is clear. *Dabur*, meaning “west wind,” is matched with *jinfeng*, “golden wind,” a reference to the autumn wind, which may function synonymously with “west wind” in poetic or seasonal contexts. Finally, *ṣāyim*, a variant of Arabic *ṣā'im* (صائم, “abstaining” or “standing still”), may imply stillness or calmness when applied to wind, and is rendered as *shuofeng*, “north wind” in Chinese.²⁶ The connection is uncertain, perhaps hinging on the idea of dryness. Although tentative, these entries illustrate the compilers’ broader approach: when faced with inevitable mismatches in meaning, they tended to rely on omission or generalization—such as capturing a salient characteristic of the wind—rather than inventing new words or forcing strict lexical equivalence. The priority was idiomatic expression and contextual fluency over strict word-for-word translation, showing that communicative clarity guided the interplay between the two languages.

²⁶ Lane’s Lexicon Online, s.v. “صائم,” accessed August 17, 2025, <https://www.laneslexicon.com/>.

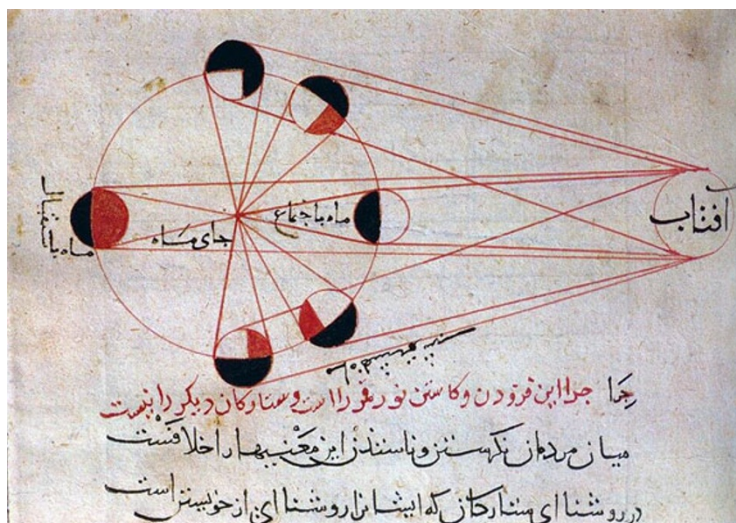


Figure 1. “Phases of the Moon” in al-Bīrūnī’s *Kitāb al-Tafhīm*. Ms. 6565, Teheran, Parlamentsbibliothek.

Further, the precision of certain technical entries suggests that the compilers possessed both linguistic competence and specialized field knowledge. An example is *ṣobḥ-e sādeq* (no. 38), “true dawn.” Technically, this term denotes the moment of daybreak, contrasted with “false dawn” (*ṣobḥ-e kāzeb*), the time just before the dawn.²⁷ The glossary renders *ṣobḥ-e sādeq* as *tianxiao* (天曉), an exact equivalent. In contrast, Liu’s interpretation of the term as *tian da liang* (天大亮, broad daylight) may reflect a literal reading of the Persian term and is inaccurate.²⁸

Another instance is the pair *ejtemā’* and *esteqbāl*, two contrasting phases of the lunar cycle in this context. As al-Bīrūnī’s *Kitāb al-Tafhīm* illustrates, *ejtemā’* (conjunction) refers to the alignment of the Moon between the Sun and Earth, marking the month’s beginning, while *esteqbāl* (opposition) designates the full moon at mid-month (Figure 1). The glossary renders these terms as *shuo* (朔, first day of the lunar month) and *wang* (望, full moon/mid-month), precise and contextually faithful translations within the lunisolar framework. Yet these meanings were not clearly interpreted by Honda or Liu.²⁹

These cases reveal two key points. First, the glossary demonstrates careful conceptual translation of technical astral terms, preserving knowledge exchange across cultural and linguistic boundaries. Second, the limitations of modern scholarship in fully grasping these terms signal the need for further research that combines linguistic expertise with historical scientific vocabularies.

Exchange

The direction of translation in the HHZZ glossary offers important insights into the movement of knowledge. While there is little doubt that Chinese functioned as the main source language across the series of *Huayi yiyu* bilingual glossaries, several features of the HHZZ’s “uncommon” Persian entries complicate the picture of how each glossary was compiled.

²⁷ Sulayman Hayyim New Persian-English Dictionary, s.v., “صبح,” accessed August 20, 2025, <https://dsal.uchicago.edu/dictionaries/hayyim/>; Dehkhoda Online, s.v. “صبح صادق” and “صبح کاذب,” accessed August 17, 2025, <https://dehkhoda.ut.ac.ir/en/dictionary>.

²⁸ Liu, HHZZ, 42.

²⁹ Honda, HHZZ, 216–217; Liu, HHZZ, 71–72, 76–77.

Idiomatic expressions and technical terms that appear only in the *HHZZ*, and not in glossaries of other languages, though limited in number, point directly to the study of Islamicate astronomical and astrological texts, reflecting the importation of these categories into the Ming scholarly milieu. At the same time, they indicate that translation and knowledge exchange operated in both directions—a pattern consistent with the multilingual intellectual environment of the Mongol period and later initiatives, such as the early Ming imperial translation projects.

For example, consider the pair “fixed stars” and “planets” (nos. 36–37). The Persian terms *sābitāt* and *sayyārāt* form a conceptual binary—“fixed” versus “moving”—within the framework of Islamicate astronomy. The idea was most famously systematized by ‘Abd al-Rahmān al-Šūfī in his *Book of Fixed Stars*, which combined Ptolemaic star catalogs with the indigenous Arabic *Anwāʾ* system, a treatise that is generally speculated to have been held in the Yuan Palace Library under the phonetically transcribed title *Suwali-kewaqibi* (速瓦里可瓦乞必).³⁰ In the *HHZZ*, *sābitāt* and *sayyārāt* are rendered in Chinese as *zaxing* (雜星), “assorted stars,” and *qizheng* (七政), “the Seven Governors,” i.e., Mercury, Venus, Mars, Jupiter, and Saturn, along with the Sun and Moon.³¹ While broadly accurate, the Chinese equivalents do not inherently convey the Arabo-Persian binary of “fixed” versus “moving” celestial bodies, carrying different connotations and emphases. As the designation “the Seven Governors” suggests, the naked-eye visible luminaries within the solar system were often regarded as guides for worldly affairs. The *Book of Jin* (晉書), for instance, states that the Sun governs life, grace, and virtue and serves as the image of the ruler; the Moon is paired with the Sun; and “wherever the Five Luminaries rise, travel, or align in the heavens, the corresponding terrestrial state possesses its position.”³² The “assorted stars,” by contrast, encompass all others: “there are auspicious stars, baleful stars, guest stars, and shooting stars.”³³ Although such descriptions represent primarily an earlier divinatory perception of celestial phenomena in Chinese cosmology, they nevertheless reveal that the initial perspectives and underlying astronomical–astrological frameworks differed markedly from those of the Hellenistic–Islamic tradition. Here, the translation clearly proceeds from Arabic or Persian into Chinese, carrying with it the underlying core concepts of the Islamicate astronomical system.

On the other hand, some entries suggest the opposite direction of knowledge flow—from Chinese to Persian. A prominent example is the Twelve Earthly Branches (nos. 113–124), a foundational concept in Chinese cosmology and astrology, widely used to represent hours, seasons, and broader temporal cycles.³⁴ This set is absent from other *Huayī yīyū* glossaries but appears under the “time and seasons” category of the *HHZZ* and corresponds to the twelve double-hours of the day, that is, a unit dividing a calendar day into twelve equal intervals.³⁵ These concepts are uniquely Chinese and have no direct equivalents in Arabic or Persian. The glossary therefore renders them descriptively in Persian, indicating the approximate times of day each branch represents. For example, *nīm-shab*, “midnight,” is used to gloss *zi* (子), the earthly branch designating the double-hour corresponding to 11 pm to 1 am; *estevā*, “the solar noontime,” is used here to gloss *wu* (午), the earthly branch designating the double-hour corresponding to 11 am to 1 pm.

Their inclusion can be no coincidence: the system of earthly branches had already entered the Islamic world through the work of Naṣīr al-Dīn al-Ṭūsī, who introduced it

³⁰ Lin Lijuan 林麗娟, “Yuandai Chuan Ru Zhongguo de Xila-Alabo Zhishi,” 166–67.

³¹ For additional interpretations of the term, see Appendix 2: Annotations.

³² Fang Xuanling 房玄齡, *Jin Shu* [晉書] (Zhonghua shuju, 2012), *juan* 12, 2:317–318; 320.

³³ Fang, *Jin Shu*, *juan* 12, 2:317–318; 322.

³⁴ For the concept of the earthly branches and its usage in time reckoning, see Nathan Sivin, *Granting the Seasons: The Chinese Astronomical Reform of 1280, with a Study of Its Many Dimensions and a Translation of Its Records* (Springer Media, 2009), 69, 83.

³⁵ Sivin, *Granting the Seasons*, 82–83.

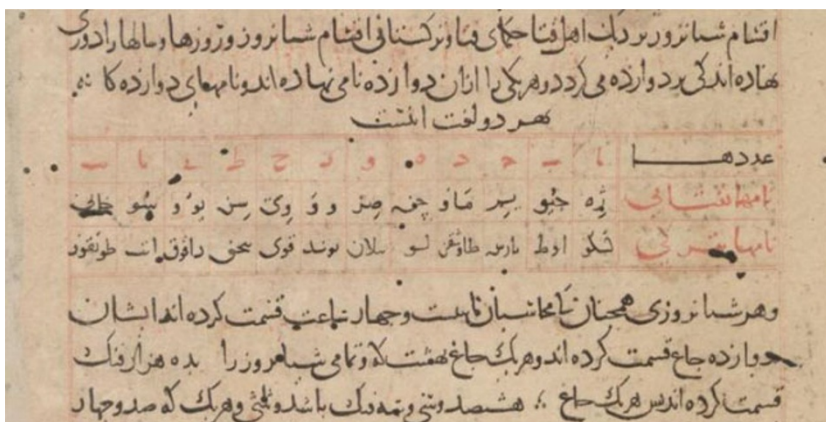


Figure 2. Twelve Earthly Branches in al-Tūsī's *Tārīkh-i Qitā* of *Zīj-i Īlkhānī*, f. 3v, PPN635599538, Staatsbibliothek zu Berlin. <http://resolver.staatsbibliothek-berlin.de/SBB00002D7800000000>.

in the “*Tārīkh-i Qitā*” (Chinese calendar) chapter of his *Zīj-i Īlkhānī* (1272). This calendar subsequently appeared in several later Persian and Arabic *zīj*es.³⁶ The Twelve Earthly Branches appear at the very beginning of al-Tūsī's chapter, presented in a table that pairs their Chinese names phonetically transcribed with the corresponding animal in Turkish (Figure 2), illustrating the twelve-animal cycle adopted by the Turko-Mongols and popularized during the Ilkhanid period. The table is accompanied by explanations of the associated double-hours and other units of time.³⁷ Unlike the *Zīj-i Īlkhānī*, the *HHZZ* omits the zodiac animals associated with the earthly branches, except for a single instance of the dragon (no. 117). This translation choice aligns with the broader absence of Mongol loanwords in the glossary, though this last observation remains tentative and warrants further research.

Another example indicating the vocabulary transmission direction from Chinese into Persian is the term *wuxing* (五行), “five constituents” (no. 135). The *wuxing*—water, fire, wood, metal, and earth—represent the foundational elements of a cosmological and correlative system central to classical Chinese thought. In the context of divination, *wuxing* provide a dynamic framework for interpreting transformations in the natural and political order through correspondence among celestial, terrestrial, and human phenomena. The topic of *wuxing* often constitutes a separate chapter within the *zhi* (志, treatises on various aspects of governance) section of China's “official dynastic histories.”³⁸ Such chapters typically follow those on *tianwen* (天文, celestial phenomena) and record calamities and anomalies. For instance, occurrences of floods would be classified under “water,” while locust infestations would fall under “wood.” It is therefore fitting that the term *wuxing* appears a few entries below those on calamities within the glossary; its placement aligns closely with the Chinese divinatory framework that organizes such correlations.³⁹

Taken together, the examination of these two wordlists reveals strategies of conceptual translation and a bidirectional flow of astral and cosmological knowledge. The vocabulary seems to have been drawn from a larger pool of terms circulating in contemporary texts.

³⁶ Yoichi Isahaya, “The *Tārīkh-i Qitā* in the *Zīj-i Īlkhānī*: The Chinese Calendar in Persian,” *SCIAMVS: Sources and Commentaries in Exact Sciences* 14 (2013): 149–50.

³⁷ Isahaya, “Chinese Calendar in Persian,” 166–68, 187–89.

³⁸ For an overview of the “treatises” as a literary genre within Chinese historiography, see “49.8 Treatises” in Endymion Wilkinson, *Chinese History: A New Manual, Seventh Edition* (Pleco, 2025). For *wuxing* in treatises, see “49.8.5 Five Phases.”

³⁹ See entries nos. 127–130 in Appendix 2: Annotations.

For instance, al-Ṭūsī's *Zīj-i Ilkhānī* translates and explains a much broader range of Chinese terms, covering numerous components of the solar calendrical system.⁴⁰ Similarly, the translated Hellenistic-Islamic astronomical treatises compiled at the Ming court contain more specialized vocabulary, including the lunar mansions and planetary houses, which carry greater scientific depth but are not seen in the *HHZZ*.⁴¹ Naturally, this absence reflects the practical purpose of the College of Foreign Translation: to equip officials with linguistic tools for handling official documents, rather than to provide specialized disciplinary training. Nevertheless, the *HHZZ*'s astronomy and astrology vocabulary demonstrates a two-way flow of knowledge, grounded in collaborative textual study, in which Chinese and Persianate scholars each contributed distinct conceptual repertoires.

Decline

The supplementary glossary was added to the corpus in the late sixteenth century, more than a hundred years after the compilation of the original glossary. The added entries in astronomy and astrology, though few in number, offer several instructive observations, especially when compared with those in the original lists. Although supplementary lists follow the same formatting standards and show no discernible differences in handwriting or visual quality, they nonetheless present several discrepancies from the main list, thereby exhibiting a subtle decline in entry quality and a shift in compilation methods. These discrepancies offer valuable insight into the changing status of Persian within the Ming bureaucracy.

Most notably, the method of selecting Persian equivalents appears to have become less contextually accurate compared to the original lists, whose word choices are notably precise and often reflect genuine scientific exchange. For example, the correspondence between the Chinese astronomical terms *Shen* (參, no. 780) and *Chen* (辰, no. 781), both denoting specific celestial bodies, and their Persian counterparts is vague. In the case of *Azhdar/Chen* (辰, no. 781) in particular, since the same pairing already appears in the original list, it seems likely that the compiler simply reused it without considering its meaning in this specific context.

Next, *lou* 漏 (no. 801), placed immediately after *geng* (更)/*pās*, “a portion of the night” (no. 800), would be readily understood by an informed Chinese reader as referring to a time-keeping device such as a water clock or hourglass. If the conceptual translation approach seen in the original glossary had been applied, *lou* would have been rendered as the Persian term for a comparable time-measuring instrument, even if the form might differ. Instead, the Persian equivalent given conveys the meaning of *lou* as a verb (“to drip”), which, while correct at the lexical level, misses the contextual sense.

Even more problematic is the glossing of *he* (和, no. 805). Within a cluster of terms relating to weather and temperature, *he* clearly connotes moderation or mildness. Yet, it is glossed as *mowāsā*, meaning “ease” or “benevolence,” which is indeed another connotation of *he*, but entirely unrelated to the semantic field of time or seasons.

Viewed as a whole, the entries in these two supplementary lists appear less systematic, as if drawn sporadically from disparate sources. Ford notes that some terms of the supplementary glossary came from diplomatic correspondence and the *laiwen*, citing expressions such as *Khozāvand-e Ta'ālā* (God Most High, no. 778) found repeatedly in these texts.⁴² While these materials likely contributed, other, unexamined sources of different types must also have been used, suggesting a more ad hoc approach to term selection.

⁴⁰ Isahaya, “Chinese Calendar in Persian,” 255–57.

⁴¹ The origins of these translated works, as well as the influences embedded within them, are complex; for a brief discussion, see Weil, “Chinese-Muslims as Agents of Astral Knowledge in Late Imperial China,” 63.

⁴² Ford, “Persian Translating at the Ming Court,” 197–99.

These findings point to a decline in the quality and coherence of the astronomy and astrology vocabulary in the supplementary lists. The brevity of the glossary is also noteworthy. While adding to an already substantial glossary is inherently more difficult than compiling one from scratch—and brevity alone should not be taken as conclusive evidence of a decline in Persian's status—the two lists under consideration have, in fact, shrunk considerably in size compared to other supplementary wordlists. This observation aligns with the series of challenges faced by the Ming government after the Yongle reign (1403–1424), including fiscal contraction, the Tumu Crisis, and the subsequent inward-looking diplomatic policies. Together, these changes led to the College of Foreign Translation's declining status within the Ming bureaucracy and a corresponding decrease in the scholarly level of its faculty and students.⁴³ On the other hand, a significant portion of the new entries added to the *HHZZ* are miscellaneous in nature, grouped under “general,” and consist largely of words and phrases suited to everyday or travel contexts.⁴⁴ Although these vocabularies are not the focus of close analysis in this article, their presence suggests that less specialized exchanges continued to take place—much in line with the Central Asian merchant Ali Akbar Khatayi's report of China in the early sixteenth century.⁴⁵ Taken together, these patterns reveal a stagnation in the development of astral sciences terminology after the completion of the original glossary, likely reflecting a reduced level of scholarly and technical collaboration between the Chinese and Persianate cosmopolises after the Yongle reign. The patterns may also indicate the disappearance of a genuinely multilingual intellectual working environment, though the shifting status of Persian in other spheres requires further investigation.

Conclusion

Analysis of the “celestial phenomena” and “times and seasons” wordlists in the *HHZZ* reveals the text as a layered record of cross-cultural intellectual encounter. The original compilation reflects a high level of conceptual translation, where precision in rendering technical and idiomatic terms points to a multilingual environment shaped by close reading of scientific texts exchanged under Mongol rule. Within this framework, a bidirectional flow of astral and cosmological knowledge emerges, with Chinese and Islamicate scholars each contributing distinct conceptual repertoires, though without fundamentally altering each other's astronomical systems.

The supplementary vocabulary in the same field, however, marks a shift: its inconsistencies, limited scope, and reduced contextual accuracy signal the erosion of that earlier intellectual vibrancy. In tracing this trajectory from precision and balance to fragmentation, the *HHZZ* offers not only a snapshot of Persian instruction within the Ming bureaucracy but also a window into the broader arc of specialized knowledge transmission between China and the Persianate world—from the Mongol-period dynamism to its gradual contraction in the later Ming.

The findings presented here are based on a close examination of two *HHZZ* vocabulary categories selected for their relevance to astral-science exchange. In addition to the insights into knowledge transmission discussed above, these lists reveal discrepancies in linguistic representation across subject matter as well as occasional features suggestive of varied Persian dialects—points that warrant further investigation in conjunction with the other vocabulary in the glossary. Moreover, the remaining sections of the glossary, both as discrete semantic fields and in relation to one another, need to be situated within their

⁴³ Chu Ton-Chi 朱冬芝, “The Siyi Guan and Its Students in Ming Dynasty” [明代的四夷館與譯字生] (PhD diss., National Chengchi University, 2020), 302–3, <https://doi.org/10.6814/NCCU202001831>.

⁴⁴ Honda, *HHZZ*, s.v., 910–1010.

⁴⁵ Kaveh Hemmat, “Introduction,” in *The Book of China: A Persian Merchant's Description of the Chinese State for the Ottoman Court* (unpublished manuscript, August 20, 2025), typescript.

respective historical contexts. Such studies promise to shed further light on the linguistic influences and orthographic traits of the New Persian circulating on the eastern edges of the Persianate cosmopolis between the thirteenth and sixteenth centuries. The present article therefore underscores the importance of further close textual analysis of the *HHZZ* and its sources. Beyond building on existing comprehensive studies, this article also makes the material accessible to a wider readership and illuminates the shifting dynamics between the “western regions” and China in the aftermath of Mongol hegemony.

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Appendix I: The wordlists

In the following table, I present my transcription of both the Persian and Chinese entries from the *tianwen* (天文, celestial phenomena) and *shiling* (時令, times and seasons) lists, accompanied by monochromatic images of each original Persian entry from the Berlin manuscript of the *HHZZ*. This format highlights how these terms are interpreted and presented *within* the *HHZZ*, rather than how the Persian or Chinese terms might be understood in other contexts. Each Persian-Chinese pairing does not necessarily reflect the most common correlation in standardized, contemporary Iranian Persian and Chinese. These semantic nuances are, in fact, among the most valuable features of the *HHZZ*, as they reveal how Persian was understood as the “language of the Huihui” within the Ming College of Foreign Translation.

Transcription notes

1. The English translation is based on each term's registered Chinese equivalents and semantic context. The translation does not necessary reflect the most common or "correct" rendering of the Persian term in present-day usage; this approach constitutes a major difference from Honda's.
2. In the *HHZZ*, Persian terms are also written using Chinese characters to approximate their pronunciation (Figure 3)—presumably for the benefit of Chinese-speaking users. To reconstruct how these phonetic transcriptions might have been pronounced at the time, I followed Pulleyblank's system of romanization for Yuan-period Chinese.⁴⁶
3. The numbering of the entries corresponds to their positions in the complete *HHZZ*, hence the gap between the wordlists. This numbering aligns with that indicated in both Honda's and Liu's work, allowing for easier comparison and reference.
4. Transcription errors in the manuscript are marked with an "X" with explanation and correction provided in the annotation section.
5. Dialectal variants (e.g., ㄨ vs. ㄩ) are reproduced as they appear. For historical Arabo-Persian orthographic conventions (e.g., 𐭥 for 𐭥; 𐭥 for 𐭥; 𐭥 for 𐭥), I supply the standard spelling in brackets without further comment.

⁴⁶ Edwin G. Pulleyblank, *Lexicon of Reconstructed Pronunciation in Early Middle Chinese, Late Middle Chinese and Early Mandarin* (UBC Press, 1991).

Table 1. The wordlist of the “celestial phenomena” category (tianwen men, 天文門)

no.	Persian in ms.	Persian transcription and romanization		Chinese connotation in the glossary and English translation		Phonetic transcriptions of Persian terms in Chinese characters in the glossary and romanization	
original							
1	آسمان	آسمان	āsmān	天	sky	阿思媽恩	ɔ-sz-ma-ən
2	آفتاب	آفتاب	āftāb	日	sun	阿夫他卜	ɔ-fu-tʰɔ-pu
3	ماه	ماه	māh	月	moon	媽黑	ma-xəj
4	ستاره	ستاره	setāra	星	star	洗他勒	si-tʰɔ-ləj
5	ابر	ابر	abr	雲	cloud	阿卜兒	ɔ-pu-r
6	باد	باد	bād	風	wind	巴得	pa-dəj
7	باران	باران	bārān	雨	rain	把刺恩	pa-la-ən
8	شبنم	شبنم	shabnam	露	dew	舍卜南	ʃɛ-pu-nan
9	پیش	پیشک	poshk	霜	frost	僕石克	pʰu-ʃi-kʰəj
10	برف	برف	barf	雪	snow	百兒夫	paj-r-fu

(Continued)

Table 1. (Continued.)

no.	Persian in ms.	Persian transcription and romanization		Chinese connotation in the glossary and English translation		Phonetic transcriptions of Persian terms in Chinese characters in the glossary and romanization	
11	رعد	رعد	<i>ra'd</i>	雷	thunder	勒阿得	ləj-ɔ-təj
12	برق	برق	<i>barq</i>	電	lightning	百兒革	paj-r-kaj
13	قوس قرخ	قوس قرخ ^x	<i>qows-e qazakh (qows-e qazah)</i>	虹	rainbow	高思古則黑	kaw-sz ku-tsaj-xəj
14	بن النعش	بنات النعش	<i>banāt al-na'sh</i>	斗	the Dipper	百納吞納阿石	paj-na-tʰən-na-ɔ-ʃi
15	بخار	بخار	<i>bokhār</i>	煙	steam	卜哈兒	pu-xja-r
16	غبار	غبار	<i>ghobār</i>	霧	mist	五巴兒	wu-pa-r
17	یخ	یخ	<i>yakh</i>	冰	ice	夜黑	jɛ-xəj
18	یخچه	یخچه	<i>yakhcha</i>	雹	hailstone	夜黑徹	jɛ-xəj-tʃɛ
19	صاعقه	صاعقه	<i>sā'eqa</i>	霆	thunderbolt	撒額革	sa-njɛ-kaj
20	آتش	آتش	<i>ātesh</i>	火	fire	阿忒石	ɔ-tʰəj-ʃi
21	نور	نور	<i>nur</i>	光	light	奴兒	nu-r
22	سایه	سایه	<i>sāya</i>	影	shadow	撒夜	sa-jɛ

(Continued)

Table 1. (Continued.)

no.	Persian in ms.	Persian transcription and romanization	Chinese connotation in the glossary and English translation		Phonetic transcriptions of Persian terms in Chinese characters in the glossary and romanization	
23	روشن	روشن <i>rowshan</i>	明	bright	羅山	lɔ-ʃan
24	تاریک	تاریک <i>tārik</i>	暗	dark	他列克	tʰɔ-ljɛ-kʰja
25	باد صبا	باد صبا <i>bād-e šabā</i>	東風	east wind; spring breeze	巴得塞巴	pa-de saj-pa
26	باد سموم	باد سموم <i>bād-e samum</i>	熏風	warm wind	巴得塞木恩	pa-de saj-mu- ən
27	باد دیور	باد دیور <i>bād-e dabur</i>	金風	autumn wind; west wind	巴得得卜兒	pa-de de-pu-r
28	باد صایم	باد صایم <i>bād-e šāyim</i>	朔風	north wind; winter wind	巴得撒因	pa-de sa-jin
29	داره	داره <i>dāra</i>	日運	solar halo	打勒	ta-ləj
30	هاله	هاله <i>hāla</i>	月運	lunar halo	哈勒	xja-ləj
31	بدر	بدر <i>badr</i>	圓月	full moon	百得兒	paj-dəj-r
32	حاق	محاق <i>moḥāq</i>	殘月	waning moon	母哈革	mu-xja-kjaj

(Continued)

Table 1. (Continued.)

no.	Persian in ms.	Persian transcription and romanization		Chinese connotation in the glossary and English translation		Phonetic transcriptions of Persian terms in Chinese characters in the glossary and romanization	
33	كسوف	كسوف	<i>kosuf</i>	日蝕	solar eclipse	苦蘇夫	k ^h u-su-fu
34	خسوف	خسوف	<i>khosuf</i>	月蝕	lunar eclipse	虎蘇夫	xu-su-fu
35	زاله	زاله	<i>zhāleh</i>	霖雨	heavy rain	惹勒	rɛ-ləj
36	ثابتات	ثابتات	<i>sābitāt</i>	雜星	“assorted stars”	撒比他忒	sa-pi-t ^h ɔ-t ^h əj
37	سيارات	سيارات	<i>sayyārāt</i>	七政	“the Seven Governors”	塞呀刺忒	saj-ja-la-t ^h əj
38	صبح صادق	صبح صادق	<i>ṣobḥ-e sādeq</i>	天曉	the true dawn	速卜黑撒的革	su-pu-xəj sa-te-kjaj
39	هوا	هوا	<i>havā</i>	天氣	air	黑洼	xəj-wa
40	انجلا	[ء] انجلا	<i>injelā[ʔ]</i>	復圓	“returning to roundness”; manifestation	尹知刺	jin-tʃi-la

(Continued)

Table 1. (Continued.)

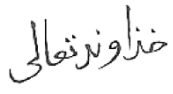
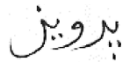
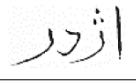
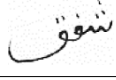
no.	Persian in ms.	Persian transcription and romanization	Chinese connotation in the glossary and English translation		Phonetic transcriptions of Persian terms in Chinese characters in the glossary and romanization	
Supplementary entries						
778		خداوند تعالی	<i>Khozāvand-e ta'ālā</i>	上天	Heaven; God Most High	黑咱灣得忒阿刺 xəj-tsan-wan-təj tʰəj-ɔ-la
779		دنیا	<i>donyā</i>	世界	world	鈍呀 tun-ja
780		پروین	<i>Parvin</i>	參	the lunar mansion of Shen	迫兒云 paj-r-yn
781		اژدر	<i>Azhdar</i>	辰	Chen	阿日得兒 ɔ-ri-dəj-r
782		شعاع	<i>sho'ā'</i>	輝	radiance	舍阿額 ʃɛ-ɔ-njɛ
783		شفق	<i>shafaq</i>	霞	afterglow	舍法革 ʃɛ-fa-kjaj
784		ارش	<i>arsh</i>	輪	moon[light]; [celestial] edge	阿兒石 ɔ-r-ʃi

Table 2. The wordlist of the “times and seasons” category (shiling men, 時令門)

no.	Persian in ms.	Persian transcription and romanization		Chinese connotation in the glossary and English translation		Phonetic transcriptions of Persian terms in Chinese characters in the glossary and romanization	
original							
97	سال	سال	sāl	年	year	撒勒	sa-ləj
98	ماه	ماه	māh	月	month	媽黑	ma-xəj
99	روز	روز	ruz	日	day	羅子	lɔ-tsʒ
100	ساعت	ساعت	sāʿat	時	hour	撒額忒	sa-njɛ-tʰəj
101	بهار	بهار	bahār	春	spring	卜哈兒	pu-xja-r
102	تابستان	تابستان	tābestān	夏	summer	他比思他恩	tʰɔ-pi-sz-tʰɔ- ən
103	تیرماه	تیرماه	tirmāh	秋	autumn	體兒媽黑	tʰi-r ma-xəj
104	زمستان	زمستان	zemestān	冬	winter	即米思他恩	tsi-mi-sz-tʰɔ- ən
105	بامداد	بامداد	bāmdād	早	morning; daybreak	榜搭得	paŋ-ta-dəj

(Continued)

Table 2. (Continued.)

no.	Persian in ms.	Persian transcription and romanization	Chinese connotation in the glossary and English translation		Phonetic transcriptions of Persian terms in Chinese characters in the glossary and romanization	
106	شبانه	(شبانهگاه) شبانهگاه	(shabāngā)	晚 nighttime	舍榜噶黑	ʃɛ-paŋ-ka-xəj
107	اجتماع	اجتماع	ejtemāʾ	朔 new moon	以知體媽額	ji-tʃi-tʰi-ma-njɛ
108	استقبال	استقبال	esteqbāl	望 full moon	以思體革巴勒	ji-sz-tʰi-kjaɪ- pa-ləj
109	سرما	سرما	sarmā	寒 cold	塞兒媽	saj-r-ma
110	حرما	(گرما) گرما	(garmā)	熱 heat	革兒媽	kjaɪ-r-ma
111	تیره	تیره	tira	陰 dim; dull	體勒	tʰi-le
112	صاف	صاف	ṣāf	晴 clear	撒夫	sa-fu
113	نیم‌شب	نیم شب	nim-shab	子 zi, the first earthly branch	恁舍卜	nən-ʃɛ-pu
114	سحر	سحر	saḥar	丑 chou, the second earthly branch	塞黑兒	saj-xəj-r
115	پگاه	(پگاه) پگاه	(pagāh)	寅 yin, the third earthly branch	僕噶黑	pʰu-ka-xəj

(Continued)

Table 2. (Continued.)

no.	Persian in ms.	Persian transcription and romanization		Chinese connotation in the glossary and English translation		Phonetic transcriptions of Persian terms in Chinese characters in the glossary and romanization	
116	ضخوه	ضخوه	zohwa	卯	mao, the fourth earthly branch	祖黑幹	tsu-xəj-wə
117	اژدر	اژدر	azhdar	辰	chen, the fifth earthly branch	阿日得兒	ɔ-ri-dəj-r
118	چاشتگاه	(چاشتگاه) چاشتگاه	(chāshtgāh)	巳	si, the sixth earthly branch	义[叉]石忒噶黑	tɕʰa-ɕi-tʰəj-ga-xəj
119	استوا	استوا	estevā	午	wu, the seventh earthly branch	以思體洼	ji-sz-tʰi-wa
120	پیشین	(پیشین) پیشین	pishin	未	wei, the eighth earthly branch	撒石尹	pʰje-ɕi-jin
121	دیگر	(دیگر) دیگر	(digar)	申	shen, the ninth earthly branch	底革兒	ti-kjaj-r
122	آفتاب‌ورفتن	آفتاب فرو رفتن	āftāb foru raftan	酉	you, the tenth earthly branch	阿夫他卜-府羅-勒夫貪	ɔ-fu-tʰɔ-pu fu-lə le-fu-tʰam

(Continued)

Table 2. (Continued.)

no.	Persian in ms.	Persian transcription and romanization		Chinese connotation in the glossary and English translation		Phonetic transcriptions of Persian terms in Chinese characters in the glossary and romanization	
123	شام	شام	shām	戌	xu, the eleventh earthly branch	沙恩	ša-ən
124	خفتن	خفتن	khof̄tan	亥	hai, the twelfth earthly branch	虎夫貪	xu-fu-t ^h am
125	معتدل	معتدل	mo’tadel	溫	moderate	母阿忒的勒	mu-ʔ-t ^h əj-te-le
126	فسردن	فسردن	fesordan	凍	to freeze	非思兒丹	fi-sz-r-dan
127	سالعشرت	سال عشرت	sāl-e ‘oshrat	稔年	auspicious year	撒勒- 額石勒忒	sa-le nje-ʃi-le-t ^h əj
128	سال قحطی	سال قحطی	sāl-e qahṭi	歉年	year of scarcity	撒勒-革黑推	sa-le kjaj-xəj-tɕ ^h uj
129	آفت سماوی	آفت سماوی	āfat-e samāwi	水災	flood	阿法梯- 塞媽迂	ʔ-fa-t ^h i saj-ma-y

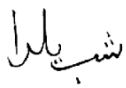
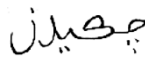
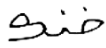
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Table 2. (Continued.)

no.	Persian in ms.	Persian transcription and romanization	Chinese connotation in the glossary and English translation		Phonetic transcriptions of Persian terms in Chinese characters in the glossary and romanization	
130	آفت‌خشه	آفت خشک <i>āfat-e koshk</i>	旱災	drought	阿法梯- 戶石克	ɔ-fa-tʰi xu-ʃi- kʰəj
131	دینه	دینه <i>dina</i>	昨日	yesterday	底納	ti-na
132	فردا	فردا <i>fardā</i>	明日	tomorrow	法兒搭	fa-r-ta
133	هرروز	هر روز <i>har ruz</i>	逐日	everyday	哈兒-羅子	xaj-r lɔ-tsɹ
134	چهار فصل	چهار فصل <i>chahār faşl</i>	四季	four seasons	义[叉]哈兒- 法思勒	tɕʰa-xaj-r fa-sz-le
135	پنج عناصر	پنج عناصر <i>panj 'anāşer</i>	五行	five constituents	潘知- 額納速兒	pʰɔn-tɕi nje- na-su-r
136	سال‌رونده	سال رونده <i>sāl-e ravanda</i>	去年	the past year	撒勒-勒灣得	sa-le le-wan- təj
137	سال‌آینده	سال آینده <i>sāl-e āyanda</i>	來年	the coming year	撒勒-阿言得	sa-le ɔ-jen-təj

(Continued)

Table 2. (Continued.)

no.	Persian in ms.	Persian transcription and romanization	Chinese connotation in the glossary and English translation		Phonetic transcriptions of Persian terms in Chinese characters in the glossary and romanization		
Supplementary entries							
799		شب یلدا	shab-e Yaldā	冬至	the winter solstice	舍卜夜勒搭	ʃɛ-pu jɛ-ləj-ta
800		پاس	pās	更	night shift; a division of the night	思	p ^h a-sz
801		چکیدن	chakidan	漏	to drip; the timing device of <i>lou</i>	扯期丹	tʃ ^h ɛ-k ^h i-dan
802		× لحظ	lakhz (lahz)	刻	moment	勒黑則	ləj-xəj-tsaj
803		خنک	khonok	冷	cold	虎奴克	xu-nu-k ^h ja
804		(گرم) گرم	(garm)	暖	warm	革藍	kjaj-lam
805		مواسا	mowāsā	和	moderate; consolation	母洼撒	mu-wa-sa

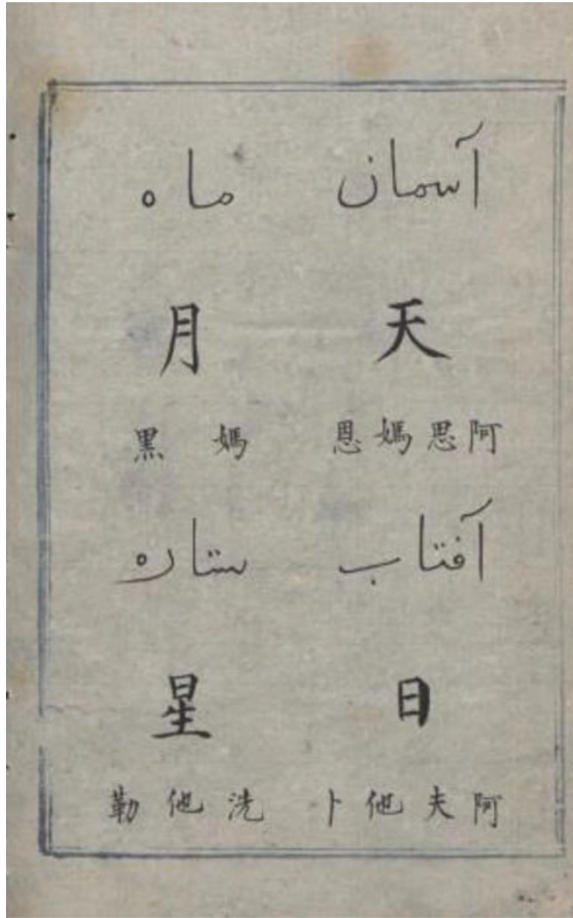


Figure 3. a sample page of the HHZZ. PPN334615730X, Staatsbibliothek zu Berlin. <http://resolver.staatsbibliothek-berlin.de/SBB000103AF00000000>.

Appendix 2: Annotations

The annotations focus on idiomatic, technical, and glossary-specific terms, and do not engage with common high-frequency entries unless orthographic or transcriptional clarification is needed. Annotation numbers correspond to those in the wordlists above.

9. “پشک” is commonly pronounced *pashak*.⁴⁷ The pronunciation *pushk* is a reconstruction based on the word’s phonetic annotation in Chinese.

13. In the Persian entry, *h* (ح) is incorrectly transcribed as *kh* (خ).

14. The phrase *banāt al-na’sh* (P < A, lit. “daughters of the bier”) refers to the constellations Ursa Major and Ursa Minor. The Chinese word *dou* (斗) often refers to the Big Dipper, an asterism consisting of seven stars within Ursa Major.

The Chinese syllable *tun* (吞) in the phonetic annotation corresponds to the syllable *tun* in the assimilated Arabic pronunciation of *banātu al-na’sh* → *banā-tun-na’sh*, demonstrating the phonological assimilation (*idghām*) of ت (*tu*) and الن (*al-n* → *an-n*).

25. *Saba* (P < A), often translated as “zephyr,” denotes an east wind, opposed to *dabūr* (west wind). Both the Persian and Chinese phrases can connote a gentle spring breeze.

⁴⁷ Dehkhoda Online, s.v. “پشک” accessed August 17, 2025, <https://dehkhoda.ut.ac.ir/en/dictionary>.

26. *Samun* ($P < A$), meaning “hot wind,” typically carries connotations of intense, scorching heat, whereas the Chinese equivalent *xunfeng* (熏風) implies a pleasant warm wind. There is a nuanced difference in emotional or environmental implication.

27. *Dabur* ($P < A$) means “west wind,” while the Chinese phrase *jinfeng* (金風, golden wind) typically refers to the autumn wind, which may function synonymously with west wind in poetic or seasonal contexts.

28. This entry is somewhat ambiguous. *Ṣāyim* (صايم), a variant of *ṣā'im* (صائم) in Arabic, commonly means “abstaining” or “standing still.” When applying to wind, it could denote stillness or calmness.⁴⁸ In this glossary, it may refer to the dryness of the wind. The Chinese phrase *shuofeng* (朔風) means “the north wind.”

29 & 30. Both *dāra* ($P < A$) and *hāla* ($P < A < G$) mean “ring” or “halo,” and more specifically refer to a moon halo in both Persian and Arabic.⁴⁹

36. *Sābitāt* (ثابتات), “fixed stars,” refers to luminaries that appear stationary relative to one another in the night sky. The Chinese equivalent *zaxing* (雜星), meaning “assorted stars,” refers to various types of celestial bodies other than the visible luminaries within the solar system; its connotation and scope are broader and less specific than those of “fixed stars.”

37. *Sayyārāt* (سیارات), “wandering stars,” refers to the planets. The Chinese equivalence *qizheng* (七政) means “the Seven Governors,” that is, seven celestial bodies governing worldly affairs. There had been varying interpretations of the term.⁵⁰ In Ming-era astrological texts, the term refers to Mercury, Venus, Mars, Jupiter, and Saturn, along with the Sun and Moon.⁵¹

40. *Injelā* (انجلاء), a variant of the Arabic verbal noun *injilā'* (انجلاء), means “to be manifest.” In the astronomical context, it refers to the final phase of an eclipse. The Chinese equivalent *fuyuan* (復圓, lit. “returning to roundness”) captures this phase precisely.

103. *Tirmāh* is the fourth month of the solar calendar, during which the Sun is in the sign of Cancer. Occasionally, the term denotes autumn or leaf-fall.⁵² Although *pāyiz* (پاییز) is the standard Persian term for “autumn,” *tirmāh* is retained in some eastern Persian dialects, e.g., *mupamoḥ* (*tiramoh*) in Tajiki. Honda marks this entry as “questionable,” but it appears accurate within the glossary and likely reflects the dialects used by the compilers.⁵³

105. Hui Muslims or other Chinese-speaking Muslims may refer to the *fajr* prayer as *bangdade* (榜打得) or *bangda* (榜答), derived from the term *bāmdād*, “daybreak.”⁵⁴

107. *Ejtemā'* ($P < A$), “conjunction,” refers to the alignment of the Moon between the Sun and Earth, marking the beginning of the lunar month. The Chinese term *shuo* (朔) refers to the new moon/first day of the lunar month.

108. *Esteqbāl* ($P < A$), “opposition; going forth to meet,” denotes the full moon phase, when the Sun and Moon are on opposite sides of the Earth, marking the midpoint of the month. The Chinese term *wang* (望) refers to mid-month or full moon.

113. *Nim-shab* (P), “midnight,” is used to gloss *zi* (子), the first earthly branch, which is associated with the rat and designates the period from 11 pm to 1 am.

114. *Ṣaḥar* ($P < A$), “time just before the dawn,” is used to gloss *chou* (丑), the second earthly branch, which is associated with the ox and designates the period from 1 am to 3 am.

115. *Pagāh* (P), “early dawn,” is used to gloss *yin* (寅), the third earthly branch, which is associated with the tiger and designates the period from 3 am to 5 am.

116. *Zoḥva* ($P < A$), “the time shortly after the sun has risen,” is used to gloss *mao* (卯), the fourth earthly branch, which is associated with the rabbit and designates the period from 5 am to 7 am.

117. For most earthly branches, the Persian terms describe the corresponding times of day. *Chen* (辰) is the only exception, as the associated zodiac animal, the dragon (*azhdar*), is given. The time of *chen* corresponds to 7 am to 9 am. Notably, *azhdar* (اژدر) appears two other times in the *HHZZ*, designating the celestial body *Chen* (辰, no.781) and dragon (animal) respectively.⁵⁵

118. *Chāshṭgāh* (P), “forenoon,” is used to gloss *si* (巳), the sixth earthly branch, which is associated with the snake and designates the period from 9 am to 11 am.

⁴⁸ Lane's Lexicon Online, s.v. “صائم,” accessed August 17, 2025, <https://www.laneslexicon.com/>.

⁴⁹ Dehkhoda Online, s.v. “دارة” and “هاله,” accessed August 17, 2025, <https://dehkhoda.ut.ac.ir/en/dictionary>; Lane's Lexicon Online, s.v. “ذائرة,” accessed August 17, 2025, <https://www.laneslexicon.com/>.

⁵⁰ For a discussion of the various interpretations, see Sivin, *Granting the Seasons*, 214 fn. 249.

⁵¹ The *Qizheng tuibu* (七政推步) and other treatises that clearly demonstrate the meaning of the “Seven Governors” can be found in Ma and Chen, *Zhongguo Huihui lifa jicong*.

⁵² Dehkhoda Online, s.v. “تیرماه,” accessed August 17, 2025, <https://dehkhoda.ut.ac.ir/en/dictionary>.

⁵³ Hondar, *HHZZ*, 216.

⁵⁴ Liu, *HHZZ*, 71; Li Shengxin 李生信, *Xibei Huizu hua yanjiu* [西北回族话研究] (Shehui kexue wenxian chubanshe, 2016), 71.

⁵⁵ See no.781 and no. 376 in Honda, *HHZZ*.

119. The term *estevā* (استوا) is an alternate form of the Arabic verbal noun *istiwāʾ* (استواء), “to become equal or balanced.” It is used here to denote the solar noontime, i.e., when the Sun is balanced at its zenith point. It is used here to gloss *wu* (午), the seventh earthly branch, which is associated with the horse and designates the period from 11 am to 1 pm.

120. *Pishin*, the Persian equivalence of Arabic *zuhr* (ظهر), means “noon” or “the time when the Sun has passed its zenith.” It is used here to gloss *wei* (未), the eighth earthly branch, which is associated with the goat and designates the period from 1 am to 3 pm. Hui Muslims or other Chinese-speaking Muslims may refer to the *zuhr* prayer as *pieshen* (撇申), derived from *pishin*.⁵⁶

121. *Digar*, the Persian equivalent of Arabic *aṣr* (عصر), means “afternoon.” It is used here to gloss *shen* (申), the ninth earthly branch, which is associated with the monkey and designates the period from 3 am to 5 pm. Hui Muslims may refer to the *aṣr* prayer as *digeʿr* (底革兒) or *digaile* (底蓋勒), derived from *digar*.⁵⁷

122. *Āftāb foru raftan* (P), “sunset,” is used to gloss *you* (酉), the tenth earthly branch, which is associated with the rooster and designates the period from 5 pm to 7 pm.

123. *Shām* (P), “evening” or “nightfall,” is used to gloss *xu* (戌), the eleventh earthly branch, which is associated with the rooster and designates the period from 7 pm to 9 pm.

124. *Khoftan* (P), “to sleep,” in the context of prayer times, it is the equivalence of Arabic *ʿishāʾ* (عشاء), “evening.” It is used here to gloss *hai* (亥), the twelfth earthly branch, which is associated with the pig and designates the period from 9 pm to 11 pm. Hui Muslims may refer to the *ʿishāʾ* prayer as *hufutan* (虎夫灘), derived from *khoftan*.⁵⁸

129. The term *āfat-e samāwi* (آفت سماوی), lit. “celestial calamities,” refers in agriculture to atmospheric damages affecting crops, such as hail, frost, or locusts.⁵⁹ The Chinese term *shuizai* (水災) specifically denotes flood.

135. The *wuxing* (五行), the “five constituents” of water, fire, wood, metal, and earth, represent the foundational elements in a cosmological and correlative system central to classical Chinese thought. Each element embodies specific qualities, movements, and transformations whose balance or disruption signifies harmony or disorder in the cosmos. While the Persian entry *panj ʿanāser* does not convey the full range of connotations associated with the Chinese term, it nevertheless captures the literal meaning with precision.

778. *Khozāvand-e Taʿālā*, “God Most High” or “the Exalted God,” is the combination of the dialectal/archaic Persian form of *khodāvand* (خداوند), “lord,” and the Arabic term *taʿālā* (تعالی), “exalted.” This expression is a respectful way to refer to God and is commonly seen in Persian texts. Timurid chroniclers employed *Khozāvand-e Taʿālā* to translate the Chinese concept *Tian* (天)—often rendered as “Heaven”—in their versions of the diplomatic correspondence between the Yongle emperor and Shahrukh.⁶⁰ In the Chinese context, *Tian* refers to “the Supreme Power” or the source of the Mandate of Heaven, and is used to underscore imperial legitimacy and divine authority.

780. *Parvin* is often identified with the Pleiades star cluster, though its precise referent can vary across sources.⁶¹ The Chinese term *Shen* (參) designates the twenty-first lunar mansion in Chinese cosmology.

781. *Azhdar* appears more than once in the *HHZZ* (see note 117). In this entry, it may denote the constellation corresponding to Draco. However, the correlation between the Persian and Chinese terms is unclear, as the Chinese *Chen* (辰), in an astronomical context, can refer broadly to celestial bodies or specifically to the planet Mercury.

784. The Persian and Chinese terms, though each rich in associations, do not correspond directly in this case. Given that the entry appears within the context of celestial phenomena, the most plausible explanation is that the Chinese term *lun* (輪) refers to the celestial rim or heavenly arch. This would align with the connotation of *ʿarsh* (عرش) as the “outermost celestial sphere.” Accordingly, the appearance of the word as *arsh* (ارش) is likely the result of a transcription error. A similar hypothesis has also been suggested by Liu.⁶²

799. Both *Yaldā* and *dongzhi* (冬至) mark the beginning of winter and the end of autumn, and thus carry nearly identical meanings. The Persian term *shab-e Yaldā* in the list more precisely refers to “the night of Yalda,” which is the longest night of the year.

800. With the connotation of “a portion of the night” or “night watch,” the Persian *pās* and the Chinese *geng* (更) share closely related meanings. The Chinese term is more precise, as the night is traditionally divided into five *gengs*.

⁵⁶ Liu, *HHZZ*, 77.

⁵⁷ Liu, *HHZZ*, 78.

⁵⁸ Liu, *HHZZ*, 79; Li Shengxin, *Xibei Huizu hua yanjiu*, 72.

⁵⁹ Dehkhoda Online, s.v. “آفت,” accessed August 17, 2025, <https://dehkhoda.ut.ac.ir/en/dictionary>.

⁶⁰ For more discussion of the connection between this phrase and the exchanged letters, see Liu, *HHZZ*, 325; Ford, “Persian Translating at the Ming Court,” 185–86. For the Ming-Timurid exchange of embassies, see Carol Fan, “The Timurid Regions and Moghulistan through the Eyes of a Ming Diplomat: An Annotated Translation of the Xiyu Fanguo Zhi and Selected Poems by Chen Cheng (1415),” *Journal of the Economic and Social History of the Orient* 66, no. 7 (2023): 796–99, <https://doi.org/10.1163/15685209-12341607>.

⁶¹ Dehkhoda Online, s.v. “پروین,” accessed August 17, 2025, <https://dehkhoda.ut.ac.ir/en/dictionary>.

⁶² Liu, *HHZZ*, 327.

801. *Lou* (漏), derived from its meaning “to drip,” refers to a time-measuring device that operates through the steady flow of sand or water. The Persian term corresponds to *lou*’s verbal sense.

802. In the Persian entry, *ḥ* (ح) is incorrectly transcribed as *kh* (خ).

805. *Mowāsā* (P < A) denotes ease, rest, favor, and benevolence. While the Chinese term *he* (和) encompasses similar meanings, it can also refer to mild or temperate weather, which makes it a more appropriate fit within the category of “times and seasons.”

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