

Tracing the Historical Context of Early Chinese Buddhist Texts

Described in the *Chu san zang ji ji*

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by

Alexander Amies

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Alexander Amies

Candidate

4/23/2026

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Date

Tracing the Historical Context of Early Chinese Buddhist Texts

Described in the *Chu san zang ji ji*

APPROVED:

*Lewis Lancaster*

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Lewis Lancaster

Chair

4-26-2026

---

Date

*Miroj*

---

Miroj Shakya

Co-chair

4-24-2026

---

Date

*Darui Long*

---

Darui Long

Committee Member

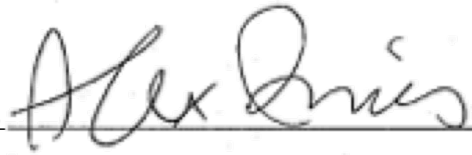
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I hereby declare that this dissertation has not been submitted  
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Signed

A handwritten signature in black ink, appearing to read "Alex Amies", is written over a horizontal line.

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## Abstract

Tracing the Historical Context of Early Chinese Buddhist Texts Described in the *Chu san zang ji ji*

By

Alexander Amies

This dissertation describes an analysis of a corpus of six hundred and two early Chinese Buddhist texts for terminology, linguistic characteristics, translation style, and content. The corpus was assembled from texts in the *Taishō Tripitaka* and *Manji Supplementary Buddhist Canon* that can be related to titles in the *Chu san zang ji ji*. The corpus was augmented with metadata extracted from notes and other data in the *Chu san zang ji ji* and secondary literature. The corpus analysis leverages artificial intelligence, n-gram analysis, classical machine learning, and custom-written software. The results are used both in a descriptive way to provide a holistic understanding of the corpus and in a predictive way to trace the historical context of titles listed in the catalog of the *Chu san zang ji ji*.

The corpus analysis pursues three themes relating to tracing historic context. The first theme is the transmission of Buddhism to China, guided by specifics of people, places, and texts found in the corpus. The second theme is the evolution of the effort of

the translation of Indic texts to Chinese. The third theme is distinguishing translations of Indic source texts from texts composed indigenously in East Asia.

The challenges encountered in this study included relating entries in the catalog to extant texts with title changes and unreliable attributions in modern canons, characterizing a large number of anonymously produced texts, and distinguishing East Asian native compositions. Findings using the novel methodology include a holistic description of the evolution of Buddhist terminology in Chinese translation, identification of translators of texts based on uniquely shared terminology, textual references, copied phrases, and of the characteristics of texts composed natively in China.

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## List of Abbreviations

AI: Artificial intelligence

CBC: Chinese Buddhist Canonical Attributions project

*FGDB: Fo Guang Dictionary of Buddhism*

LLM: Large language model

*Manji: Manji Supplementary Buddhist Canon*

RAG: Retrieval Augmented Generative AI

T: *Taishō Tripiṭaka*

## Chapter One: Introduction

This dissertation presents the compilation and analysis of a corpus of early Chinese Buddhist texts that can be related to titles in the *Chu san zang ji ji* catalog. The corpus analysis includes analysis of terminology, linguistic characteristics, translation style, and content. The corpus analysis will be used as a tool to trace historical context of texts listed in the catalog of the *Chu san zang ji ji*.

The *Chu san zang ji ji* 出三藏記集 (T 2145) was compiled by Sengyou circa 515 C.E.<sup>1</sup> in the Southern Liang dynasty (502–557 C.E.) in fifteen fascicles. It is the earliest extant Buddhist bibliographical document including a catalog, biographies of translators, and a collection of prefaces to scriptures. Sengyou lists 2,251 texts in his catalog and provides a narrative of the religious and historical context of the origin and circumstances of the translation of the texts. Issues raised by Sengyou, including the attribution to translators, authenticity, language, scripts, and place of origin, are investigated considering the corpus analysis and modern scholarship.

The *Chu san zang ji ji* is the best source of the data for dates and identities of translators of early Buddhist texts in Chinese translation. Unfortunately, modern canons, including the *Taishō Tripitaka* use dates and names of translators from later, less reliable<sup>2</sup>

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<sup>1</sup> Tanya Storch, *The History of Chinese Buddhist Bibliography: Censorship and Transformation of the Tripitaka* (Amherst, New York: Cambria Press, 2014), 21.

<sup>2</sup> Michael Radich, “Fei Changfang’s Treatment of Sengyou’s Anonymous Texts,” *Journal of the American Oriental Society* 139, no. 4 (2019): 819–42, <https://doi.org/10.7817/jameroriesoci.139.4.0819>.

catalogs, especially the *Record of the Three Jewels throughout Successive Dynasties* 歷代三寶紀 *Li dai san bao ji* (T 2034) compiled by Fei Changfang (fl. c. 562–598 C.E.).

The connections between titles in the *Chu san zang ji ji* and manuscripts discovered in archeological finds are also documented in this dissertation. Many of the texts listed in the *Chu san zang ji ji* originate in an oral tradition that predates their written form. The study aggregates and interprets notes on oral transmission from The *Chu san zang ji ji* and other sources.

Fascicles thirteen through fifteen of the *Chu san zang ji ji* are biographies of translators. These biographies were completed slightly earlier than the biographies included in the *Biographies of Eminent Monks* 高僧傳 (T 2059) compiled by Huijiao between about 519 and 540 C.E.<sup>3</sup> The lists of people covered in the two compilations of biographies are mostly similar with some important differences. The *Biographies of Eminent Monks* includes more biographies than the *Chu san zang ji ji*. The *Chu san zang ji ji* includes a short biography of the early translator An Xuan<sup>4</sup> who, as a layperson, was not included in the *Biographies of Eminent Monks*.

The process of tracing includes finding related manuscripts in source languages, evidence of oral transmission, or evidence of Chinese native composition of the texts in the catalog. The ultimate origin of the Indic source texts is difficult to determine. In some

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<sup>3</sup> Huijiao and Tianshu Yang, *The Biographies of Eminent Monks* (Hong Kong: Centre of Buddhist Studies, The University of Hong Kong, 2022), I-II, ebook.

<sup>4</sup> T 2145, 55.0096a09.

cases, parallels in the Pali canon give confidence that some *sūtras* may have originated the time of the Buddha or shortly after before the development of sectarian schools.

Three themes will be discussed within the concept of tracing historic context: specifics of people, places and texts in the transmission of Buddhism; details of the effort of translating Indic texts to Chinese, and; distinguishing translations of Indic source texts from texts composed natively in East Asia. These three themes reflect the major themes of the *Chu san zang ji ji*. Firstly, Sengyou chronicles the work of the translators in their role of ensuring the continuity of the Dharma in the early phase of Chinese Buddhism. Secondly, the challenge of conveying the profound teachings of the Buddha in Chinese, a language so completely different from the languages of the Indic source texts. Thirdly, Sengyou describes the challenge of distinguishing true from false teachings.

The influence of the *Chu san zang ji ji* is enormous. Zacchetti<sup>5</sup> states that the *Chu san zang ji ji* is the single most important text in the study of the early evolution of the Chinese Buddhist canon. One of the reasons for its importance is its inclusion of the catalog compiled by Dao'an 道安 (312-385 C.E.), who was one of the most influential figures in early Chinese Buddhism.<sup>6</sup> Dao'an lived in a period when Buddhism in China

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<sup>5</sup> Stefano Zacchetti, "Notions and Visions of the Canon in Early Chinese Buddhism." in *Spreading Buddha's Word in East Asia: The Formation and Transformation of the Chinese Buddhist Canon*, ed. Jiang Wu and Lucille Chia (New York: Columbia University Press, 2016), 85, Kindle ebook.

<sup>6</sup> Stefano Zacchetti, "Blind Spots and One-Way Tracks in Chinese Buddhist Historiography." in *Chinese Buddhism and the Scholarship of Erik Zürcher*, ed. Jonathan A. Silk and Stefano Zacchetti (Leiden; Boston: Brill, 2023), 292.

transitioned from Mainstream to *Mahāyāna*.<sup>7</sup> He was from Fulu in the Changshan commandery, near modern-day Hengshui in Hebei. Dao'an officiated over translation projects, as mentioned in in Saṃghabhūti's biography in Fascicle Thirteen of the *Chu san zang ji ji*.<sup>8</sup>

Sengyou's major source for the composition of both his catalog and collection of biographies was Dao'an's catalog the *Catalog of all Chinese Buddhist Scriptures* 綜理眾經目錄, produced in 374 C.E., which is now lost.<sup>9</sup> Okabe<sup>10</sup> explains that Sengyou's catalog can be considered as a continuation of Dao'an's. The *Chu san zang ji ji* is understood to contain so much of Dao'an's catalog that it can be recovered from the *Chu san zang ji ji*.<sup>11</sup>

The *Chu san zang ji ji* was one of the sources of the *Kaiyua Lu* (T 2154). The *Kaiyuan lu* is a later catalog of that formed the basis for *Kaibao zang* (completed 983 C.E.), the first printed Chinese Buddhist canon. The *Kaibao zang* is now lost but we know that it formed the basis for the Korean Buddhist canon (*Tripitaka Koreana*) and, in turn, the *Taishō*.

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<sup>7</sup> Arthur E. Link, "Biography of Shih Tao-An." *T'oung Pao* 46, no. Livr. 1/2 (1958): 1.

<sup>8</sup> T 2145, 55.0099a19.

<sup>9</sup> Erik Zürcher, *The Buddhist Conquest of China: The Spread and Adaptation of Buddhism in Early Medieval China*, 3rd ed. (Leiden: Brill, 2007), 10.

<sup>10</sup> Kazuo Okabe, "The Chinese Catalogues of Buddhist Scriptures," *Journal of the Faculty of Buddhism of the Komazawa University*, no. 38 (1980): 5.

<sup>11</sup> Tomojirō Hayashiya, *Kyōroku kenkyū: Zenpen*. (Tokyo: Iwanami Shoten, 1941), 362-380.

The influence of the texts in the corpus is even larger than that of the *Chu san zang ji ji* and not limited to Buddhism. The language of the texts influenced the Chinese language, including common everyday modern Chinese words, such as ‘convenience’ 方便. The style of the texts would lead to a later style of vernacular fiction *bianwen* 變文 that arose in the Tang dynasty and had a profound influence on Chinese fictional literature.<sup>12</sup>

Many of the texts listed in the *Chu san zang ji ji* are listed as anonymous by Sengyou. Many may have been composed in China rather than brought to China from India and translated. The challenge that will be discussed is that indigenous East Asian compositions are not necessarily easy to distinguish from translations of Indic source texts because many may have been assembled from pieces of translations or oral transmissions of concepts from South Asian Buddhism.

The meaning of ‘trace’ in this dissertation is to both trace to a text back to its source and trace a title in the *Chu san zang ji ji* forward to a text in a modern canon, specifically the *Taishō Tripitaka* and the *Manji Supplementary Buddhist Canon*. In a small number of cases, Sengyou notes that the text was composed or compiled in China by a certain author. For example, Sengyou states in Fascicle Two<sup>13</sup> that Sengqu

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<sup>12</sup> Victor H. Mair, “Tang Transformation Texts: A Study of the Buddhist Contribution to the Rise of Vernacular Fiction and Drama in China,” *Sino-Platonic Papers*, No. 2 (University of Pennsylvania, August 1989), 2, [https://www.sino-platonic.org/complete/spp012\\_tang\\_transformation\\_texts.pdf](https://www.sino-platonic.org/complete/spp012_tang_transformation_texts.pdf).

<sup>13</sup> T 2145, 55.0013a21.

composed (撰 *zhuàn*) the *Essentials of the Sarvāstivādinaya Prātimokṣa* 十誦羯磨 *Shi Song Jiemo* (T 1439).

The best result that can be hoped for in tracing a text listed as translated in the *Chu san zang ji ji* is to find a historic manuscript in a source language that can be dated. The earliest manuscripts were written in Gāndhārī, a northwest Indic prakrit.<sup>14</sup> Gāndhārī was gradually replaced in Buddhist texts by Sanskrit in the first centuries of the Common Era.<sup>15</sup> The most common scripts of the archaeologically discovered manuscripts before 515 C.E. are Kharoṣṭhī and Brāhmī.

Kharoṣṭhī is a script adapted from Aramaic script used in ancient Iran for Indic languages.<sup>16</sup> It is visually very different from Brāhmī and it runs from right to left, in contrast to Brāhmī, which runs from left to right. Several Kharoṣṭhī inscriptions have been found in China, including at sites in Xinjiang, a stone inscription in Luoyang, and an inscription on a pedestal for a bronze statue discovered in Shaanxi.<sup>17</sup>

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<sup>14</sup> Stefan Baums, “Truth and Scripture in Early Buddhism: Categorical Reduction as Exegetical Method in Ancient Gandhāra and Beyond,” in *Buddhism across Asia: Networks of Material, Intellectual and Cultural Exchange*, ed. Tansen Sen (Singapore: Manohar, 2014), 19-38.

<sup>15</sup> Kenneth R. Norman, *A Philological Approach to Buddhism: The Bukkyō dendō kyōkai Lectures 1994* (London: University of London, 1997), 95-112.

<sup>16</sup> Richard Salomon, F. Raymond Allchin, and Mark Barnard, *Ancient Buddhist Scrolls from Gandhara: The British Library Kharoṣṭhī Fragments* (Seattle, Washington: British Library and University of Washington Press, 1999), 4.

<sup>17</sup> Richard Salomon, *Indian Epigraphy: A Guide to the Study of Inscriptions in Sanskrit, Prakrit, and the Other Indo-Aryan Languages* (New York: Oxford University Press, 1998), 159-160.

**Sanskritization** was the process of the gradual adoption of Sanskrit as a written language in preference to Prakrits and the gradual adoption of Sanskrit spelling in Prakrits in the early centuries C.E.<sup>18</sup>

Many of the texts listed in the *Chu san zang ji ji* originate in an oral tradition that predates their written form. This is apparent in some cases because we know of parallel texts in the Pali canon that stem from a shared oral history. The *Āgama* texts listed in the *Chu san zang ji ji* have parallels in the *Nikāyas* of the Pali canon. Also, Sengyou documents some instances where Chinese translations were based on a recitation of a text rather than a written manuscript.

The Silk Road was a route between China and the Mediterranean through Central Asia, which constantly changed, depending on environmental, political, and social conditions.<sup>19</sup> The network of routes was used for commercial and cultural exchanges, including the transmission of Buddhism. It also branched into South Asia, from which Buddhism originated. The Himalayas and its extension with the Karakoram and Pamir ranges create a geographical and cultural boundary between Central and South Asia. For the purposes of this dissertation, **Central Asia** is defined to include parts of Western China, namely the present-day provinces of Gansu and Xinjiang, and present-day nations of Mongolia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan in

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<sup>18</sup> Norman, *Philological Approach to Buddhism*, 95-96.

<sup>19</sup> Jason Emmanuel Neelis, *Early Buddhist Transmission and Trade Networks: Mobility and Exchange within and beyond the Northwestern Borderlands of South Asia* (Leiden; Boston: Brill, 2011), 289-309.

addition to northern Iran. **South Asia** is defined to include the modern states of India, Pakistan, Afghanistan, Bangladesh, Nepal, Bhutan, and Sri Lanka.

The term ‘South Asia’ will be used in preference to ‘India’ to avoid confusion with the modern state and to be inclusive of the modern states of Pakistan, Afghanistan, and Nepal where many important discoveries have been made. The languages belonging to South Asia will be referred to as Indic languages.

There were many peoples historically inhabiting South Asia and Central Asia, and some migrated across geographic boundaries. The Greeks invaded South Asia and left a presence in Bactria. Some of the Greek Bactrian people adopted Buddhism and may have had an important influence in the development of *Mahāyāna* Buddhism<sup>20</sup> and perhaps earlier aspects of Buddhism. The Kuṣāṇas began as a tribe of the Yuezhi Central Asian people in present-day Xinjiang and Gansu. Due to war, they migrated west and south to Gandhara where they overthrew the Bactrians and Sakas to form the Kuṣāṇa Empire.<sup>21</sup> Three important early translators of Buddhist texts to Chinese listed in the *Chu san zang ji ji* were Yuezhi: Lokakṣema, Zhi Qian, and Dharmarakṣa.

There are many *Mahāyāna sūtras* listed in the *Chu san zang ji ji*. The ultimate origin of *Mahāyāna* texts and of the *Mahāyāna* movement itself is not clear. The main

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<sup>20</sup> Christopher I. Beckwith, *Greek Buddha: Pyrrho’s Encounter with Early Buddhism in Central Asia* (Princeton, New Jersey: Princeton University Press, 2017), 86-94.

<sup>21</sup> Beckwith, 188-189.

difficulty is a lack of written records in the period after the time of Aśoka and before the Gupta dynasty, when we believe that *Mahāyāna* Buddhism arose.

The secondary literature contains a spectrum of theories for the origin of the texts in the corpus from: translation of Indic texts with known translators, translation of Indic texts with unknown translators and possibly later misattributions, translations of multiple versions of the same base Indic text often with expansions of the source texts, refinements of previous translations to Chinese, Chinese annotations of Indic texts, Chinese extracts from Indic texts, retelling of Buddhist concepts from Indic sources in Chinese, Dharma lectures misattributed as *sūtras*, and forgeries. A bibliographic database has been compiled to relate most texts in the corpus to secondary literature commenting on them. However, there is insufficient space in this dissertation to describe each one.

There are many texts that have no author or date associated with them in the *Chu san zang ji ji* and yet in the *Taishō* they do. Nattier<sup>22</sup> enumerates three types of evidence: firstly, catalogs; secondly, prefaces, colophons, and biographies, and; thirdly, vocabulary and style. Sengyou lists 1,622 anonymously produced texts. The details for this total are discussed below. One of Sengyou's main sources was Dao'an's catalog.

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<sup>22</sup> Nattier, *A Guide to the Earliest Chinese Buddhist Translations: Texts from the Eastern Han 東漢 and Three Kingdoms 三國 Periods* (Tokyo: International Research Institute for Advanced Buddhology, Soka University, 2008), 9-18.

Chen<sup>23</sup> discusses the meaning of the term 出 *chū* in the title of the *Chu san zang ji ji*, which is often taken to mean ‘translate’ but does not have a truly suitable English equivalent. Chen describes that this is intended to mean ‘translate’ 譯出 *yichu* in the title but in the body of the text may also mean ‘compose’ 撰出 *zhuanchu*, ‘extract’ 抄出 *chaochu*, ‘recite’ 宣出 *xuanchu* or 誦出 *songchu*, or ‘expound’ 演出 *yanchu*. In the case of the anonymous texts, many of which Sengyou did not see himself, he had no way of knowing how they were produced. The English term ‘produce’ is used in this dissertation because its broad meaning covers the full range of possibilities.

Many anonymously produced texts in the *Chu san zang ji ji* are noted by Sengyou as ‘extracts’ 抄 *chāo*, sometimes translated as ‘abridgments’ in English.<sup>24</sup> The nature of the extract may be summarization or partial transcription. Sengyou was generally critical of extract texts because of the often haphazard extraction of content.<sup>25</sup>

Sengyou (445-518 C.E.) grew up and compiled the *Chu san zang ji ji* in Jianye 建鄴,<sup>26</sup> also known as Jiankang 建康, in the vicinity of modern-day Nanjing. Dao’an was from the Changshan commandery 常山郡 *Changsha jun*, near modern-day Zhending in Hebei and travelled to Ye 鄴, near modern-day Handan in Hebei, to study with Fotudeng

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<sup>23</sup> Jinhua Chen, “Some Aspects of the Buddhist Translation Procedure in Early Medieval China: With Special References to a Longstanding Misreading of a Keyword in the Earliest Extant Buddhist Catalogue in East Asia,” *Journal Asiatique* 293, no. 2 (2005): 603–61.

<sup>24</sup> Jan Nattier, *Earliest Chinese Buddhist Translations*, 133.

<sup>25</sup> Kyoko Tokuno, “The Evaluation of Indigenous Scriptures in Chinese Buddhist Bibliographical Catalogues,” in *Chinese Buddhist Apocrypha*, ed. by Robert E. Buswell (Honolulu: University of Hawaii Press, 1990), 39-40.

<sup>26</sup> Huijiao and Yang, *Biographies of Eminent Monks*, 536-537.

佛圖澄.<sup>27</sup> He later travelled to Xiangyang 襄陽, in modern-day Hubei, and Chang'an. Two of the sections of the catalog were Dao'an's lists from Liangzhou 涼州 in present-day Gansu and Guanzhong 關中 in present-day Shaanxi. These locations are shown in Figure 1.



Figure 1: Locations Related to the *Chu san zang ji ji*.

Sengyou did not know the origin of the anonymously produced texts, even those that he saw himself. In Fascicle Four in the introduction to the section “Part One: New List of Additional Anonymously Produced and Miscellaneous *Sūtras*” in the context of explaining the difficulty of compiling this section of the catalog, Sengyou notes, “The

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<sup>27</sup> Link, “Biography of Shih Tao-An,” 7.

sources of these texts cannot be found despite searching but they could not have fallen from the heavens or sprung from the earth.” This dissertation includes investigation into what can be said about the period of production of the anonymously produced texts in the *Chu san zang ji ji*.

In the literature review for this paper, the most comprehensive study of the *Chu san zang ji ji* catalog was Hayashiya,<sup>28</sup> which is now somewhat dated. Other authors have performed deep analysis of a few representative texts and recent studies have analyzed increasingly large numbers of texts. The Chinese Buddhist Canonical Attributions project (CBC) has notes on secondary literature relating to most of the texts. However, without a modern comprehensive analysis of the *Chu san zang ji ji* the author is left wondering, What is the whole picture of the development of anonymously produced texts during early Chinese Buddhism?

### **Goals and Questions Addressed**

There are three goals of this study that relate to the three themes mentioned above: the transmission of Buddhism to China, the translation of Indic texts to Chinese, and distinguishing of translations of Indic sources from texts composed natively in East Asia. A holistic description will be given for each goal to enable a broad, comprehensive, and representative view of the subject of each theme. This includes describing the people,

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<sup>28</sup> Hayashiya, *Kyōroku kenkyū*.

places, and texts related to the written and oral transmission of Buddhist teachings and how they were translated.

In addition, the methodology developed should be used in predictive mode in support of each goal. The corpus metadata should include known data that can be used to validate the methodology in predictive mode, including attribution to translators and whether the texts were translated from Indic sources or composed in East Asia. How well the data that can be derived from the corpus supports the findings of secondary literature will be reported and an explanation of discrepancies and gaps will be presented. The methodology will also be applied in predictive mode to explore what new findings can be made. Those findings will be validated with reference to canonical text. Finally, the limitations of the methodology will be discussed.

In summary, the three goals are:

Goal one. Provide a holistic view of the catalog of texts listed in the *Chu san zang ji ji*. Can the titles in the catalog be matched to entries in modern canons? Can the texts be matched to an Indic source parallel or manuscript?

In a predictive mode, the methodology should describe how well the data from the *Chu san zang ji ji* and derived from the corpus supports the attribution of translation of texts in the corpus and use the methodology to derive and validate new findings. What data can be extracted from the catalog and corpus that supports attribution of translations to specific individuals or time periods? What are the challenges in doing this with certainty?

Goal two. Provide a holistic view of the translation of the Indic source texts to the Chinese texts in the corpus. How did Buddhist terminology in Chinese translation evolve? Who established what terminology? What terminology was adopted from which previous translators? What were the dominant styles (semantic translation, transliteration, or other) of terminology?

In predictive mode, the methodology should describe the use of Buddhist terminology in Chinese translation to predict attribution to translators. What terminology in the corpus can help identify the translations by specific individuals? What are the challenges in assigning terminology established to specific translators?

Goal three. Provide a holistic view of the differences between the texts translated from Indic sources and texts composed natively in East Asia. For which texts do modern scholarship indicate an East Asian native composition? What are the high-level characteristics of texts composed natively in East Asia compared to those that were translated from Indic sources?

In predictive mode, the methodology should be related to findings in secondary literature identifying texts natively composed in East Asia. Can data derived from the corpus predict which texts were composed natively in East Asia? If not, what are the difficulties in doing this?

The descriptions and their explanations should be data driven and grounded with evidence from canonical texts and secondary literature. If the corpus and its analysis cannot be used in predictive mode to answer these questions, explain why and discuss

limitations and sources of uncertainty. Since there is too much data to discuss each text in this dissertation, it should be available in the related GitHub repository.

## **Literature Review**

The literature review in this section is intended to support the goals of this study rather than be a comprehensive review of the subject areas. Besides a review of secondary literature relating to the *Chu san zang ji ji*, sources from other domains are reviewed with the goal of providing a foundation for the corpus analysis methodology and rubrics. The literature review does not include a literature review of each text in the corpus. However, the bibliographic database described in Chapter Two includes citations for most texts in the corpus.

### **The *Chu san zang ji ji***

Storch describes the background and structure of the *Chu san zang ji ji* in her book, *The History of Chinese Buddhist Bibliography: Censorship and Transformation of the Tripitaka*.<sup>29</sup> Storch describes the roots of Senyou's approach in secular Chinese scholarship. According to Storch, Senyou's main concern was the authenticity of the scriptures, which he judged mainly with respect to their South Asian origin. Senyou created a categorization system that included authentic scriptures 經 *jing*, different translations of the same source scripture 異出經 *yi chu jing*, scriptures where the names

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<sup>29</sup> Storch, *History of Chinese Buddhist Bibliography*, 55-73.

of the translators were not recorded 失譯經 *shi yi jing*, digest scriptures 抄經 *chao jing*, doubtful and fake scriptures 疑偽經 *yi wei jing*.<sup>30</sup>

Lian<sup>31</sup> discusses the complex history of manuscripts of the *Chu san zang ji ji*, indicating that numerous edits were made during and after Sengyou's time. Lian examined numerous manuscripts of the *Chu san zang ji ji*, including historic Japanese handwritten manuscripts and block-print versions. One important point described by Lian is that the “Afterword to the *Sūtra on the Practice of the Way*” 道行經後記 in Fascicle Seven<sup>32</sup> was a later addition. A second important point described is that references in the *Li dai san bao ji* (T 2034) to the *Chu san zang ji ji* are inconsistent with the body. A third point raised is that there are discrepancies between the actual number of translated scriptures listed in the catalog and numerical totals given by Sengyou. The discrepancies suggest that some titles have been added to the catalog after it was completed by Sengyou. Specific instances will be discussed in Chapter Two.

Nattier discusses the authenticity of Chinese Buddhist translations at length in the book *A Guide to the Earliest Chinese Buddhist Translations: Texts from the Eastern Han 東漢 and Three Kingdoms 三國 Periods*.<sup>33</sup> The *Chu san zang ji ji* is one of Nattier's main sources of data in discussing this subject. Additionally Nattier uses other catalogs,

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<sup>30</sup> Storch, *History of Chinese Buddhist Bibliography*, 73-74.

<sup>31</sup> Haochen Lian, “Chu san zang ji wenben zhi zengbu yu cuozhi,” *Zhonghua Wen Shi Lun Cong* 3 (2025): 111–39.

<sup>32</sup> T 2145, 55.0047c05.

<sup>33</sup> Nattier, *Earliest Chinese Buddhist Translations*, 9-10.

material in colophons and prefaces, and consistency of vocabulary and style to evaluate authenticity.<sup>34</sup>

There is no complete English translation of the *Chu san zang ji ji*. Cheung<sup>35</sup> collects translations of several passages from Fascicle One along with annotation and discussion of historical context. In two articles, Link<sup>36</sup> presents translations of several passages from Fascicle One.

Li<sup>37</sup> and Nattier<sup>38</sup> discuss Gāndhārī as a possible source language for the translation of early Buddhist texts into Chinese rather than, or in addition to, Sanskrit, which was previously assumed. They propose that the texts in the early centuries of the Common Era were written in Gāndhārī and texts became gradually Sanskritized in later centuries.

As mentioned above, Dao'an's catalog was the most important source for Sengyou in compiling the *Chu san zang ji ji*. Sengyou also mentions making use of several other catalogs, including the *Old Catalog* 舊錄 *Jiu lu*, *Ancient Catalog* 古錄 *Gu*

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<sup>34</sup> Nattier, *Earliest Chinese Buddhist Translations*, 11-18.

<sup>35</sup> Martha P. Y. Cheung, *An Anthology of Chinese Discourse on Translation: From Earliest Times to the Buddhist Project* (London and New York: Taylor & Francis, 2014), 192-206, ebook.

<sup>36</sup> Arthur E. Link, "The Earliest Chinese Account of the Compilation of the Tripiṭaka (I)," *Journal of the American Oriental Society* 81, no. 2 (1961): 87–103, <https://doi.org/10.2307/595048>. Also, Arthur E. Link, "The Earliest Chinese Account of the Compilation of the Tripiṭaka (II)," *Journal of the American Oriental Society* 81, no. 3 (1961): 281–99.

<sup>37</sup> Wei Li, *Zao qi han yi fo jing de lai yuan yu fanyi fangfa chu tan* (Beijing: Zhonghua Shu Ju, 2011), 80-85.

<sup>38</sup> Nattier, *Earliest Chinese Buddhist Translations*, 21-22.

*lu*, and *Catalog by Subject* 別錄 *Bie lu*.<sup>39</sup> In addition, he would have had access to libraries at both his temple and the Liang palace. Palumbo<sup>40</sup> mentions that palace libraries may have been particularly important. It is also notable that the compilation of two other catalogs was commissioned by the Liang imperial court at around this time,<sup>41</sup> although these are no longer extant.

Although the literature mentioned above (Storch, Nattier, Cheung, Link, and Li) discusses aspects of the *Chu san zang ji ji*, none of these sources covers Sengyou's catalog in a comprehensive and systematic way, as proposed for this dissertation. The most comprehensive study is the book *Research on Catalogs* 經錄研究 *Kyōroku kenkyū* by Hayashiya. This is a monumental work, over 1,300 pages in length, although the description is purely textual, it somewhat dated now, and it is not complete. Hayashiya's focus is relating the entries in different catalogs, not just the *Chu san zang ji ji*. Hayashiya provides detailed notes on many texts listed in the *Chu san zang ji ji* and compares the data given with other catalogs. Hayashiya discusses catalogs that are believed to have preceded the *Chu san zang ji ji* but are now lost, including *Zhu Shixing's Catalog of Han Dynasty Translations* 朱士行漢錄 and Dao'an's catalog.<sup>42</sup> Hayashi also discusses

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<sup>39</sup> Guodong Feng, "A Study of Lost Early Buddhist Bibliographic Catalogues," *Chinese Studies in History* 56, no. 1 (2023): 5–26.

<sup>40</sup> Antonello Palumbo, *An Early Chinese Commentary on the Ekottarikaāgama: The Fenbie gongde lun 分別功德論 and the History of the Translation of the Zengyi Ahan Jing 增一阿含經* (Taipei: Dharma Drum Publishing Corp, 2013), 151.

<sup>41</sup> Storch, *History of Chinese Buddhist Bibliography*, 51-52.

<sup>42</sup> Hayashiya, *Kyōroku kenkyū*, 241-247.

attributions in later catalogs, including the *Fa Jing Catalog* 法經錄 (T 2146), *Li dai san bao ji*, and *Kaiyuan Catalog* at length.

The CBC database contains extensive annotations from Hayashiya<sup>43</sup> and other resources related to the *Chu san zang ji ji*. The CBC is an invaluable source for the relation between texts mentioned in the *Chu san zang ji ji* and modern collections and sources of secondary literature.

The *Fo Guang Dictionary of Buddhism* 佛光大辭典 has a considerable amount of information under individual entries, including mention of individual texts in the *Chu san zang ji ji* and the *Kai Yuan Catalog*.

In addition to the catalogs and Liang palace library discussed above, Sengyou's sources include his own investigations. In Fascicle Nine of the *Chu san zang ji ji*, Sengyou includes a "Record of the *Sūtra of the Wise and the Foolish*" 賢愚經記 where he describes his investigation on the origins of the *sūtra*.<sup>44</sup> The record is insightful of both Sengyou's process of compiling records and of the origin of this scripture. Sengyou stated that,

祐總集經藏訪訊遐邇

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<sup>43</sup> Michael Radich and Jamie Norrish, "Source: Hayashiya 1941," n.d. accessed November 8, 2024, <https://dazangthings.nz/cbc/source/9/>.

<sup>44</sup> Victor H. Mair, "The Khotanese Antecedents of The *Sūtra of the Wise and the Foolish* (Xianyu Jing)," in *Buddhism Across Boundaries: The Interplay of Indian, Chinese, and Central Asian Source Materials*, ed. by John R. McRae and Jan Nattier (Pennsylvania: University of Pennsylvania, 2012), 151-154.

in making a comprehensive collection of the canon, I inquired near and far.<sup>45</sup>

In this instance, Sengyou interviewed a monk who had firsthand knowledge of the compilation of the scripture.

### *Sengyou*

*The Biographies of Eminent Monks*<sup>46</sup> mentions that Sengyou was originally from Xiapi, in modern-day Xuzhou, Jiangsu and migrated to the capital of the Southern Liang dynasty Jianye, modern-day Nanjing. In Jianye he joined the monastic order at a young age. After ordination Sengyou studied under Faying who had a reputation for his knowledge of the Vinaya. After he had matured as a monastic, he enjoyed considerable imperial patronage.

Besides his notes in the *Chu san zang ji ji*, Sengyou's own religious views are reflected in the *Collection for the Propagation and Clarification of Buddhism* 弘明集 *Hong Ming Ji* (T 2102). In the *Hong Ming Ji* Sengyou defends Buddhism from Confucian and Taoist critics.<sup>47</sup> The text is important for understanding of the early Chinese acceptance and perspective on Buddhism. Schmidt-Glintzer and Mair<sup>48</sup> describe the *Hong Ming Ji* as apologetic literature.

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<sup>45</sup> Mair, "Khotanese Antecedents," 154; T 2145, 55.0067c10.

<sup>46</sup> Huijiao and Yang, *Biographies of Eminent Monks*, 536-542.

<sup>47</sup> Harumi Hirano Ziegler, *The Collection for the Propagation and Clarification of Buddhism* (Moraga, California: Bukkyō dendō kyōkai America, 2015), PDF version.

<sup>48</sup> Helwig Schmidt-Glintzer, and Victor H. Mair. "Buddhist Literature," in *The Columbia History of Chinese Literature*, ed. by Victor H. Mair (New York: Columbia University Press, 2001), 192, ebook.

### *Challenges Interpreting the Chu san zang ji ji*

There are many ambiguities and idiosyncrasies in the *Chu san zang ji ji*. This is to be expected of a text of its age. One critical ambiguity is the difference between ‘foreign’ 胡 *hu* and ‘Sanskrit’ 梵 *fan*. Li<sup>49</sup> argues that these terms are synonymous. However, Boucher<sup>50</sup> argues this distinction is idiosyncratic and deliberate, and that 胡本 *huben* is used by Sengyou to mean Kharoṣṭhī manuscript. Boucher’s conclusion is arguable because elsewhere Sengyou uses the more specific term 佉樓 *qūlóu* for Kharoṣṭhī.<sup>51</sup>

Another ambiguous term, already discussed above, used by Sengyou is ‘produced’ 出 *chu*.

Li<sup>52</sup> discusses a number of challenges interpreting the *Chu san zang ji ji* using the translation of works attributed to Zhi Qian as a case study. Li discusses a number of discrepancies in the *Chu san zang ji ji*. Firstly, Sengyou quoted extensively from other catalogs. Li concludes that Sengyou did not have direct knowledge of the texts listed but simply quoted verbatim. It does not seem that it can be concluded that Sengyou had not seen **any** of the texts in these catalogs based on Li’s logic. The example of Sengyou’s firsthand investigation into the translation of the *Sūtra of the Wise and the Foolish* was

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<sup>49</sup> Li, *Zao qi han yi fo jing de lai yuan*, 162-167.

<sup>50</sup> Daniel Boucher, “On Hu and Fan Again: The Transmission of “Barbarian” Manuscripts to China,” *Journal of the International Association of Buddhist Studies* 23, no. 1 (2000): 7–28.

<sup>51</sup> T 2145, 51.0004b02.

<sup>52</sup> Zhouyuan Li, “Four Challenges Faced by Early Chinese Buddhist Translators: A Case Study of Zhi Qian’s Chinese Translation of Dhammapada.” *Religions* 14, no. 8 (2023): 1018–139.

mentioned above. However, Sengyou may not have seen **some** of the texts he lists. For example, for the three texts listed as translated by Kinkara and Tanyao, Sengyou notes that, “These three *sūtras* were not sent to the capital.”<sup>53</sup>

### *Relationship of Entries in Sengyou’s Catalog to Modern Collections*

A number of scholars have matched many titles in the *Chu san zang ji ji* to entries in modern collections. There have been several challenges in doing this.

A major challenge has been discrepancies in the attributions and dates introduced in the very influential catalog *Li dai san bao ji* (T 2034), compiled by Fei Changfang circa 598 CE.<sup>54</sup> Radich lists the large discrepancies between Sengyou’s list of anonymously produced texts and Fei’s much smaller list and the possibility that Fei himself wrongly attributed translators to anonymously produced texts, thus boosting their status. Zürcher<sup>55</sup> noted that the number of attributions to An Shigao grew from 34 to 179 and the attributions to Lokāṣema grew from 7 to 23.

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<sup>53</sup> T 2045, 55.0013b09.

<sup>54</sup> Radich, “Fei Changfang’s Treatment,” 819.

<sup>55</sup> Erik Zürcher, “A New Look at the Earliest Chinese Buddhist Texts,” in *Buddhism in China: Collected Papers of Erik Zürcher*, ed. Jonathan A. Silk (Leiden: Brill, 2013), 420.

Naitō<sup>56</sup> and Greene<sup>57</sup> propose that Fei Changfang may have misinterpreted translation attributions in the *Zhong Jing Bie Lu* 眾經別錄. The *Zhong Jing Bie Lu* was lost for many years, but fragments have been discovered at Dunhuang. Buswell<sup>58</sup> also mentions Fei Changfang's incorrect attributions. Fang and Gao<sup>59</sup> mention the incorrect classification by Fei Changfang of the *Treatise on Distinguished Merit* 分別功德論 (T 1507) as a Late Han text, which persists in the *Taishō*.

Unfortunately, as noted by Radich, modern canons, including the *Taishō*, have incorrectly adopted translation attributions of 163 titles from Fei Changfang. Radich also states that Sengyou is our most reliable source of the dates and attributions of early Chinese Buddhist translations. Radich concludes that a “thorough reconsideration of all received pre-Tang canonical ascriptions” is needed.<sup>60</sup>

Hayashiya<sup>61</sup> gives a table of relations between Dao'an's list of anonymously produced *sūtras*, *Fajing Catalog* 法經錄, *Renshou Era Catalog* 仁壽錄, *Li dai san bao ji*

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<sup>56</sup> Ryūo Naitō, “出三藏記集の撰集年次について Shutsusan-zōkishū no senjū nenji ni tsuite,” *Journal of Indian and Buddhist Studies* 7, no. 1 (1958): 162–63.

<sup>57</sup> Eric M. Greene, “The Decline and Fall of Chinese Buddhist Literary Historical Consciousness,” *Journal of the American Oriental Society* 143, no. 1 (2023): 125–50.

<sup>58</sup> Robert E. Buswell, “Introduction: Prolegomenon to the Study of Buddhist Apocryphal Scriptures,” in *Chinese Buddhist Apocrypha*, ed. Robert E. Buswell (University of Hawaii Press, 1990), 8.

<sup>59</sup> Yixin Fang and Lieguo Gao, “A Tentative Study of the Year of Translation of Fenbie gongde lun,” *Journal of Zhejiang University (Humanities and Social Sciences)* 33, no. 5 (2003): 92–99.

<sup>60</sup> Radich, “Fei Changfang's Treatment,” 821.

<sup>61</sup> Hayashiya, *Kyōroku kenkyū*, 458–467.

歷代三寶記, *Kaiyuan lu* 開元錄 and *Taishō Tripitaka* entries. Following this, Hayashiya<sup>62</sup> notes that the *Li dai san bao ji* introduced attributions to translators.

Sengyou also refers to the *Old Catalog* 古錄. Although the *Old Catalog* has been lost, several other catalogs refer to this, including the *Li dai san bao ji* and the *Kaiyuan lu*.<sup>63</sup>

Entries in the *Taishō* that are anthologies introduce another complication. Radich and Norrish<sup>64</sup> discuss the complex history of composition of the *Ekottara Āgama* 增一阿含經 (T 125), including the relationship of the individual entries that make up this collection and stand-alone entries in the *Taishō*. Many texts listed by Sengyou relate to individual texts in similar collections in the *Taishō*, especially *Madhyama Āgama* 中阿含經 (T 26), *Collection of the Six Perfections* 六度集經 (T 152), and *Jātaka Stories* 生經 (T 154). Although these have simple attributions to translators in the *Taishō*, such as Saṅghadeva for the *Madhyama Āgama*, it is possible that they are the result of a more complex composite authorship, perhaps being collected from many sources with later compilation into a single volume, additions, editing, and revisions.

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<sup>62</sup> Hayashiya, *Kyōroku kenkyū*, 468-469.

<sup>63</sup> Guodong Feng, “A Study of Lost Early Buddhist Bibliographic Catalogues,” *Chinese Studies in History* 56, no. 1 (2023): 5–6.

<sup>64</sup> Michael Radich, and Jamie Norrish, “What Happened to the Ekottarikāgama 增壹阿含經 T125 after the Death of Dao’an?” *International Journal of Asian Studies* 23, no. 1 (2025), 1–41.

Zürcher<sup>65</sup> surveyed a number of texts in Dao'an's list of anonymous texts that were also treated as anonymously produced in the *Taishō*, including T 29, T 73, T 96, T 147, T 161, T 265, T 344, T 392, T 521, T 522, T 629, T 687, T 740, T 795, t 819, T 1262, and T 2029. Zürcher noted the very short lengths and provided very useful summaries of the content of the texts to understand the themes covered. Most are simple texts focused on the theme of karmic retribution and rewards. Zürcher describes these texts as the product of an early stage of the development of “Buddhism at the sub-elite level.”

One limitation of Zürcher's survey is that it did not include texts that were treated as being anonymously produced by Sengyou and then later acquired unwarranted translation attributions. As discussed above, this is a large group.

Discounting the attributions in the *Taishō* in favor of the attributions in the *Chusan zang ji ji*, there are many anonymous texts to account for. Nattier<sup>66</sup> states that these anonymous texts comprise the ‘missing majority’ of the titles in Sengyou's catalog.

Nattier<sup>67</sup> also gives ideas on how to analyze this body of anonymously produced literature. An example of the use of translation terminology discussed in Karashima and

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<sup>65</sup> Erik Zürcher, “Obscure Texts on Favourite Topics: Dao'an's Anonymous Scriptures,” in *Buddhism in China Collected Papers of Erik Zürcher*, ed. Jonathan Silk (Brill, 1995).

<sup>66</sup> Jan Nattier, “The ‘Missing Majority’: Dao'an's Anonymous Scriptures Revisited,” in *Chinese Buddhism and the Scholarship of Erik Zürcher*, ed. Jonathan A. Silk and Stefano Zacchetti (Leiden ; Boston: Brill, 2023), 135.

<sup>67</sup> Nattier, 115-140.

Nattier<sup>68</sup> is the use of name ‘Son of Fall Dew’ 秋露子 Qiuluzi, which is an Early Chinese translation for Śāriputra. This form is far less commonly used than the more usual form 舍利弗 *Shelifu*, but it occurs in four anonymously produced texts, providing a possible clue to their date and origin.

Nattier also notes the use of 聞如是 *wen rushi*, which marks early Chinese translations, in contrast to the later form ‘thus have I heard’ 如是我聞 *rushi wo wen*.

Also, Chicken Mountain 雞山 *Jishan* for Vulture Peak 靈鷲山 *Lingjiu shan*,<sup>69</sup> or 弗迦沙 *Fujiasha* for Bimbisāra (T 511), later written as 頻婆娑羅 *Pinbosuoluo*.

Fang<sup>70</sup> analyzes language use in Entry No. 810 *Sūtra on the Great Skillful Means for Repaying Kindness* 大方便佛報恩經 (T 156), including the use of the function word 非 *fēi*, to determine that the text was translated after the Later Han, which is the period given in the *Taishō*.

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<sup>68</sup> Seishi Karashima and Jan Nattier, “Qiuluzi 秋露子, An Early Chinese Name for Sariputra,” in *Annual Report of The International Research Institute for Advanced Buddhology at Soka University for the Academic Year 2004* (2005).

<sup>69</sup> Nattier, “Missing Majority,” 131.

<sup>70</sup> Yixin Fang, “《大方便佛報恩經》語匯研究” *Journal of Zhejiang University (Humanities and Social Sciences)*, no. 5 (2001): 53.

### *Influence of the Chu san zang ji ji*

Zacchetti<sup>71</sup> wrote that the historiographical endeavor in the Liang dynasty, in which Sengyou lived, was a major event in Chinese Buddhism. In compiling the *Biographies of Eminent Monks*, Huijiao used the *Chu san zang ji ji* as one of his sources. In fact, many sections of the *Biographies of Eminent Monks* were copied verbatim from the *Chu san zang ji ji*.<sup>72</sup> As already noted above, one of the reasons for the importance of the *Chu san zang ji ji* is its inclusion of Dao'an's catalog. In his book "History of Chinese Buddhism" 支那佛教精史 *Shina bukkyō seishi*, Sakaino<sup>73</sup> makes extensive use of the *Chu san zang ji ji*.

Tokuno<sup>74</sup> explains that one reason for the influence of Chinese Buddhist catalogs is concern for judging the authenticity of scriptures. Those deemed authentic were more likely to be included in later canons. Storch<sup>75</sup> summarizes the various ways that catalogs shaped and transformed the Chinese Buddhist canon, and the adoption of Chinese secular standards for bibliography, evaluation of the authenticity of texts, and classification.

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<sup>71</sup> Stefano Zacchetti, "Blind Spots and One-Way Tracks in Chinese Buddhist Historiography," in *Chinese Buddhism and the Scholarship of Erik Zürcher*, ed. Jonathan A. Silk and Stefano Zacchetti (Leiden; Boston: Brill, 2023), 292.

<sup>72</sup> Zürcher, *Buddhist Conquest of China*, 10.

<sup>73</sup> Kōyō Sakaino, *Shina bukkyō Seishi* (Tokyo: Hakushi Ikō Kankōkai, 1935).

<sup>74</sup> Tokuno, "Evaluation of Indigenous Scriptures," 32-33.

<sup>75</sup> Storch, *History of Chinese Buddhist Bibliography*, 185-190.

Deeg<sup>76</sup> points out that the *Chu san zang ji ji* is one of the few sources that tells of the uncertainty in the translation process of early Chinese Buddhist texts.

It has long been believed that the *Chu san zang ji ji* is the oldest extant catalog of Buddhist texts in Chinese translation. However, Pu<sup>77</sup> raises the possibility that the *Zhongjing bielu* 眾經別錄 may, in fact, be older. The *Zhongjing bielu* was lost for many years, but parts were rediscovered in Dunhuang,

### Connection with Indic Language Source Texts

The materials of Indic manuscripts discovered that date to before 515 C.E. when the *Chu san zang ji ji* was completed were birch bark and palm leaf. The dry climate in the Indic northwest may be a reason that it is the only area in South Asia where manuscripts of this age have been preserved. Although radiocarbon dating is a possibility,<sup>78</sup> recovery of the manuscripts has been difficult, and we are left with mostly fragments rather than complete manuscripts.

The Gāndhārī *Dharmapada* manuscript, discovered in 1892 near Khotan in the Southern Silk Road,<sup>79</sup> provided early evidence of the origin of a Chinese translation of a Gāndhārī Buddhist text. However, it was nearly a hundred years until more Gāndhārī

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<sup>76</sup> Max Deeg, “Creating Religious Terminology—A Comparative Approach to Early Chinese Buddhist Translations,” *Journal of the International Association of Buddhist Studies* 31, nos. 1–2 (2008): 83–118.

<sup>77</sup> Chengzhong Pu, “What Is Left of the *Zhongjing bielu* 眾經別錄,” *Studies in Chinese Religions* 10, no. 1 (2024): 63–102.

<sup>78</sup> Mark Allon and Richard Salomon, “New Evidence for Mahayana in Early Gandhāra,” *The Eastern Buddhist* 41, no. 1 (2010): 1–22.

<sup>79</sup> Brough, John, *The Gāndhārī Dharmapada* (London: Oxford University Press, 1962).

manuscripts were discovered in the 1990s.<sup>80</sup> The earliest *Mahāyāna* manuscript dated by radiocarbon dating to the first century C.E. so far is the *Aṣṭasāhasrikā Prajñāpāramitā* in Gāndhārī.<sup>81</sup> This is also the earliest *Mahāyāna* text translated to Chinese. It was translated to Chinese by Lokakṣema in 179 C.E.<sup>82</sup> This is an incredible alignment between textual tradition and the archeological discovery of a manuscript.

Other examples of connections between texts listed in the *Chu san zang ji ji* and Indic manuscripts are discussed below and are included in the bibliographic database.

### **Related Historical Background**

This section discusses domains and key points related to tracing historic context to address the goals of this dissertation and secondary literature compiled for the bibliographic database.

#### *Indian Patriarchs*

Young<sup>83</sup> describes a received tradition of the transmission of the Dharma in India by a series of patriarchs in a chain of master-disciple relationships, emphasizing the three

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<sup>80</sup> Richard Salomon, “New Manuscript Sources for the Study of Gandhāran Buddhism,” in *Gandhāran Buddhism: Archaeology, Art, Texts*, ed. Pia Brancaccio and Kurt Behrendt (Vancouver: UBC Press, 2006), 135-150.

<sup>81</sup> Harry Falk and Ingo Strauch, “The Bajaur and Split Collections of Kharoṣṭhī Manuscripts within the Context of Buddhist Gāndhārī Literature,” *Birch Bark to Digital Data: Recent Advances in Buddhist Manuscript Research*, Papers Presented at the Conference Indic Buddhist Manuscripts: The State of the Field Stanford, June 15-19 2009 (2014), 51–78.

<sup>82</sup> Edward Conze, *The Perfection of Wisdom in Eight Thousand Lines & Its Verse Summary* (Bollinas, California: Four Seasons Foundation, 1973), xi.

<sup>83</sup> Stuart H. Young, *Conceiving the Indian Buddhist Patriarchs in China. Studies in East Asian Buddhism* (Honolulu: University of Hawai‘i Press, 2015), 4-7.

key figures of Aśvaghōṣa 馬鳴, Nāgārjuna 龍樹, and Āryadeva 提婆. Works attributed to these figures that appeared with the translations of Kumārajīva and his team included Entry No. 327 *Hundred Treatise* 百論 (T 1569) attributed to Āryadeva, Entry No. 325 *Fundamental Verses on the Middle Way* 中論 (T 1564) and Entry No. 322 *Great Perfection of Wisdom Treatise* 大智度論 (T 1509) attributed to Nāgārjuna. Sengyou compiled a hagiographic text with the title *Record of the Masters and Disciples of the Sarvāstivāda Sect*, which is now lost.<sup>84</sup> However, a preface to this text and the names of fifty-three Indian patriarchs is preserved in Fascicle Twelve of the *Chu san zang ji*.<sup>85</sup>

According to this tradition, Aśvaghōṣa was born in Ayodhya and became closely associated with Kaniṣka.<sup>86</sup> Kaniṣka I was the ruler of the Kuṣāṇa Empire, which began circa 127 C.E.,<sup>87</sup> who expanded its territory all the way to Pāṭaliputra and was an important sponsor of Buddhism. Aśvaghōṣa was known for his elegant classical Sanskrit compositions, including the *Buddhacarita*, which were important milestones in the Sanskritization of Buddhist literature.

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<sup>84</sup> Young, *Indian Buddhist Patriarchs in China*, 67.

<sup>85</sup> T 2145, 55.0089a01.

<sup>86</sup> Rongxi Li, “The Life of Aśvaghōṣa Bodhisattva: Translated from the Chinese of Kumārajīva (Taishō Volume 50, Number 2046),” in *Lives of Great Monks and Nuns*, ed. Sengaku Mayeda (Berkeley: Numata Center for Buddhist Translation and Research, 2017), 5-16, PDF version.

<sup>87</sup> Michael C. Skinner, “Marks of Empire: Extracting a Narrative from the Corpus of Kuṣāṇa Inscriptions,” (Seattle: University of Washington Libraries, 2017), 10.

### *Transmission of Buddhism along the Silk Road*

In his book *Early Buddhist Transmission and Trade Networks*, Neelis,<sup>88</sup> describes the historic cultural exchange within and beyond the Indic northwestern borderlands and Central Asia. A particularly significant recent discovery is an inscription from Shanshan provides evidence of a local king's patronage of *Mahāyāna* in the mid-third century C.E.<sup>89</sup>

A notable point raised by Zürcher<sup>90</sup> is that all the early translators of Buddhist texts into Chinese were from Central Asia, including An Shigao, Lokakṣema, Dharmarakṣa, and Kumarajīva. The first wave of foreign monks from circa 150 C.E. to circa 270 C.E. coincided with the Kuṣāṇa Empire, which as mentioned above, sponsored Buddhism.

The Chinese historical background to the transmission of Buddhism along the Silk Road overlaps with a large body of literature collectively referred to as 'Dunhuang studies' 敦煌學 that describes the study of texts discovered in the 'Library Cave' at Mogao Grottoes, Dunhuang.<sup>91</sup> Not only do the texts discovered in Library Cave inform of the transmission of Buddhism over the Silk Road in the period covered in this dissertation

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<sup>88</sup> Neelis, *Early Buddhist Transmission*.

<sup>89</sup> Neelis, 298.

<sup>90</sup> Erik Zürcher, "Buddhism Across Boundaries: The Foreign Input," in *Buddhism Across Boundaries: The Interplay of Indian, Chinese, and Central Asian Source Materials*, ed. John R. McRae and Jan Nattier (Philadelphia: University of Pennsylvania, 2012), 13-14.

<sup>91</sup> Xinjiang Rong, *Eighteen Lectures on Dunhuang*, trans. Imre Galambos (Leiden; Boston: Brill, 2013), 1-3.

(before 515 C.E.) but they illuminate some areas of later Chinese Buddhism as well as Chinese history in the Western Regions.

From at least as early as 227-233 C.E. Dunhuang became a place where Chinese traded with Central Asian peoples.<sup>92</sup> Buddhism followed shortly afterwards. Artwork was discovered in the Mogao Caves at Dunhuang in the late Qing dynasty by Taoist monk Wang Yuanlu, who attempted to convert the Buddhist caves to Taoist shrines.<sup>93</sup> During the renovation Wang's assistant accidentally discovered the Library Cave, which had been sealed, including bundles of manuscripts stored there. Wang gave away and sold most of the manuscripts, some of which were acquired by archeologist Aurel Stein, who arrived at Dunhuang in 1907. Shortly after in 1908, French Sinologist Paul Pelliot arrived at Dunhuang and acquired some of the Dunhuang manuscripts and subsequently shipped them to France.

The earliest record that we have of travel over the Silk Road to fetch Buddhist texts is in the *Chu san zang ji ji* itself. This note tells of Zhu Shixing 朱士行 traveling to the Western regions in 260 CE to get the manuscript of the *Prajñāpāramitā*.<sup>94</sup>

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<sup>92</sup> Rong, *Eighteen Lectures on Dunhuang*, 56-58.

<sup>93</sup> Rong, 81-83.

<sup>94</sup> Hiroshi Kumamoto, "Textual Sources for Buddhism in Khotan," in *Buddhism Across Boundaries: The Interplay of Indian, Chinese, and Central Asian Source Materials*, ed. John R. McRae and Jan Nattier. (Philadelphia: University of Pennsylvania, 2012), 142.

### *Theories of the origin of Mahāyāna*

There are several theories of the *Mahāyāna* movement's origin. Gombrich<sup>95</sup> argues that selection of *Mahāyāna* was an evolutionary process with the critical selection factor being emphasis on written texts. Silk<sup>96</sup> argues that there were many *Mahāyānas* in early Indian Buddhism, not just one. The origin of *Mahāyāna* Buddhism outside of India, in Central Asia has been discussed and dismissed.<sup>97</sup> The forest theory proposes that *Mahāyāna* was a grassroots attempt to go back to the roots of early Buddhism.<sup>98</sup> Another theory is that *Mahāyāna* Buddhism arose as a stupa cult.<sup>99</sup> In addition, there has been speculation about the relation of *Mahāyāna* to the Mahasamghika split.<sup>100</sup>

There are many *Mahāyāna* texts in the corpus of this study. However, given the difficulty of pinning down the historic specifics of the *Mahāyāna* movement in the secondary literature, it is unlikely that the study in this dissertation will be able to find the ultimate origin of the *Mahāyāna* texts in the corpus. Therefore, the tracing the ultimate origin of *Mahāyāna* texts will not be addressed in this dissertation.

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<sup>95</sup> Richard Gombrich, "How the Mahayana Began," *Journal of Pali and Buddhist Studies* 1 (1988): 29–46.

<sup>96</sup> Jonathan A. Silk, "What, If Anything Is Mahāyāna Buddhism?" in *Buddhism: The Origins and Nature of Mahāyāna Buddhism; Some Mahāyāna Religious Topics*, vol. 3, ed. Paul Williams (London and New York: Taylor & Francis, 2002), 355–68.

<sup>97</sup> Allon and Salomon, "New Evidence for Mahayana," 1-22.

<sup>98</sup> David Drewes, "Early Indian Mahāyāna Buddhism I: Recent Scholarship," *Religion Compass* 4, no. 2 (2010): 55–65.

<sup>99</sup> Akira Hirakawa, "The Rise of Mahayana Buddhism and Its Relationship to the Worship of Stupas," *Memoirs of the Research Department of the Toyo Bunko (The Oriental Library)* 22 (1963): 57–106.

<sup>100</sup> Hirakawa, 57-106

### *Inscriptions and Artwork*

Inscriptions are an invaluable source of knowledge for the historic social context of the practice of Buddhism. In his book *Indian Epigraphy*, Salomon<sup>101</sup> provides a guide to the study of inscriptions in Indo-Aryan Languages. Salomon and other scholars have searched hard for a connection between *Mahāyāna* texts and historical evidence in South Asia. There is important evidence from a fragment discovered in Bamiyan that contains an unidentified text in Sanskrit/Gupta Brāhmī script, which apparently is an *avadāna* collection, and similarly refers to a King Huveṣka as having “set out on the Mahayana path” ((\*mahā)yānasamprasthito huveṣko nā(\*ma rājā)). This Huveṣka is the Kuṣāṇa emperor who is better known as Huviska, successor of the great Kaniska, who probably ruled in the latter half of the second century C.E.<sup>102</sup>

Buddhist artwork provides additional evidence connecting Buddhist texts with historical social context. The earliest Buddhist artwork, such as at the Great Stupa at Sanchi, did not show the Buddha directly. It is generally accepted that the earliest images of the Buddha are from the areas of Gandhāra and Mathura in the early centuries of the Common Era.<sup>103</sup> It can be reasoned from this that the region was more important than a stopping point on the Silk Road and there may be reasons other than the dry climate that has led to the discovery of the earliest Buddhist manuscripts in the region.

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<sup>101</sup> Salomon, *Indian Epigraphy*.

<sup>102</sup> Allon and Salomon, “*New Evidence for Mahayana*,” 1-22.

<sup>103</sup> Simone Gaulier, Robert Jera-Bezard, and Monique Maillard, *Buddhism in Afghanistan and Central Asia Part 1: Introduction - Buddha - Bodhisattva* (Leiden: Brill, 1976), 5.

Although tracing texts to inscriptions and artwork is a promising area, and some references to it are included in the bibliographic database, the domain is too broad to discuss further in this dissertation.

### *Sinification of Buddhism*

There are several aspects of the Sinification of Buddhism relevant to this study. One aspect is the conception of a series of patriarchs connecting Indian and Chinese traditions.<sup>104</sup> A second aspect is the classification system used by Sengyou, which was heavily influence by the Chinese secular bibliographic tradition. A third aspect is the Chinese *Mahāyāna* viewpoint. A fourth aspect is the influence of sponsorship of Buddhist activities, including translation.

Xu discusses the Sinification of Buddhism in his book *Fojiao de Zhongguohua* 佛教的中国化<sup>105</sup> including the Han, Sanguo, and the Southern and Northern dynasties periods. Xu describes Sinification as an evolutionary process initially struggling to describe what Buddhism was in comparison to Taoism and Confucianism.<sup>106</sup>

Zürcher's classic book *The Buddhist Conquest of China*<sup>107</sup> describes the spread of Buddhism across China and acculturation of Buddhism into Chinese society. Zürcher notes<sup>108</sup> that Buddhism during its early phase on in China was a foreign 'intrusion' in

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<sup>104</sup> Young, *Indian Buddhist Patriarchs in China*, 3.

<sup>105</sup> Kangsheng Xu, *Fojiao de zhongguohua* (Beijing: Zongjiao Wenhua Chubanshe, 2008).

<sup>106</sup> Xu, *Fojiao de zhongguohua*, 2-4.

<sup>107</sup> Zürcher, *Buddhist Conquest of China*.

<sup>108</sup> Zürcher, "Earliest Chinese Buddhist Texts," 419-420.

Chinese civilization. The pattern that Zürcher observes in his survey of Han dynasty Chinese Buddhist literature is gradual absorption, progressing from alien to being conventionalized by a range of stylistic idioms, deeply influenced by vernacular Chinese. Through examination of the translation styles of An Shigao, Lokasema, Zhi Qian, and other Han period translators, Zürcher concludes that this adaptation had taken form by the early third century C.E.

Zacchetti<sup>109</sup> points out the roots of Sengyou's approach to bibliography in traditional Chinese scholarship. Sengyou's work somewhat resembles the work of Liu Xiang (77–6 B.C.E.), known for his bibliographic work describing secular Chinese texts.

Buddhist scholars, such as Buswell<sup>110</sup> applies the term 'apocrypha' to East Asian Buddhist texts that with traditional attribution as translation from Indic sources but are believed by modern scholars to be native East Asian compositions. Buswell also notes that the term 'apocrypha' in the sense often used in Biblical studies as pseudepigrapha or writings that are falsely attributed to a biblical figure or heretical books, is somewhat harsh in many cases of East Asian Buddhist indigenously composed texts. Many of these texts labelled as 'apocrypha' are anonymous extracts, summaries, compilations, or re-interpretations of texts and ideas from South Asia, perhaps later wrongly classified as *sūtras* or attributed to well-known translators. The example of Entry No. 836 *Sutra on the Visualization of Immeasurable Life* 觀無量壽經 (T 365) is discussed by Fujita and

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<sup>109</sup> Zacchetti, "Blind Spots," 290–303.

<sup>110</sup> Buswell, "Introduction," 3-4.

Tanaka<sup>111</sup> as possibly wrongly attributed as translated by Kālayāśas based on their analysis of the *Chu san zang ji ji* and other catalogs.

The Northern Wei had a great influence on the acceptance of Buddhism into Chinese society. The Xianbei people founded the Northern Wei dynasty at a time when they were adapting to Chinese culture themselves. Emperors of the Northern Wei officially sponsored Buddhist rituals, festivals, and the building of temples.<sup>112</sup> As the first non-Han Chinese dynasty they may have preferred Buddhism to Confucianism as the official state ideology since Confucianism is rooted in the origins of the Han people and legitimized the rule of Han Chinese dynasties.<sup>113</sup> In addition, the homeland of the Xianbei people, along the Silk Road, placed them in a strategic position to promote Buddhism in China. This background may be part of the explanation for the rise and fall of imperial sponsorship or repression of Buddhism in China.

Liang<sup>114</sup> discusses apocryphal texts beginning with the classification systems of Dao'an and Sengyou and their struggles to distinguish genuine from apocryphal texts to protect the integrity of the Dharma. Liang describes later refinements of the classification of doubtful texts, including Daoxuan's *Catalog of the Inner Canon of the Great Tang*

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<sup>111</sup> Kotatsu Fujita and Kenneth K. Tanaka, "The Textual Origins of the Kuan Wu-Liang-Shou Ching: A Canonical Scripture of Pure Land Buddhism," in *Chinese Buddhist Apocrypha*, ed. Robert E. Buswell (Honolulu: University of Hawaii Press, 1990).

<sup>112</sup> Poh Yee Wong, "Acculturation as Seen through Buddha's Birthday Parades in Northern Wei Luoyang: A Micro Perspective on the Making of Buddhism as a World Religion," University of the West, 2012, 114-115.

<sup>113</sup> Wong, "Acculturation," 117-119.

<sup>114</sup> Xiaohong Liang, *Fojiao yu hanyu shi yanjiu: yi riben ziliao wei zhongxin* (Shanghai: Shanghai Guji Chubanshe, 2008), 3-4.

*Dynasty* 大唐內典錄. Liang<sup>115</sup> notes that the reasons for the emergence of apocryphal literature, which included promoting the ideology of the author and to fill a cultural gap between Indian and Chinese Buddhism. The second reason is particularly important in understanding the development of Chinese Buddhism. The gap between Indian and Chinese culture was large and yet Buddhist texts translated from Indic manuscripts depended on an understanding and general sympathy with Indian culture, which was very distant and foreign from Chinese culture. Some apocryphal literature emerged to help bridge this gap by incorporating local idioms and familiar cultural concepts.

Liang<sup>116</sup> discusses the value of apocryphal literature in understanding the culture and language of China giving the example of Entry No. 1428 *Sūtra of Pure Dharma Practice* 清淨法行經 (a Nanatsudera Temple manuscript), listed as an anonymous text in Fascicle Four of the *Chu san zang ji ji* and early use of colloquial forms, such as the compound “bandits” 盜賊 *dào zéi* and other terms.

### Corpus Analysis

The study in this dissertation is referred to as corpus analysis because it applies approaches from the domain of corpus linguistics and digital humanities. This section briefly reviews the literature for how corpus linguistics may be leveraged to study the body of texts in this dissertation. **Corpus linguistics** is a set of methods for studying

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<sup>115</sup> Liang, *Fojiao yu hanyu shi yanjiu*, 9-10.

<sup>116</sup> Liang, 36-42.

language that has been applied to many areas of linguistics.<sup>117</sup> Linguists have desired to study collections of texts that are too large and often too uninteresting for a person to read. An early milestone in corpus linguistics was the compilation of the Brown Corpus, which included over a million words of American English.<sup>118</sup> The development of software for natural language processing enabled the development and study of these corpora. Corpus linguistics made possible huge advances in the field of lexicography.<sup>119</sup>

Kučera and Francis<sup>120</sup> extracted the vocabulary of the Brown Corpus and from that compiled frequency lists and other statistics. Hoffman and Waisanen<sup>121</sup> give a pre-large language model era overview of software for computer-aided textual analysis and discuss the four main functions delivered by these software packages: basic textual statistics, indexes and concordances, dictionary comparisons, and cluster analysis. One limitation that Hoffman and Waisanen<sup>122</sup> mention is that “any capacity to understand context-related meanings must come from the human reader.” However, now the use of AI enables that and the approach of corpus linguistics to be extended much further than

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<sup>117</sup> Tony McEnery and Andrew Hardie, *Corpus Linguistics: Method, Theory and Practice* (Cambridge: Cambridge University Press, 2011), 1-2, Kindle edition.

<sup>118</sup> Henry Kučera and Winthrop Nelson Francis, *Computational Analysis of Present-Day American English* (Providence, Rhode Island: Brown University Press, 1967), v.

<sup>119</sup> McEnery and Hardie, *Corpus Linguistics*, 79-80.

<sup>120</sup> Kučera and Francis, *Computational Analysis*, 3.

<sup>121</sup> David Hoffman and Don Waisanen, “At the Digital Frontier of Rhetoric Studies: An Overview of Tools and Methods for Computer-Aided Textual Analysis,” in *Rhetoric and the Digital Humanities*, ed. Jim Ridolfo and William Hart-Davidson (Chicago: The University of Chicago Press, 2015), 169-183.

<sup>122</sup> Hoffman and Waisanen, “Digital Frontier of Rhetoric Studies,” 179.

the previous techniques of compiling concordances, word frequency lists, and annotations of syntactic structures.

Buddhist scholars have also used indexes and concordances for the comparison of multiple translations of the same source Indic text. For example, Lancaster<sup>123</sup> compiled concordances to compare multiple Chinese translations of the *Aṣṭasāhasrikā Prajñāpāramitā Sūtra*. Dictionary comparisons have also been used for analysis of sentiment and genre.<sup>124</sup>

There have been several studies of the Chinese Buddhist canon with corpus linguistics approaches. A **dependency treebank** is a corpus with annotated grammatical relationships. For example, Wong and Lee<sup>125</sup> describe a dependency treebank of the Chinese Buddhist canon to study the language that it is composed in. The authors did word segmentation, part-of-speech tagging, and other processing to build this treebank. In a related paper, Lee and Wong<sup>126</sup> report a conversational network constructed from a treebank of the *Tripitaka Koreana* edition of the Chinese Buddhist canon using computational linguistics techniques.

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<sup>123</sup> Lewis Rosser Lancaster, “An Analysis of the Aṣṭasāhasrikā Prajñāpāramitā-Sūtra from the Chinese Translations” (The University of Wisconsin-Madison, 1968), 326-373.

<sup>124</sup> Hoffman and Waisanen, “Digital Frontier of Rhetoric Studies.”

<sup>125</sup> Tak-sum Wong and John SY Lee, “A Dependency Treebank of the Chinese Buddhist Canon,” *Proceedings of the Tenth International Conference on Language Resources and Evaluation* (2016), 1679–83.

<sup>126</sup> John Lee and Tak-sum Wong, “Conversational Network in the Chinese Buddhist Canon,” *Open Linguistics* 2, no. 1 (2016): 427–36.

One of the challenges with corpus analysis has been the specialized software required and the need to understand the theoretical basis for them to appreciate the results of the studies. Each of these software components is specialized to very narrow tasks, and human coding was needed for tasks that were too difficult to develop software for. In contrast, AI models are very flexible, being able to respond to a large range of questions, like a human performing manual coding. One promise of AI models is that they may be able to replace specialized corpus analysis software and human coding. However, it remains to be seen how accurately this can be done.

### *Distant Reading and Cultural Analytics*

Because of the relatively sparse use of corpus analysis in Buddhist studies, it is enlightening to consider some uses of corpus analysis outside of linguistics, in the digital humanities.

**Distant reading**, in contrast to close reading, in literature studies focusses on units that may be larger or smaller than individual texts, including devices, themes, tropes, genres, and systems.<sup>127</sup> Corpus analysis is a critical tool for distant reading because it gives a broad, comprehensive, and representative view of a body of text in contrast to a deep understanding of a small body of text through close reading.<sup>128</sup> An example of distant reading is Moretti's<sup>129</sup> network diagram of the characters in Hamlet.

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<sup>127</sup> Franco Moretti, *Distant Reading* (London: Verso, 2013), loc. 779, Kindle edition.

<sup>128</sup> Judy Wakabayashi, "Digital Approaches to Translation History," *Translation & Interpreting: The International Journal of Translation and Interpreting Research* 11, no. 2 (2019): 136.

<sup>129</sup> Moretti, *Distant Reading*, loc. 3249.

Moretti<sup>130</sup> looked towards quantitative methods and distant reading as a more rational approach to literary history. Moretti investigates topics in literary history graphically, including the rise of the novel<sup>131</sup> and the rise and fall of genres.<sup>132</sup> The large-scale change apparent in charts drives discussion of the reasons for the changes over time with specific examples illustrating the points.

Piper<sup>133</sup> notes that distant reading also overcomes the problem of bias inherent in close reading. The artifacts of distant reading lend themselves to objective measurement over large bodies of text.

Manovitch<sup>134</sup> defines the field of cultural analytics as the study of patterns and trends in digital culture. In this field, Manovitch states that the only way to describe the millions or even billions of digital assets created by online communities is using the methods of data science, including data visualization, statistics, and machine learning. Two central challenges in cultural analytics described by Manovitch<sup>135</sup> are: firstly, transforming cultural experiences into data and, secondly, drawing insights on cultural context from the data.

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<sup>130</sup> Franco Moretti, *Graphs, Maps, Trees: Abstract Models for a Literary History* (London and New York: Verso, 2007), 4.

<sup>131</sup> Moretti, 6-12.

<sup>132</sup> Moretti, 14-23.

<sup>133</sup> Andrew Piper, *Enumerations: Data and Literary Study* (Chicago and London: The University of Chicago Press, 2018), 23-24.

<sup>134</sup> Lev Manovitch, *Cultural Analytics* (Cambridge, Massachusetts: The MIT Press, 2020), 7-9.

<sup>135</sup> Manovitch, 19.

### *Use of Machine Learning and AI in Buddhist Studies and the Humanities*

Large language models (LLMs) themselves are trained on corpora. One of the early milestones was the development of the skip-a-gram model based on a 1.6 billion word data set.<sup>136</sup> However, the use of AI in Buddhist studies has been very sparse.

Hung, Bingenheimer, and Wiles<sup>137</sup> used classical machine learning to interpret the results of n-gram analysis of anonymously produced texts in the Chinese Buddhist canon. Their methodology used n-gram feature extraction, principal component analysis, and average linkage clustering to analyze a set of texts. The n-gram analysis by the authors produced many combinations of characters, only a few of which are important. Each n-gram is considered a **feature**, which is an input variable to the machine learning model. **Principal component analysis**<sup>138</sup> is a technique that addresses **feature selection**,<sup>139</sup> that is, the procedure for reducing many features to only those that are the most important, or a small number of combinations. The model used by Hung, Bingenheimer, and Wiles is an average linkage clustering algorithm computing the similarity of texts based on the n-grams contained.

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<sup>136</sup> Tomas Mikolov et al., “Efficient Estimation of Word Representations in Vector Space,” arXiv Preprint, 2013, arXiv:1301.3781.

<sup>137</sup> Jen-Jou Hung, Marcus Bingenheimer, and Simon Wiles, “Quantitative Evidence for a Hypothesis Regarding the Attribution of Early Buddhist Translations,” *Literary and Linguistic Computing* 25, no. 1 (2010): 119–34.

<sup>138</sup> Gareth Michael James et al., *An Introduction to Statistical Learning: With Applications in R* (New York: Springer Science+Business Media, 2013), 370.

<sup>139</sup> James et al., 201.

The approach by Hung, Bingenheimer, and Wiles is still relevant today. There are some advantages to using classical machine learning in comparison to LLMs, including more targeted analysis, faster performance, more direct interpretability, and better repeatability. One disadvantage is the lack of flexibility of the approach as it is narrowly targeted at specific analysis, compared with LLMs which can respond to a very flexible range of questions.

Nehrdich et al.<sup>140</sup> describe the evaluation of LLMs for machine translation of Buddhist Chinese canonical text to English. The authors evaluated a number of commercial and open-source models and a domain-specialized model with their own corpus using different metrics for translation quality. They also show that the use of a retrieval augmented generative system to inject vocabulary from a dictionary improves translation quality for Chinese Buddhist texts due to its low-resource domain. The same authors support the Dharmamitra machine translation application.<sup>141</sup> Wei<sup>142</sup> also evaluates machine translation of Chinese Buddhist texts to English in a smaller, more qualitative study.

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<sup>140</sup> Sebastian Nehrdich et al., “MITRA-Zh-Eval: Using a Buddhist Chinese Language Evaluation Dataset to Assess Machine Translation and Evaluation Metrics,” *Proceedings of the 5th International Conference on Natural Language Processing for Digital Humanities* (2025), 129–37.

<sup>141</sup> Nehrdich et al.

<sup>142</sup> Xiang Wei, “The Use of Large Language Models for Translating Buddhist Texts from Classical Chinese to Modern English: An Analysis and Evaluation with ChatGPT 4, ERNIE Bot 4, and Gemini Advanced,” *Religions* 15, no. 1559 (2024), <https://doi.org/10.3390/rel15121559>.

Nehrdich et al.<sup>143</sup> refer to the language that the Chinese Buddhist canon is written in as a low-resource language. A **low-resource language** is a language that is less well studied, resource scarce, less digitized, or less privileged than the major languages that AI models are trained on.<sup>144</sup> In contrast, the authors state that natural language processing research focusses on twenty or so major languages because adequate training requires huge parallel text corpora. Although advances are being made for low-resource languages, they are at a disadvantage compared to the major languages.

### **Buddhist Terminology in Chinese Translation**

The aim of the literature review in this section is to aid in planning the methodology and rubric for the terminology analysis.

In the book *Fojiao Ciyu de Gouzaoyu Hanyu Cihui de Fazhan* 佛教词语的构造与汉语词汇的发展, Liang<sup>145</sup> gives a linguistic analysis of Buddhist terminology, focusing on the kinds of translated terms. Liang<sup>146</sup> notes that transliteration was especially prominent in early translations. Liang divides transliterations into two groups: full transliterations and abbreviated transliterations 節譯. For example,<sup>147</sup>

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<sup>143</sup> Nehrdich et al., “MITRA-Zh-Eval.”

<sup>144</sup> Alexandre Magueresse, Vincent Carles, and Evan Heetderks, “Low-Resource Languages: A Review of Past Work and Future Challenges,” arXiv Preprint, 2020, arXiv:2006.07264.

<sup>145</sup> Xiaohong Liang, *Fojiao ciyu de gouzaoyu hanyu cihui de fazhan* (Beijing Yuyan Xueyuan Chubanshe, 1994).

<sup>146</sup> Liang, 3.

<sup>147</sup> Liang, 6.

阿耨三菩提 *ānòusānpútí* is an abbreviation for ‘unsurpassed complete perfect enlightenment’, Sanskrit *anuttarasamyaksambodhi* 阿耨多羅三藐三菩提 *ānòuduōluó sānmiǎo sānpútí*. A second example of an abbreviated transliteration is 阿毗曇 *āpítán* for *Abhidharma* 阿毗達磨 *āpídámó*.

Liang<sup>148</sup> uses the term 合璧詞 *hé bì cí* for words with mixed transliteration and semantic translation and gives examples including ‘Buddhaland’ 佛土 *fótǔ*, which combines the transliteration ‘Buddha’ 佛 *fó* with the semantic translation ‘land’ 土 *tǔ*.

Liang<sup>149</sup> uses the term 意義詞 *yìyì cí* for semantic translations and gives examples including ‘Dharma King’ 法王 *fǎ wáng*. Liang<sup>150</sup> uses the term 佛化漢詞 *fó huà hàn cí* to describe newly invented senses of Chinese words giving examples, including *sūnyatā* 空 *kōng*. Buddhist idioms are the Buddhist equivalent of traditional four-character Chinese idioms 成語 *chéngyǔ*, such as ‘a deluge of heavenly flowers’ 天華亂墜 *tiān huā luàn zhuì*, alternatively written as 天花亂墜 *tiān huā luàn zhuì*, a Chan idiom adopted from Fascicle One of the *Mahāyāna Sūtra on Contemplation of the Mind-Ground of Essential Nature* 大乘本生心地觀經.<sup>151</sup> Liang<sup>152</sup> describes ‘Buddhist sayings’ 佛教俗諺 *fójiào*

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<sup>148</sup> Liang, *Fojiao ciyu de gouzao yu hanyu cihui de fazhan*, 14.

<sup>149</sup> Liang, 35.

<sup>150</sup> Liang, 65.

<sup>151</sup> Shi Ciyi, *Fo Guang Dictionary of Buddhism* (Taiwan: Fo Guang Shan, 2000). s.v. “天花亂墜”, online version; Liang, *Fojiao ciyu de gouzao yu hanyu cihui de fazhan*, 88; T 159, 3.0294c17.

<sup>152</sup> Liang, *Fojiao ciyu de gouzao yu hanyu cihui de fazhan*, 119.

*síyàn* as concise proverbs. An example is “put down the butcher’s knife and attain enlightenment on the spot” 放下屠刀，立地成佛.

Dictionaries are a critical tool in modern translation. However, the texts in the corpus were translated without dictionaries. When dictionaries were later compiled, they were not bilingual dictionaries, as are used for translation today. Xu, Liang, and Chen<sup>153</sup> discuss the background to the creation of Buddhist dictionaries in the Southern and Northern dynasties, noting that they became necessary because of the massive translation efforts to translate Buddhist texts from South Asia. The proliferation of Chinese Buddhist dictionaries after the period that the corpus in this study covers highlights the difficulties that translators and readers of the period faced with the huge volume and foreign nature of the terminology.

The earliest extant Chinese Buddhist dictionary is *Xuanying's Dictionary of Sounds and Meanings* 玄應音義 by Xuanying in the Tang. Xuanying was present in Chang’an when Xuanzang returned from India. He felt that previous Buddhist dictionaries were insufficient, giving one reason that they did not include the title of the text that they extracted each term from.<sup>154</sup> The dictionary was compiled from a selected number of texts and included the source for the term, the pronunciation using *fanqie*, and an explanation of the meaning. It also identifies transcription errors. The dictionary, twenty-five fascicles in length and the earliest extant Buddhist dictionary, is now

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<sup>153</sup> Xu, *Fojiao de zhongguohua*, 22-35.

<sup>154</sup> Xu, 58-63.

incorporated into Huilin's *Sounds and Meanings of all the Terms in the Canonical Texts* 一切經音義 (T 2128) compiled by Huilin 慧琳 in the Tang.<sup>155</sup>

*The Sounds and Meanings of all the Terms in the Canonical Texts* is one hundred fascicles in length. Huilin (737-820 C. E.) was a native of Kashgar in present-day Xinjiang and studied under Amoghavajra in Chang'an.<sup>156</sup> Besides *Xuanying's Dictionary of Sounds and Meanings*, it also includes *Huiyuan's Glossary* 慧苑音義 by Tang dynasty monk Huiyuan 慧苑 listing terms in the *Avataṃsaka Sūtra* in fascicles 21-23.<sup>157</sup>

The *Fayuan zhulin* 法苑珠林 (T 2122) by Daoshi 道世 in one hundred scrolls completed in 668 C. E. of the Tang dynasty, is an encyclopedia that is regarded as one of the most important primary sources on early Chinese Buddhism.<sup>158</sup> In contrast to the dictionary style of *The Sounds and Meanings of all the Terms in the Canonical Texts*, the *Fayuan zhulin* is structured around broad topics, which are broken down into sub-topics.

The use of Buddhist terminology in a text can also be an indicator of the age of a text. The example of “Thus have I heard” 如是我聞 *rushi wo wen*, which is a translation variant introduced by Kumārajīva and adopted by later translators, was discussed above.

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<sup>155</sup> FGDB, s.v. “玄應音義”.

<sup>156</sup> FGDB, s.v. “慧琳”; Xu, *Fojiao de zhongguohua*, 65.

<sup>157</sup> FGDB, s.v. “慧苑音義”; Liang, *Fojiao yu hanyu shi yanjiu*, 70.

<sup>158</sup> Richard D. II. McBride, “Üich’ōn and Why the Fayuan zhulin Is in the Taishō,” *International Journal of Buddhist Thought and Culture* 34, no. 2 (2024): 173–96.

Nattier's article<sup>159</sup> on Entry No. 286 *Sūtra on Cutting Ties in the Ten Dwellings* 十住斷結經 (T 309), translated by Zhu Fonian, is a good example of analysis of translated terminology specific to particular translators. Nattier<sup>160</sup> suggests that *Shizhu duanjie jing* is an apocryphon based on heavy borrowing from Entry No. 98 *Radiant Light Prajñāpāramitā* 放光般若經 (T 221), translated by Mokṣala rather than any Sanskrit source text that can be identified.

Lin and Radich<sup>161</sup> use software to assist in analysis of n-grams shared between multiple of Zhu Fonian's texts, including Entry No. 286 *Sūtra on the Bodhisattva's Jade Necklace* 菩薩瓔珞經 (T 656). Their analysis extends Nattier's analysis of the *Sūtra on Cutting Ties in the Ten Dwellings* and they conclude that the source texts that the *Sūtra on the Bodhisattva's Jade Necklace* borrows from several texts translated by Dharmarakṣa and one by Lokakṣema.

In this study, it will be necessary to associate terms with usage in each text of the corpus. However, to date, compilation of glossaries for specific texts or historic translators has only been done for a very limited set of texts and translators. Vetter<sup>162</sup> compiled a lexicography for An Shigao's texts. Karashima compiled *A Glossary of*

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<sup>159</sup> Jan Nattier, "Re-Evaluating Zhu Fonian's Shizhu duanjie jing (T309): Translation or Forgery?" *Annual Report of the International Research Institute for Advanced Buddhology at Soka University* 13 (2010): 231–58.

<sup>160</sup> Nattier, 252-255.

<sup>161</sup> Qian Lin and Michael Radich, "A Computer-Assisted Analysis of Zhu Fonian's Original Mahayana Sutras," *Buddhist Studies Review* 38, no. 2 (2021): 145–68.

<sup>162</sup> Tilmann Vetter, *A Lexicographical Study of An Shigao's and His Circle's Chinese Translations of Buddhist Texts* (Tokyo: The International Institute for Buddhist Studies, 2012).

*Dharmarakṣa's Translation of the Lotus Sūtra*,<sup>163</sup> *A Glossary of Kumārajīva's Translation of the Lotus Sūtra*,<sup>164</sup> and *A Glossary of Lokakṣema's Translation of the Astāhasrikā Prajñāpāramitā*.<sup>165</sup> These painstakingly compiled glossaries, although they are extremely valuable, are too small in scope to be used for the purposes of this study, except for data validation.

### **Linguistic Analysis**

The aim of this section is to review literature relevant for planning the methodology and rubric for the linguistic analysis performed as part of the corpus analysis.

The definitions of the periods of the Chinese language vary somewhat by author. In one definition, **Old Chinese** 上古漢語, also referred to as Archaic Chinese, is the language of the period before the Qin dynasty.<sup>166</sup> This dissertation uses the definition from Dong<sup>167</sup> as the period from the Late Shang dynasty (12 century B.C.E.) to the end of

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<sup>163</sup> Seishi Karashima, *A Glossary of Dharmarakṣa's Translation of the Lotus Sūtra* (Tokyo: The International Research Institute for Advanced Buddhology, Soka University, 1998).

<sup>164</sup> Seishi Karashima, *A Glossary of Kumārajīva's Translation of the Lotus Sūtra* (Tokyo: The International Research Institute for Advanced Buddhology, Soka University, 2001).

<sup>165</sup> Seishi Karashima, *A Glossary of Lokakṣema's Translation of the Astāhasrikā Prajñāpāramitā* (Tokyo: The International Research Institute for Advanced Buddhology, Soka University, 2010).

<sup>166</sup> Zhongwei Shen, *A Phonological History of Chinese* (Cambridge: Cambridge University Press, 2020), 92.

<sup>167</sup> Hongyuan Dong, *A History of the Chinese Language* (London: Routledge, Taylor & Francis Group, 2021), 19.

the Han dynasty (220 C.E.). Some scholars, such as Shen,<sup>168</sup> define **Middle Chinese** 中古漢語 as beginning in 601 C.E. with the compilation of the *Qieyun* 切韻. This dissertation uses the definition by Dong<sup>169</sup> of Middle Chinese as beginning in the Three Kingdoms period (220-265 C.E.) to the end of the Song dynasty (960-1279 C.E.).

Liang<sup>170</sup> states that during the Wei and Six Dynastie periods, based on sampling from several secular and Buddhist texts, polysyllabic words became more dominant than monosyllabic words, which were dominant in the classical period. During the period that the *Chu san zang ji ji* catalog covers the Chinese language was impacted by the introduction of Western cultures, especially through Buddhism.<sup>171</sup> The introduction of polysyllabic words was one of the most important developments in Middle Chinese.<sup>172</sup> Besides being imported from foreign languages, polysyllabic words were also introduced by surfacing vernacular Chinese into written Chinese.

Grammatical usage in Chinese can be a marker of the different historic periods. The shift from Late Archaic Chinese to the language of the Later Han was particularly large and is described by Dobson<sup>173</sup> who studied this by comparing the commentary

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<sup>168</sup> Shen, *Phonological History of Chinese*, 38.

<sup>169</sup> Dong, *History of the Chinese Language*, 19.

<sup>170</sup> Liang, *Fojiao yu hanyu shi yanjiu*, 250-151

<sup>171</sup> Xi Xiang, *A Brief History of the Chinese Language: V: Middle Chinese Lexicon I* (London: Routledge, 2023), 9

<sup>172</sup> Xiang, *Middle Chinese lexicon 1*, 102.

<sup>173</sup> W. A. C. H. Dobson, *Late Han Chinese: A Study of the Archaic-Han Shift. Heritage* (Toronto: University of Toronto Press, 1964), xix.

*Mengzi Zhang Ju* 孟子章句 by Zhao Qi 趙岐 (d. 201 C. E.) against the text of *Mengzi* 孟子. The commentary includes paraphrases of *Mengzi* in later period language allowing a sentence-by-sentence comparison. The shift involved a move away from the definite purpose of function words in Late Archaic Chinese to periphrastic (combinations of words rather than inflection) use in the Late Han and the introduction of compounds.<sup>174</sup> This marked a change towards characteristics familiar in **Modern Standard Chinese**, which is the official language of China today, also known as 國語 *guóyǔ* or 普通話 *pǔtōnghuà*.<sup>175</sup>

In their linguistic examination of suspicious Buddhist scriptures, Gao and Meng<sup>176</sup> argue that fourteen translations attributed to An Shigao in the *Taishō Tripitaka* cannot reliably be attributed to him based on the frequent use of modal particles (語氣助詞 *yuqi zhuci*), which were not characteristic of texts produced in the Later Han dynasty. Gao and Meng note that these attributions date to Fei Changfang's *Li dai san bao ji*. Gao and Meng argue that using sentence-final modal particles 耶 *yé*, 耳 *ěr*, 哉 *zāi*, and 也 *yě* as a criterion for scrutiny can give historical specificity, typicality, and is quantifiable via usage frequency and thus help to establish the period of a text.

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<sup>174</sup> Dobson, *Late Han Chinese*, xxiii.

<sup>175</sup> Dong, *History of the Chinese Language*, 14.

<sup>176</sup> Lieguo Gao and Yichen Meng, “Jiyu yuqi zhuci de keyi an shigao yijing kaobian 基於語氣助詞的可疑安世高譯經考辨,” *Hanyu shi yanjiu jikan*, no. 2 (2018): 50–67.

However, some of these particles can be expected to be occasionally used in the Later Han dynasty or before. For example, Pulleyblank<sup>177</sup> gives an example of the second modal particle described (耳 *ěr*), used at the end of declarative sentences to indicate a restrictive tone from Mengzi (372–289 B.C.E.): 直好世俗之樂耳 “I only like the popular music of the present age” (Meng 1B/1). Gao and Meng show that final modal particle use by An Shigao in texts credibly attributed to him is simpler and less frequent than in texts that should not be attributed to him and that were likely produced at a later date.

Gao and Meng note that 哉 *zāi* is only ever used by An Shigao in the formula 善哉善哉 *shànzāi shànzāi*. Sengyou attributes thirty-five works to An Shigao, of which twenty-three can be related to texts in the *Taishō*. Gao and Meng refer to other scholars, including Nattier,<sup>178</sup> who states that only between seventeen and nineteen texts can reliably be attributed to An Shigao, discarding the other texts attributed to An Shigao by Sengyou in the *Chu san zang ji ji*.

Linguistic analysis, such as performed by Gao and Meng, appears to be a promising direction that can be extended beyond the texts of An Shigao. Fang and Lu<sup>179</sup> provide an overview of recent studies of the language of early Chinese Buddhist texts,

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<sup>177</sup> Edwin George Pulleyblank, *Outline of Classical Chinese Grammar* (Vancouver: University of British Columbia Press, 2003), 134.

<sup>178</sup> Nattier, *Earliest Chinese Buddhist Translations*, 45-46.

<sup>179</sup> Yixin Fang and Lu Lu, “A Review and Prospects of the Achievements in the Study of Suspicious Buddhist Scriptures from the Perspective of Language in the Past Decade 近十余年从语言角度考辨可疑佛经成果的回顾与展望,” *Journal of Zhejiang University (Humanities and Social Sciences)* 53, no. 2 (2023): 5–28.

several of them taking a linguistic approach. For example, Fang and Gao<sup>180</sup> describe an overlapping set of linguistic characteristics that may be used to date early Chinese Buddhist translations and apply them to Entry No. 813 *Treatise on Distinguished Merit* 分別功德論 *Fenbie gongde lun* (T 1507), attributed to an unknown translator in the Later Han in the *Taishō*.

Fang and Gao list several linguistic characteristics of the *Treatise on Distinguished Merit* that were not used in the Late Han: (1) passive sentences using the 被 *bèi* passive construction, (2) interrogative forms binding with pronouns 何者 *hézhě* and 何等人 *héděng rén*, and (3) use of some later vocabulary including ‘twins’ 雙生兒, ‘camel’ 駱駝, ‘arithmetic’ 算術, and ‘bald-head’ 禿頭. Fang and Gao conclude that the text was unlikely to be composed in the Late Han. Cao and Yu<sup>181</sup> use verb-linkage and passive constructions to study the dates and authorship of anonymously produced texts.

Xiang<sup>182</sup> provides a lexicon of terms, including both monosyllabic and polysyllabic words, that emerged in Middle Chinese. For example, Xiang<sup>183</sup> notes that the meaning of the character 步 *bù* as ‘dock’ appeared in the Southern and Northern Dynasties (420–589 C.E.) but more commonly means ‘step’ or ‘walking’. Another

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<sup>180</sup> Yixin Fang and Lieguo Gao, “A Tentative Study of the Year of Translation of *Fenbie gongde lun* 《分別功德論》 翻譯年代初探.”

<sup>181</sup> Cuangshun Cao and Xiaorong Yu, “The Issue of Dating Certain Early Buddhist Sutra Translations from a Linguistic Perspective—Taking the *Jiu Za Piyu Jing* (The Old Miscellaneous Jataka Sutra) as an Example,” *Hanyu Shi Yanjiu Ji Kan* 1 (2000): 1–9.

<sup>182</sup> Xiang, *Middle Chinese Lexicon 1*.

<sup>183</sup> Xiang, 9.

example is ‘village’ 村 *cūn*, which emerged in the Six Dynasties 220-589 C.E.<sup>184</sup> The appearance of vocabulary like this may be a way of dating texts in the corpus.

### Translation Style

The goal of this section is to investigate aspects of translation style that may be feasibly studied with corpus analysis, which methodologies can potentially be used, and which characteristics of translation style should be included in a rubric.

What is meant by translation style? Verdonk<sup>185</sup> notes that the notion of writing style is such a common concept that it seems like it should be understood and discussed in relation to translation, but that this common notion belies its subjective and complex nature. Style in language may include linguistic and literary features, such as ellipsis, intertextuality, foregrounding, and use of strong adjectives for persuasive effect.

Funayama<sup>186</sup> discusses the general history of translation of Indian Buddhist texts to Chinese, including the methods of studying the subject and the translation process, which was not the same as the mostly single-person translation process that we understand today. The process for translating Buddhist texts to Chinese was a group activity involving recitation, interpretation, and recording of the result in writing.

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<sup>184</sup> Xiang, *Middle Chinese Lexicon 1*, 13.

<sup>185</sup> Peter Verdonk, *Stylistics* (Oxford: Oxford University Press, 2002), 3.

<sup>186</sup> Toru Funayama, *Making Sutras into Classics (Jingdian): How Buddhist Scriptures Were Translated into Chinese* (Tokyo: Iwanami Shoten, 2013), 1-21.

Li<sup>187</sup> discusses the challenges that early translators faced with a case study of Zhi Qian's translation of the *Dharmapada* (T 210). Li enumerates four challenges: integrating variable translation practices, integrating multiple source materials and languages, integrating and refining previous translations, and translation style. Zhi Qian's preface to the *Dharmapada*, which is included in the *Chu san zang ji ji*, notes some of these challenges.

### *Methodologies for Analyzing Translation Styles*

Wakabayashi<sup>188</sup> discusses digital techniques for the study of translation history, including topic analysis, stylometrics, and network analysis. **Stylometrics** is the analysis of the style of language usage. It has been used to attempt to establish authorship by analysis of frequency of word usage, the use of unique words, grammatical patterns, and other characteristics.<sup>189</sup>

In their review of prior research on translator attribution, Hung, Bingenheimer, and Wiles<sup>190</sup> mention analysis based on frequency of function words, word collocations, richness of vocabulary, and sentence length as simple variables used in style analysis. The authors decided to use n-gram frequency due to the difficulty of lack of word boundaries in Chinese text. They analyzed seventy-two *Madhyama Āgama* texts, twenty-four of which were assessed to be translated by Dharmanandin and Zhu Fonian.

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<sup>187</sup> Li, "Four Challenges."

<sup>188</sup> Wakabayashi, "Digital Approaches to Translation History."

<sup>189</sup> Kimberly Neuendorf, *A. The Content Analysis Guidebook* (Thousand Oaks: SAGE Publications, 2016), 279-280.

<sup>190</sup> Hung et al., "Quantitative Evidence," 121.

One limitation of the n-grams methods is that n-grams common to multiple texts should be expected because early Buddhist texts are formulaic and repetitive because they were originally oral compositions designed for memorization and transmission.<sup>191</sup> This makes the interpretation of the frequency of n-grams difficult.

### *Prose and Verse*

The subject of Indic poetry is too big in scope to cover here. However, the corpus of this study includes a large amount of translation of Indic verse, so some discussion of aspects that can feasibly be used in corpus analysis will be provided.

Because of the difficulty of translating verse, in many cases the translator may not attempt to translate verse in a source text into verse in the target text at all. Raines<sup>192</sup> states that one reason for the greater difficulty of translating verse include the “intricate dance of sound, rhythm, and meaning.” Besides the use of rhyme and rhythm, poetry has a rich use of figurative language, particularly metaphors. In addition, the meanings used in poetry and the verse forms are often deeply rooted in the culture that they originated in. An intermediate translation approach is to translate into a form of verse that matches the target language rather than importing a form of verse from the source language.

Verse styles in Indic languages are very different to Chinese. The concept of heavy and light syllables is fundamental to Pali verse.<sup>193</sup> The meter is defined by the

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<sup>191</sup> Mark Allon, “Early Buddhist Texts: Their Composition and Transmission,” *Journal of Indian Philosophy* 50, no. 4 (2022): 523–56.

<sup>192</sup> Hugo Raines, *Verse Translation* (Publifye AS, 2025), 4 ebook.

<sup>193</sup> Bhikkhu Ānandajoti, *An Outline of the Metres in the Pāḷi Canon* (Self-pub, Ancient-buddhist-texts.net, 2013), 4, PDF version.

number of syllables in each line and the alternation of light and heavy syllables, which builds rhythmical structures. Some meters have a fixed number of syllables, and some have a variable number. For example, *siloka* (Sanskrit *śloka*), the dominant form in Pali verse, have four lines with eight syllables per line.<sup>194</sup>

Like Pali, Sanskrit prosody is based on the difference between heavy *guru* or light *laghu* syllables.<sup>195</sup> A heavy syllable has a long vowel or a short vowel followed by two or more consonants. A light syllable has a short vowel followed by a single consonant or no consonant. Meters have a fixed syllable form, fixed line form, or a combined form. The combined form of partly fixed and partly free is called a *śloka*, which is the most popular form and dates back to the *Rig Veda*.

A stanza is formed from four 'feet' *pada*. The older Vedic forms of *śloka* are called *chandas* and have *pada* of eight, eleven, or twelve syllables.<sup>196</sup> The predominant forms in the epics *Mahābhārata* and *Ramayana* is the *śloka*.

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<sup>194</sup> Ānandajoti, *Outline of the Metres*, 18.

<sup>195</sup> Roland Greene and Stephen Cushman, eds. *The Princeton Handbook of World Poetries* (Princeton: Princeton Reference. Princeton University Press, 2017), 285-286.

<sup>196</sup> Greene and Cushman, *Princeton Handbook of World Poetries*, 286.

A number of features of Indic languages enable flexibility to change according to the needs of specific situations in verse. For example, the length of the vowels is important in Pali verse but it may be varied to achieve the intended meter.<sup>197</sup>

Interpretation of this is possible because Indic languages are written phonetically.

In Chinese poetry the number of characters in a line determines its meter.<sup>198</sup>

While there are some forms of Chinese poetry where the number of characters per line varies, these are rarely seen in Buddhist texts. In addition, there are changes in tone that can impact the rhythm. Four-syllable (tetrasyllabic) verse was the earliest form of Chinese poetry. The *Book of Songs* 詩經 (11th to 7th centuries BCE) consists predominantly of four-syllable verse. Rhyming is important in many forms of Chinese poetry. However, linguistic analysis is required to inform of historic pronunciations. Use of characters marking exclamations or sighs may augment the rhythm.<sup>199</sup>

Many changes in took place in Chinese poetry between the Han and the Sui dynasties, including the emergence of the five-syllable (pentasyllabic) and seven-syllable (heptasyllabic) forms, the codification of tones in verse, and the emergence of new genres.<sup>200</sup>

Five- and seven-syllable poetry of the Han dynasty without known authorship was historically referred to as ‘ancient verse’ 古詩 *gǔshī*. Rhyming in this genre is used at the end of even-numbered lines.<sup>201</sup> **Fu** 賦 *fù* poetry is a style of parallel prose mixed with verse that flourished before the Tang, during the period that the corpus was produced.<sup>202</sup> Fu poetry has been known for its excessively ornate style. The well-known fifth-century secular work *The Literary Mind and the Carving of Dragons* 文心雕龍 by Liu Xie 劉勰 on literary aesthetics was written in parallel prose.<sup>203</sup>

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<sup>197</sup> Ānandajoti, *An Outline of the Metres*, 9-10.

<sup>198</sup> James J. Y. Liu, *The Art of Chinese Poetry* (Chicago: University of Chicago Press, 2022), loc. 501, Kindle.

<sup>199</sup> Riegel, “Shih-Ching Poetry and Didacticism” 135.

<sup>200</sup> Robert Joe. Cutter, “Poetry from 200 B.C.E. to 600 C.E.,” in *The Columbia History of Chinese Literature*, ed. Victor H. Mair (New York: Columbia University Press, 2001), 275-176, ebook.

<sup>201</sup> Cutter, “Poetry from 200 B.C.E. to 600 C.E.,” 276; Liu, *The Art of Chinese Poetry*, loc. 545.

<sup>202</sup> Christopher Leigh Connery, “Sao, Fu, Parallel Prose, and Related Genres,” in *The Columbia History of Chinese Literature*, ed. Victor H. Mair (New York: Columbia University Press, 2001), 249-250, ebook.

<sup>203</sup> Connery, “Sao, Fu, Parallel Prose,” 263.

The reaction against overly ornate style in Buddhist circles can be seen in Seng Rui's critique of Zhi Qian's translation style. Seng Rui was a senior member of Kumārajīva's translation team. In his preface to Entry No. 304 *Brahmaviśeṣacintīparipṛcchā* 思益梵天所問經 (T 586), included in Fascicle Eight of the *Chu san zang ji ji*, Seng Rui wrote that Zhi Qian's earlier translation used

ornate words, but they confused the message; and consequently the great objective was distorted by inaccurate language and the ultimate essence was spoiled by flowery ostentation  
而恭明前譯頗麗其辭迷其旨。是使宏標乖於謬 文至味酸於華艷。<sup>204</sup>

This quote highlights the great difficulty of translating verse and retaining the meaning and feeling of the source text.

### *Impact of the Oral Tradition on Translation Style*

Early Buddhist texts were transmitted orally through a process of memorization and communal recitation.<sup>205</sup> The great influence of this oral tradition on Buddhist literature is in great contrast to most Chinese literature. Sengyou mentions the story of the initial communal recitation of *sūtras* at the First Council.<sup>206</sup> Haar<sup>207</sup> describes, based on

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<sup>204</sup> Xinzhang Luo, "Seng Rui (353?-420? CE)." in *An Anthology of Chinese Discourse on Translation: From Earliest Times to the Buddhist Project*, vol. 1, ed. Martha P. Y. Cheung, trans. Jane Lai (London and New York: Taylor & Francis, 2014), 151-153, ebook; T 2145, 55. 0057c23.

<sup>205</sup> Allon, "Early Buddhist Texts," 523-556.

<sup>206</sup> T 2145, 51.0004a06.

<sup>207</sup> Barend J. Haar, "Buddhist Monks and Oral Performance." in *Chinese Buddhism and the Scholarship of Erik Zürcher*, ed. Jonathan A. Silk and Stefano Zacchetti (Leiden ; Boston: Brill, 2023), 188-232.

notes in Huijiao's *Biographies of Eminent Monks* 高僧傳 (T 2059), the esteem with which foreign monks with a talent for reciting *sūtras* were held.

An obvious surfacing of the oral tradition is the use of the phrase 'spoken by the Buddha' 佛說 *foshuo* in titles. The use of *foshuo* in the title became common in later Chinese Buddhism but was rarely used by Sengyou.<sup>208</sup>

Mair<sup>209</sup> notes that the use of vernacular language in Buddhist texts is linked to the Buddhist oral tradition. He argues, however, that it is probably not a causal relation but rather the translation of early Chinese Buddhist texts by foreigners like An Shigao and Lokāṣema, who had not mastered literary Chinese and did not have help from supporting teams like later translators.

Karashima<sup>210</sup> describes the transitions from oral transmission in Prakrit to writing in Kharoṣṭhī, to a mixture of Sanskrit and Prakrit, to Sanskrit with writing in Brāhmī with special reference to the case of Zhi Qian's translation of the *Vimalakīrtinirdeśa*, which is listed in the *Chu san zang ji ji*.<sup>211</sup>

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<sup>208</sup> Funayama, Tōru. "Jizang's 吉藏 Sanskrit," in *Chinese Buddhism and the Scholarship of Erik Zürcher*, ed. Jonathan A. Silk and Stefano Zacchetti (Leiden ; Boston: Brill, 2023), 255–289.

<sup>209</sup> Victor H. Mair, "Buddhism and the Rise of the Written Vernacular in East Asia: The Making of National Languages," *The Journal of Asian Studies* 53, no. 3 (1994): 713-716.

<sup>210</sup> Seishi Karashima, "Features of the Underlying Language of Zhi Qian's Chinese Translation of the *Vimalakīrtinirdeśa*," in *Chinese Buddhism and the Scholarship of Erik Zürcher*, ed. Jonathan A. Silk and Stefano Zacchetti (Leiden ; Boston: Brill, 2023), 141–165.

<sup>211</sup> T 2145 55. 0006c11.

### *Vernacular Elements*

Surfacing of vernacular elements into written Chinese has been mentioned several times above. Zürcher claims that early Chinese Buddhist texts have a heavily vernacular style noting that, “It cannot be doubted that this idiom largely reflects the vernacular language of the period”.<sup>212</sup> Nattier,<sup>213</sup> however, describes An Shigao’s translation style as ‘inelegant’ but does not mention it being vernacular. Nattier<sup>214</sup> does mention Lokāṣema’s translations as containing vernacular elements, citing Zürcher. One of the problems with claims of vernacular elements by Zürcher is that they are conflated with the characterization of an ‘unrefined’ or ‘inelegant’ translation style.

A macro trend over the last two millennia in written Chinese language change was the incorporation of vernacular elements. After the Han dynasty, spoken language in China increasingly diverged from written language resulting in **diglossia**, the coexistence of two different languages in the same community: the more prestigious Literary Chinese, which was modelled on Classical Chinese, in written form and the less prestigious vernacular form of everyday use.<sup>215</sup> During the period between the third and ninth centuries C.E. written Chinese was predominantly Literary Chinese and there was only sporadic written vernacular Chinese.<sup>216</sup> There was more extensive use of written

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<sup>212</sup> Zürcher, “New Look at the Earliest Chinese Buddhist Texts,” 422.

<sup>213</sup> Nattier, *Earliest Chinese Buddhist Translations*, 44.

<sup>214</sup> Nattier, 76.

<sup>215</sup> Don Snow, “Towards a Theory of Vernacularisation: Insights from Written Chinese Vernaculars,” *Journal of Multilingual and Multicultural Development* 34, no. 6 (2013): 597–610, <https://doi.org/10.1080/01434632.2013.786082>.

<sup>216</sup> Dong, *History of the Chinese Language*, 131.

vernacular Chinese in the period from the tenth to the eighteenth centuries. Today, in Modern Standard Chinese, the spoken and written forms are nearly the same.

Snow<sup>217</sup> describes five patterns related to the early development of vernacular written Chinese: first, a connection with oral literature; second, texts targeted at less literate readers; third, an association with a low-prestige domain; fourth, a connection with a group that does not respect the orthodoxy and; fifth, use in a new genre. Several of these patterns overlap with Zürcher's theory of a 'sub-elite' Buddhist community, mentioned above.

Mair<sup>218</sup> notes that the earliest instances of some vernacular forms in written Chinese are in Buddhist texts. Mair argues that it was not that Buddhism introduced many linguistic changes to the Chinese language, but they were already present in vernacular Chinese and happened to be written down first in Buddhist texts. Mair argues that the incorporation of vernacular elements in Buddhist texts induced secular literature to adopt them as well. He gives the example of the use of the character 是 *shì* as a copula in vernacular use, in contrast to use as a demonstrative in Literary Chinese, which had some rare occurrences in secular texts before Buddhism arrived in China and has become the most frequent form of 是 *shì* in modern Chinese.

Although Sanskrit later became the dominant language for *Mahāyāna* writings, the Buddha famously rejected the proposal of two Brahmins to use Sanskrit verse

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<sup>217</sup> Snow, "Towards a Theory of Vernacularisation."

<sup>218</sup> Mair, "Rise of the Written Vernacular," 709-712.

(*chandās*) in favor of Prakrits for the propagation of the Dharma.<sup>219</sup> Mair<sup>220</sup> argues that the dispensation to use vernacular language in Buddhist writings may be traced to this stance by the Buddha. Widespread early adoption of vernacular forms in secular written Chinese was inhibited by, firstly, opposition from conservative orthodoxy in favor of Literary Chinese and, secondly, the inability of Chinese characters to reflect changes in pronunciation. Mair<sup>221</sup> concludes that Buddhism played a crucial early role in the process that eventually led to the formal adoption of vernacular language in the twentieth century in Modern Standard Chinese.

We do not have a precise definition of what the vernacular language of the period of the corpus was because of the rarity of written vernacular Chinese 語體文 in that period. The best early written records of vernacular Chinese are texts in the *bianwen* 變文 performative genre of the Tang dynasty discovered in Dunhuang.<sup>222</sup> These *bianwen* texts are later than the period of the corpus but still useful to consider. Another important, but also later, source of knowledge of early vernacular Chinese are texts in the Chan Buddhist ‘records of sayings’ 語錄 *yulu* genre of the Tang and Song dynasties.<sup>223</sup> The

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<sup>219</sup> Vincent Eltschinger, “Why Did the Buddhists Adopt Sanskrit,” *Open Linguistics* 3, no. 1 (2017): 308–26.

<sup>220</sup> Mair, “Rise of the Written Vernacular,” 722–723.

<sup>221</sup> Mair, 738.

<sup>222</sup> Dong, *History of the Chinese Language*, 132.

<sup>223</sup> Dong, 133.

*yulu* genre was also used to record the master-disciple dialogs of Neo-Confucianists in the Song dynasty.<sup>224</sup>

Another important source of historic written vernacular Chinese are Yuan dynasty texts in the *pinghua* 評話 genre of oral history and storytelling, which have survived to the present. The earliest edition of the first full length fictional narrative written in vernacular prose, the *Outlaws of the Marsh* 水滸傳, found is later in the sixteenth century.<sup>225</sup> Hanan<sup>226</sup> that even in the dynasties after the Tang, written vernacular Chinese was unusual and was used mostly to fill a gap for dialogs in fictional literature, drama, and ‘master’s sayings’ 語錄 *yulu* for which literary Chinese was a poor fit.

Some examples of vernacular forms are the prefixes 阿 *ā* and 老 *lǎo*, the suffix 兒 *ér*, reduplicated nouns, the pronouns ‘you’ 你 *nǐ* and ‘he / she’ 渠 *qú*, and the personal pronouns 他 *tā* and 伊 *yī*.<sup>227</sup> However, apart from these few clear examples, distinguishing vernacular Chinese elements from classical Chinese in the early period is not straightforward. Ge<sup>228</sup> compares the word usage in a parallel pair of vernacular verse and literary Chinese prose passages from the *Medley on the Romance of the Western Wing* 西廂記諸宮調 attributed to Dong Jueyuan 董解元, of the Jin dynasty in the twelfth

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<sup>224</sup> Liangyan Ge, *Out of the Margins: The Rise of Chinese Vernacular Fiction* (Honolulu: University of Hawai’i Press, 2001), 19.

<sup>225</sup> Ge, *Out of the Margins*, 3-4.

<sup>226</sup> Patrick Hanan, *The Chinese Vernacular Story* (Cambridge, Mass.: Harvard University Press, 1981), 4-5.

<sup>227</sup> Dong, *History of the Chinese Language*, 133-140.

<sup>228</sup> Dong, 23-25.

and thirteenth centuries, which is after the period of the corpus. The vernacular text uses the verb ‘to say’ 道 *dào* in preference to 曰 *yuē* or 言 *yán* in literary Chinese and the pronoun ‘this’ 這 *zhè* in vernacular text in preference to 此 *cǐ* or 是 *shì* in literary Chinese. However, 道 *dào* is also occasionally used in the sense of ‘to say’ in some classical Chinese works, for example, in the *Analects of Confucius* 論語.<sup>229</sup>

Written records for the use of regional forms are even more sparse than written records of early vernacular Chinese. One example is the first-person pronoun ‘I’ 儂 *nóng* used in the Eastern Jin dynasty and as a second-person pronoun in the modern Wu dialect.<sup>230</sup>

### *Literal versus Fluent Translation*

The terms ‘literal’ and ‘fluent’ are often used in describing translation styles. This section discusses how these tendencies may be applied in the analysis of translation of early Buddhist texts.

Translators needed to manage the great differences between the grammatical structures of the Indic source languages and Chinese. These included a generally explicit subject in Indic languages compared to a preference for an implicit subject in Chinese, explicit indication of plural in Indic languages compared to none in Chinese, and explicit indication of tense compared to none in Chinese. These difficulties and the solutions

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<sup>229</sup> *Analects*, ‘Li Shi’ 論語 · 季氏.

<sup>230</sup> Dong, *History of the Chinese Language*, 135.

historically used by translators are summarized by Meisterernst.<sup>231</sup> Examples include indication of future tense with 當 *dāng* and the indication of plural with 等 *děng*.

The use of Chinese constructs matching Indic grammatical structures can give translated texts a literal feel. How translators addressed these challenges can also provide important clues to the origin or existence of a source text.

### Content Analysis

The aim of the literature review in this section is to aid in planning the methodology and rubric for the content analysis performed as part of the corpus analysis. Neuendorf<sup>232</sup> defines **content analysis** as “a summarizing, quantitative analysis of messages that follows the standards of the scientific method...” Content analysis is a method often used in social sciences and media studies to research the topic, tone, and sentiment in corpora.

### Genre

The basic original separation in the Indian Buddhist tradition was the *tripiṭaka* or ‘three baskets’: *sūtra*, Abhidharma, and Vinaya.<sup>233</sup> Chinese native genres are used in translating some of the basic Sanskrit categories, for example ‘classic’ 經 *jīng* was

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<sup>231</sup> Meisterernst, Barbara. “Buddhism and Chinese Linguistics.” In *Buddhism and Linguistics: Theory and Philosophy*, edited by Manel Herat. (Cham, Switzerland: Palgrave Macmillan, 2018), 130-136.

<sup>232</sup> Neuendorf, *Content Analysis Guidebook*, 36.

<sup>233</sup> Jiang Wu, “The Chinese Buddhist Canon through the Ages: Essential Categories and Critical Issues in the Study of a Textual Tradition,” in *Spreading Buddha’s Word in East Asia: The Formation and Transformation of the Chinese Buddhist Canon* (New York: Columbia University Press, 2015), 34-36.

equated to *sūtra* and ‘treatise’ 論 *lùn* was most equated to *śāstra*.<sup>234</sup> In his 5th-century book on literary criticism, the *Literary Mind and the Carving of Dragons* 文心雕龍, Liu Xie began with the classics in Chapter One. Explaining the relation between 經 *jīng* and 論 *lùn*, he wrote, “The principles propounded by the Sage are called *jīng*, or Classics, and the works which explain the Classics and set forth their underlying ideas are known as *lùn*, or treatise or discourse.”<sup>235</sup>

Early Buddhist sources also mention either a ninefold division 九分教 or twelvefold division 十二部經. The twelve traditional *Mahāyāna* divisions of Buddhist literature are: ‘discourses’ *sūtras*, ‘responsive verses’ *geya*, ‘predictions’ *vyākaraṇa*, ‘independent verses’ *gāthā*, ‘monologues’ *udāna*, ‘causes and conditions’ *nidāna*, ‘parables’ *avadāna*, ‘stories of the Buddha’s past lives’ *jātaka*, ‘expanded teachings’ *vaipulya*, ‘rare events’ *adbhuta-dharma*, and ‘discussions on the intrinsic natures of all phenomena’ *upadeśa*.<sup>236</sup>

It is somewhat difficult to classify the texts found in the Chinese Buddhist canon into granular categories using the twelve divisions. However, Martin<sup>237</sup> writes that most of the texts found in the canon fit into one of the categories of parables and apologies, miracle tales, and biographies. Whereas parables and apologies serve as expedient means

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<sup>234</sup> François Martin, “Buddhism and Literature,” in *Early Chinese Religion, Part Two: The Period of Division (220-589 AD)*, vol. 2, ed. John Lagerwey and Pengzhi Lü (Leiden: Brill, 2010), 892-896.

<sup>235</sup> Liu Hsieh, *The Literary Mind and the Carving of Dragons*, trans. Youzhong Shi. (New York: New York Review Books, 2015), loc. 3745, Kindle edition.

<sup>236</sup> FGDB, s.v. “十二部經”.

<sup>237</sup> Martin, “Buddhism and Literature,” 899-910.

for explaining the rules of cause and effect and other fundamental teachings of the Buddha, miracle tales tell of the divine power of Avalokiteśvara and other spiritual figures.<sup>238</sup>

When the Chinese canon was created, compilers developed subsections of the three subdivisions of *sūtra*, Abhidharma, and Vinaya.<sup>239</sup> In the *Kaiyuan lu*, Zhisheng distinguished the categories of *Mahāyāna*, including *Prajñāpāramitā*, *Ratnakūṭa*, *Mahāsaṃnipāta*, *Avataṃsakasūtra*, and others.<sup>240</sup>

### *Rhetoric*

Although there is no single, unified style of rhetoric in Chinese literature, the ideal has tended towards an indirect, ‘subtle’ 微 style.<sup>241</sup> Parallelism has been a commonly used literary mechanism to imply correspondence. Chinese rhetoric, as is literary Chinese in general, is extremely compact. The typical length of a colon is four characters.<sup>242</sup> Many of the devices used in Western classical rhetoric are missing in Chinese literature.

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<sup>238</sup> Martin, “Buddhism and Literature,” 900-910.

<sup>239</sup> Wu, “Chinese Buddhist Canon,” 44-45.

<sup>240</sup> Wu, 45-46.

<sup>241</sup> Christoph Harbsmeier, “The Rhetoric of Premodern Prose Style,” in *The Columbia History of Chinese Literature*, ed. Victor H. Mair. (New York: Columbia University Press, 2001), 916-917, ebook.

<sup>242</sup> Harbsmeier, “Rhetoric of Premodern Prose Style,” 913.

Rhetoric is also present in Buddhist literature. Braarvig<sup>243</sup> argues that there is a ‘rhetoric of emptiness’ as well as logic in the *Mūlamadhyamakakārikā*, attributed to Nāgārjuna.

### *Commentary*

Sengyou compiled his catalog with the assumption that the texts included were translations from Indic texts. However, it appears that Chinese commentary has also crept into the corpus. This may not be surprising since exegesis has played a central role in Chinese literature since its beginnings. For example, the *Spring and Autumn Annals* 春秋 of the Spring and Autumn period (c. 770 – c. 481 B.C.E.) had three separate commentarial traditions.<sup>244</sup>

Exegesis was often paragraph by paragraph or sentence by sentence. Forms of commentary included glossing, **lexical commentary**, which replaces difficult words with more familiar ones, **periphrastic commentary**, which restates the meaning of the original text, and **amplifying commentary**, which adds supplementary context.<sup>245</sup> Since pre-modern Chinese did not have punctuation, over time with transcription and later printing and digitization, the commentary could be mixed with the original text.

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<sup>243</sup> Jens Braarvig, “Rhetoric of Emptiness,” in *Zen Buddhist Rhetoric in China, Korea, and Japan*, ed. Christoph Anderl (Leiden; Boston: Brill, 2012), 102.

<sup>244</sup> Haun Saussy. “Classical Exegesis,” in *The Columbia History of Chinese Literature*, ed. Victor H. Mair. (New York: Columbia University Press, 2001), 936-937, ebook.

<sup>245</sup> Saussy, 939.

The Buddhist tradition of commentaries was strong as well and commentaries are included in some of the oldest Indic Buddhist manuscripts discovered.<sup>246</sup> However, native Chinese Buddhist commentaries were not knowingly included in the *Chu san zang ji ji* catalog.

### *Named Entity Recognition*

Identifying people, places, and other entities in texts is important in understanding historic contexts. In this study, it is particularly important to identify references to historic people and to other texts to understand the dependencies between texts. This needs to be done automatically in studies of large corpora because there is too much text for humans to read. **Named entity recognition** is a technique in natural language processing that can recognize and categorize named entities in texts, such as people, places, and organizations mentioned in text.<sup>247</sup> Approaches to named entity recognition include unsupervised learning and supervised learning with deep neural networks.

Named entity recognition has been used in Buddhism, although rarely. Wong and Lee<sup>248</sup> report on the use of named entity recognition in the Chinese Buddhist canon using part-of-speech tagging. The authors note several challenges with the problem, including

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<sup>246</sup> Stefan Baums and Tansen Sen, “Truth and Scripture in Early Buddhism: Categorical Reduction as Exegetical Method in Ancient Gandhāra and Beyond,” in *Buddhism across Asia: Networks of Material, Intellectual and Cultural Exchange*, vol. 1 (Singapore: Manohar, 2014).

<sup>247</sup> Basra Jehangir, Saravanan Radhakrishnan, and Rahul Agarwal, “A Survey on Named Entity Recognition—Datasets, Tools, and Methodologies,” *Natural Language Processing Journal* 3 (2023), <https://doi.org/10.1016/j.nlp.2023.100017>.

<sup>248</sup> Tak-sum Wong and John Sie Yuen Lee, “Analyzing Who, What, and Where in a Mediaeval Chinese Corpus: A Case Study on the Chinese Buddhist Canon 1,” in *Advances in Corpus Applications in Literary and Translation Studies* ed. Richard Moratto and Defeng Li (Abingdon, Oxon: Routledge, 2022), 81–102.

the low-resource nature of the language that the canon is written in, dealing with the many epithets of the Buddha, and dealing with terms that include the names of entities.

## Chapter Two: Methodology

If something can be observed in any way at all, it lends itself to some type of measurement method.

Douglas Hubbard, *How to Measure Anything*

This section describes a novel methodology, including the compilation of a unique corpus with a rich set of metadata and a corpus analysis that leverages the logical reasoning capabilities of AI models, n-gram analysis, classical machine learning, and custom-written software. The results combine elements of historical and textual analysis to give a holistic view of the *Chu san zang ji ji* catalog, discover anomalous patterns, and trace the details with data from specific texts. Relevant secondary sources are used to support interpretations.

A critical edition of the *Chu san zang ji ji* by Jinren Su and Lianzi Xiao,<sup>249</sup> which corrects the punctuation errors in the *Taishō*, will be used as a basis for translations in this dissertation.

The compilation of the corpus includes a number of steps. Firstly, the titles in the catalog are compiled into a table and related to modern sources. This data is augmented with metadata from the *Chu san zang ji ji* and secondary literature.

With this table as a basis, terminology is extracted from canonical texts and analyzed. The terms are associated with the translators who first used them. From the list

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<sup>249</sup> Sengyou. *Chu san zang ji ji* 出三藏記集, ed. Jinren Su and Lianzi Xiao (Beijing: Zhonghua Book Company, 1995).

of terms extracted, determine which terms are semantic translations, transliterations, or other types. The linguistic analysis is based on the same set of canonical texts to trace language changes over time. The translation style analysis includes distinguishing literal from fluent translation style, vernacular from literary translation style, and identification and nature of East Asian native compositions. The content analysis includes genre classification and identification of named entities.

Validation includes manual validation, n-gram analysis, term frequency, and using AI validation with different prompts and context.

The grounding of the methodology in the principles of Buddhist studies is described in this chapter. Additional details about the database structure, web application, and methods for validation of AI results are given in Appendices A and B. The data and instructions to reproduce the results are given in the associated GitHub repository.<sup>250</sup>

### **Compiling the Corpus and Metadata**

The core of the data for the corpus is a table of the texts derived from the *Chu san zang ji ji* catalog and augmented with information extracted from notes in the *Chu san zang ji ji*, modern canons, and secondary literature. This will be referred to as the ‘catalog table.’ Additional tables relate the entries in the catalog table to Indic source languages, citations to secondary literature, and the results of the corpus analysis.

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<sup>250</sup> Alex Amies, “Silk Road Corpus Repository,” 2026, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus](https://github.com/Silk-Road-Corpus/silk_road_corpus).

The data in these tables will be used to address goal one of this dissertation, to provide a holistic view of the catalog. In addition, the catalog table will provide validation data in support of describing how well the data in the *Chu san zang ji ji* and derived from the corpus supports the attribution to translators.

A partial list of the fields in the catalog table is given in Table 1 below.

Table 1: Partial List of Fields in the Catalog Table

Field	Notes	Example
<i>Chu san zang ji ji</i> Entry No.	Sequential numbers beginning with 1	1
<i>Chu san zang ji ji</i> fascicle		2
<i>Chu san zang ji ji</i> section	Sengyou's classification scheme	New List of Records of Sutras and Treatises
<i>Chu san zang ji ji</i> title	Chinese and English	Sūtra of Forty-Two Sections 四十二章經
<i>Chu san zang ji ji</i> Date	If Sengyou includes a date	
<i>Chu san zang ji ji</i> no. fascicles		1
<i>Chu san zang ji ji</i> Translator(s)	If Sengyou attributes the work to a translator	Kasyapa-Matanga
<i>Chu san zang ji ji</i> place of translation	If Sengyou includes a place of translation	Luoyang
Manuscript source	If the <i>Chu san zang ji ji</i> mentions a manuscript	
Oral transmission	If the <i>Chu san zang ji ji</i> mentions oral recitation	
Mentions lost or not seen	If Sengyou mentions that the text is lost	
<i>Chu san zang ji ji</i> notes	Sengyou's notes	The catalog compiled by Master Dao'an's omits this scripture
Modern collection relations	Including reference number, title, attribution and date	四十二章經 (T 784) translated by Kasyapa-Matanga in the Later Han
Manuscripts and parallels	Indic language manuscripts, Pali and Tibetan parallels	None
Attribution assumed for analysis	Based on both the <i>Chu san zang ji ji</i> and secondary literature	None
Secondary literature classification		East Asian indigenous composition

The full list and description of fields in the catalog table is given in the GitHub repository.<sup>251</sup> The data for the catalog table is also given in the GitHub repository.<sup>252</sup>

### **Relating Titles in the Catalog to Modern Collections**

Establishing relations between texts listed in the *Chu san zang ji ji* catalog to entries in modern collections with the full text available is critical for the purposes of analyzing content and approximate dates produced. In some cases, the titles match exactly or very closely. However, sometimes substantially different titles are used, which makes establishing the relationship non-trivial. The methods used in this dissertation to make the relationships include: (1) manually using full text searches for exact or closely matching titles, (2) checking alternative titles given in the *Chu san zang ji ji* itself; (3) consulting secondary literature, and; (4) discovering additional alternative titles in the *Kaiyuan lu*. The *Fo Guang Shan Dictionary of Buddhism (FGDB)* and Chinese Buddhist Canonical Attributions project (CBC) are important sources for alternative titles, which conveniently aggregate the alternative titles from historic sources. However, neither the *FGDB* or the CBC lists the primary sources of the alternative titles and it is also not clear how comprehensive the lists are. Therefore, this study also searches for alternative titles in the *Kaiyuan lu*.

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<sup>251</sup> Alex Amies, “Chu san zang ji ji Schema JSON,” January 1, 2026, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/data/chusanjangjiji\\_schema.json](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/data/chusanjangjiji_schema.json).

<sup>252</sup> Alex Amies, “Chu san zang ji ji CSV,” February 22, 2026, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/data/chusanjangjiji.csv](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/data/chusanjangjiji.csv).

The translator, number of fascicles, and dates in the modern collection are also checked for consistency, bearing in mind the problems with attributions and dates discussed in Chapter One.

### Attributions of Translations of Texts in the Catalog

As discussed in Chapter One, the *Chu san zang ji ji* is considered the most reliable historic source of attributions to translators. However, there are still some attributions that are problematic. For example, the very first record in the *Chu san zang ji ji*, Entry No. 1 *Sūtra of Forty-Two Sections* 四十二章經 (T 784) is well-known to be an East Asian native composition. Sengyou attributes the translation of the *Sūtra of Forty-Two Sections* to Kasyapa-Matanga.<sup>253</sup> Nattier notes that there are obvious problems with the historical accuracy of the story in the preface of this text, also included in Fascicle Six of the *Chu san zang ji ji*<sup>254</sup> that also refers to this translator. In particular, the figure Zhang Qian 張騫 mentioned in the preface as being dispatched by Emperor Xiaoming of Later Han was a well-known figure who lived in the secondary century B.C.E. This point is also mentioned by Nakajima.<sup>255</sup>

Therefore, the texts listed in the catalog are associated with translators for the purpose of analysis based on a combination of the attributions in the *Chu san zang ji ji* and consultation with secondary literature. If the attribution to a translator in the *Chu san zang ji ji* is overruled by opinions in the secondary literature, then it is analyzed as an anonymously produced translation. The results of the corpus analysis are subsequently reviewed to check for consistency of the over-ruling.

Sengyou's attributions to translations by An Shigao, Lokakṣema, Zhi Yao, Yan Fotiao and An Xuan, Kang Mengxiang, Vighna, and Zhi Qian were validated with reference to Nattier<sup>256</sup> and other secondary literature. Sengyou's attributions for later translators were used directly.

The specifics of attribution of translations will be discussed below in Chapter Three.

### Connection with Indic Source Texts

Establishing a set of parallel texts in Indic languages and Tibetan is important in support of goals one and two of this dissertation.

Tracing Chinese texts to Indic language sources that might have resembled the manuscripts that they were translated from is difficult because it cannot be derived from a single source. Several catalogs were used for this purpose:

1. *The Bajaur Collection - A New Collection of Kharoṣṭhī Manuscripts: A Preliminary Catalogue and Survey.*<sup>257</sup>
2. *Catalogue of the Buddhist Sanskrit Manuscripts in the University Library, Cambridge, with Introductory Notices and Illus. of the Palaeography and Chronology of Nepal and Bengal.*<sup>258</sup>
3. *Manuscript Remains of Buddhist Literature.*<sup>259</sup>

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<sup>253</sup> T 2145, 55.0005c18.

<sup>254</sup> Nattier, *Earliest Chinese Buddhist Translations*, 35-36; T 2145, 55.0042c19.

<sup>255</sup> Ryūzō Nakajima, *Annotated Translation of the Prefaces Fascicles of the Chū sanzang jiji 出三藏記集: 序卷訳注 Shutsusanzōkishū jōkan yakuchū* (Kyōto: Heirakuji Shoten, 1997), 3.

<sup>256</sup> Nattier, *Earliest Chinese Buddhist Translations*.

<sup>257</sup> Ingo Strauch, "The Bajaur Collection - A New Collection of Kharoṣṭhī Manuscripts: A Preliminary Catalogue and Survey," Greta e-library, 2008, [http://resolver.sub.uni-goettingen.de/purl/?gr\\_elib-273](http://resolver.sub.uni-goettingen.de/purl/?gr_elib-273).

<sup>258</sup> Cecil Bendall, *Catalogue of the Buddhist Sanskrit Manuscripts in the University Library, Cambridge, with Introductory Notices and Illus. of the Palaeography and Chronology of Nepal and Bengal* (Cambridge: Cambridge University Press, 1883).

<sup>259</sup> August Friedrich Rudolf Hoernle, *Manuscript Remains of Buddhist Literature*. Oxford: Clarendon Press, 1916.

4. *Catalogue of Digitized Rare Sanskrit Buddhist Manuscripts*.<sup>260, 261</sup>
5. *The Korean Buddhist Canon: a Descriptive Catalogue*.<sup>262</sup>

The data manually extracted from these sources was stored as fields in the main catalog table.

## Overview of Corpus Analysis

The core of each part of the corpus analysis, including terminology analysis, linguistic analysis, style analysis, and content analysis, use a similar framework. In each analysis a fascicle of text and a prompt including a rubric is provided to an AI model.

The methodology does not depend on any specific AI model, although the quality of the results does depend on the particular choice.

This dissertation uses the Gemini models, which gave excellent results in translating Chinese Buddhist texts in a benchmarking study<sup>263</sup> as well as other more widely applicable benchmarks.<sup>264</sup> Since reasoning is more important than translation in

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<sup>260</sup> Miroj Shakya, ed. *Catalogue of Digitized Rare Sanskrit Buddhist Manuscripts, 1:1-200* (Rosemead, California: University of the West, 2010).

<sup>261</sup> Miroj Shakya, ed. *Catalogue of Digitized Rare Sanskrit Buddhist Manuscripts. 2:201-300*, with Hsingyun, Jesse Chang, Lewis R. Lancaster, Gudrun Bühnemann, Iain Sinclair, and Hui Dong Shi (Rosemead, California: University of the West, 2019).

<sup>262</sup> Lewis R. Lancaster, *The Korean Buddhist Canon: A Descriptive Catalogue*, with Sung-bae Park. (Berkeley: University of California Press, 1979).

<sup>263</sup> Nehrdich et al., “MITRA-Zh-Eval.”

<sup>264</sup> Koray Kavukcuoglu, “Gemini 2.5: Our Most Intelligent AI Model,” March 25, 2025, <https://blog.google/technology/google-deepmind/gemini-model-thinking-updates-march-2025/#gemini-2-5-thinking>; The rankings in the LMArena leaderboard change on a regular basis. At the time of reviewing this on 11/22/2025, the rankings for the Leaderboard Overview Text were: 1. Gemini-3-pro, 2. Grok-4.1-thinking, 3. Grok-4.1, 4. chatgpt-5.1-high, 5. gemini-2.5-pro; LMArena, “Leaderboard Overview,” accessed November 22, 2025, <https://lmarena.ai/leaderboard>.

this study, the newer “thinking” or large reasoning models should be expected to perform better than the pure LLMs that were released beginning in 2022. LRMs extend LLMs with advanced reasoning, and they potentially enable a huge acceleration of research for scholars in all disciplines. It is as recent as 2024 that Gemini 2.0, which was the first “thinking” model in the Gemini series, was announced. Differences in Gemini models are evaluated below. The compact Gemini Flash series models were preferred over the Gemini Pro series models because they process excellent reasoning ability with a fraction of the required resources and cost.<sup>265</sup>

The general scheme of the process for corpus analysis is shown in Figure 2 below.

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<sup>265</sup> Doshi, Tulsee, “Gemini 2.5: Our Most Intelligent Models Are Getting Even Better,” *The Keyword*, May 20, 2025, <https://blog.google/innovation-and-ai/models-and-research/google-deepmind/google-gemini-updates-io-2025/>.

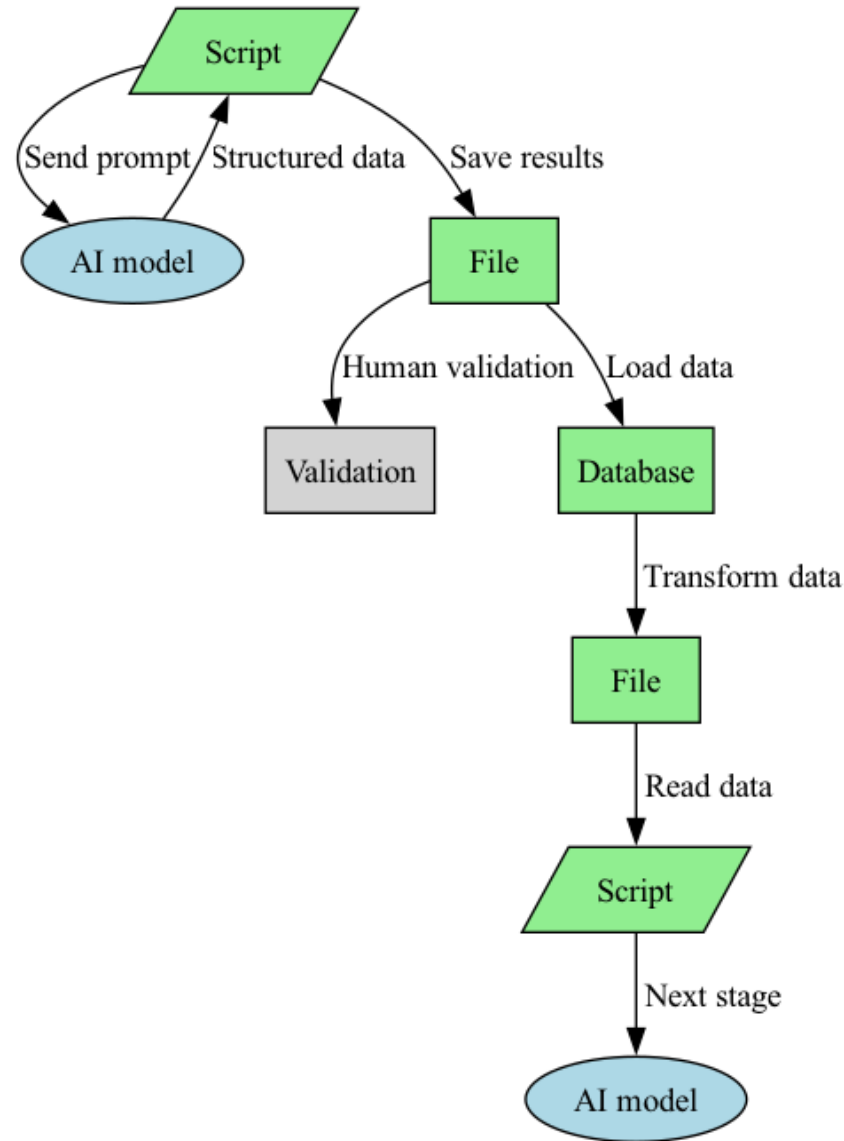


Figure 2: General Framework for Corpus Analysis

In Figure 2, grey boxes indicate manual activities, blue ellipses indicate work done by the AI model, and green boxes indicate tasks done by software. Prompts are parameterized with placeholders for different terms and sent to the AI model many times with different *Taishō* texts. This required scripting the sending of prompts to the AI

model. Python scripts for this purpose were written by the author and kept in the Silk Road Corpus Github repository together with input data and instructions.<sup>266</sup>

In this process, the model is constrained to return structured data so it can be processed by software later in the pipeline and imported into the database. Explanatory notes from the AI model are kept separate from the structured data.

The primary source of the corpus data is the electronic source of the *Chu san zang ji ji* (T 2145) from the Chinese Electronic Tripiṭaka Collection (CBETA) website.<sup>267</sup>

### **Terminology Analysis**

As discussed in Chapter One, extraction of vocabulary from a corpus is well-established in corpus linguistics. Vocabulary is extracted from the corpus in this study, but the focus is on the Buddhist terminology only, not general vocabulary. This forms a foundation for subsequent steps analyzing the terminology. Analysis of terminology depends on the relation of titles in the *Chu san zang ji ji* to texts in the *Taishō Tripiṭaka* and establishment of attribution to translators. This differs from Buddhist terminology in a dictionary in that the analysis in this dissertation tracks where each term first appears and where it is subsequently used in the corpus.

A simplified view of the overall method of terminology analysis is shown in Figure 3 below.

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<sup>266</sup> Amies, Silk Road Corpus Repository.

<sup>267</sup> CBETA. “Chinese Electronic Tripiṭaka Collection.” n.d. Accessed April 22, 2026, <https://cbeta.org/>.

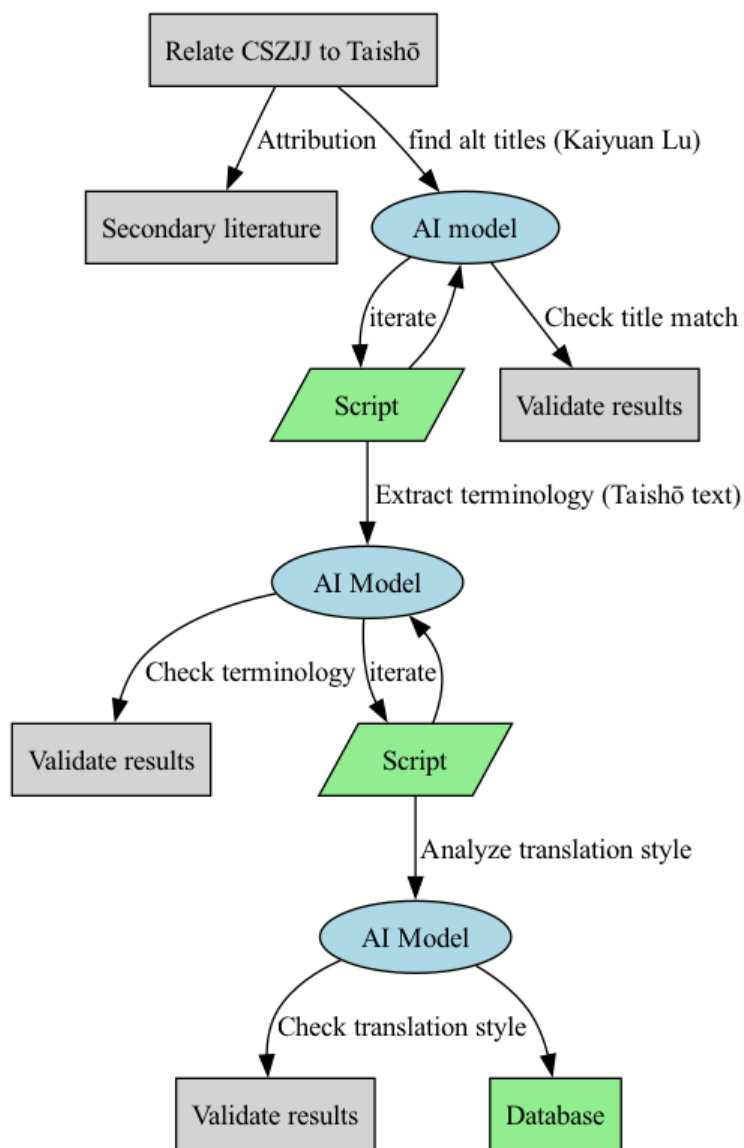


Figure 3: Simplified Schematic of Stages of Terminology Analysis

In Figure 3, grey boxes indicate manual activities, blue ellipses indicate work done by the AI model, and green boxes indicate tasks done by software. Python scripts written by the author are kept in the associated GitHub repository.

In this simplified view, in the first stage a prompt is to the AI model for each title in the *Chu san zang ji ji* to identify alternate titles that may be potential matches in the *Taishō Tripitaka*. Along with this prompt, the text of the *Kaiyuan lu* is uploaded. In the second stage, for each fascicle of each text in the *Taishō* identified, a prompt asks the AI model to extract a list of Buddhist terms. In the third stage, for each distinct term identified, a prompt is sent to the AI model asking it to analyze the term.

The rubric used to analyze the terminology is based on Liang,<sup>268</sup> as discussed in Chapter One. The possibilities for terminology type are: 'Semantic', 'Mixed', 'Transliteration', 'New meaning', 'Buddhist idiom', 'Buddhist saying', and 'Generic phrase' or 'Partial term', if not valid Buddhist terminology. The prompt sent to analyze each Buddhist term asks the AI model to classify the term as one of these types. For each terminology type, an example is given to the model. In this way, in-context learning was leveraged instead of relying on pre-training of the model from unknown sources. **In-context learning** is a prompt engineering technique where AI models make predictions with prompts that include examples.<sup>269</sup>

The software artifacts for the terminology analysis and procedure for using them are provided in the GitHub repository.<sup>270</sup>

### *Document Frequency*

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<sup>268</sup> Liang, *Fojiao ciyu de gouzao yu hanyu cihui de fazhan*.

<sup>269</sup> Qingxiu Dong, et al. “A Survey on In-Context Learning.” *Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing* (2024): 1107–28.

<sup>270</sup> Alex Amies, “Terminology Usage and Analysis,” March 20, 2026, Silk Road Corpus Repository, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/commits/main/terminology.md](https://github.com/Silk-Road-Corpus/silk_road_corpus/commits/main/terminology.md).

This study will quantify how widely a term is used using document frequency.

**Document frequency** is the number of documents in the corpus that a term is found in.<sup>271</sup>

For example, if a term is only found in a single document, then the document frequency is one. The relative values rather than the exact values of document frequency are important. A document in this analysis is a single fascicle of a text. For example, Entry No. 298 *Lotus Sūtra* 妙法蓮華經 (T 262) translated by Kumārajīva in seven fascicles is seven documents.

N-grams analysis is generally used for computation of document frequency in this study because it is more deterministic and reliable than the use of an AI model. A comparison of the results of the two methods is discussed below.

### *Validation*

In general, a term that can be considered Buddhist terminology is a term representing a Buddhist concept that may be found in a Chinese Buddhist dictionary, such as the *FGDB*. However, infrequently used variant Chinese translations of Buddhist terms are not commonly found in dictionaries. In the extreme case a translator will invent their own one-off translation for a term, and it will never be used a second time. This gives rise to difficulties and will be discussed below. Validation is done both manually with a sample of the terminology and with an AI model for the whole set of terminology.

## **Linguistic Analysis**

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<sup>271</sup> Christopher D. Manning, Prabhakar Raghavan, and Hinrich Schütze, *Introduction to Information Retrieval* (Cambridge: Cambridge University Press, 2008), 8.

As discussed in Chapter One, the linguistic analysis is used in support of goal one, to verify the date range in the *Chu san zang ji ji* catalog or offer a date range if the text is anonymous. Selection of features for the rubric for linguistic analysis is based on the potential of terms that may be able to establish date ranges.

The change in use of final particles noted by Gao and Meng<sup>272</sup> above are included. In addition, use of 謂 *wèi* in delegated agency as described by Dobson<sup>273</sup> and as a cupola as described by Boucher<sup>274</sup> are included. Also, the 被 *bèi* passive construction and interrogative pronoun constructions 何者 *hézhě* and 何等人 *héděng rén* described by Fang and Gao<sup>275</sup> are used.

Some secular terms that emerged in the Six Dynasties (220-589 CE) are included in this study: ‘village’ 村 *cūn*,<sup>276</sup> ‘add’ 添 *tiān*,<sup>277</sup> ‘eat’ 吃 *chī*,<sup>278</sup> and ‘yearning’ 思想 *sīxiǎng*.<sup>279</sup> There are some other terms for which new meanings emerged in medieval

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<sup>272</sup> Lieguo Gao and Meng Yichen, “Jiyu yuqi zhuci de keyi an shigao yijing kaobian.”

<sup>273</sup> Dobson, *Late Han Chinese*, 50.

<sup>274</sup> David Boucher, “Buddhist Translation Procedures in Third-Century China: A Study of Dharmarakṣa and His Translation Idiom” (University of Pennsylvania, 1996), 182.

<sup>275</sup> Yixin Fang and Lieguo Gao, “A Tentative Study of the Year of Translation of Fenbie gongde lun 《分别功德论》 翻译年代初探.”

<sup>276</sup> Xiang, *Middle Chinese Lexicon 1*, 13.

<sup>277</sup> Xiang, 20.

<sup>278</sup> Xiang, 74-75.

<sup>279</sup> Xiang, 140.

times, including: 的 *dì* in the sense of ‘indeed’ or ‘certainly’<sup>280</sup> and 事故 *shìgù* in the sense of ‘accident’ or ‘disaster’.<sup>281</sup> Most of the terms listed by Xiang are not as common as the function words discussed above, so it may be a matter of chance to be able to use any one of these terms to help date any text. Therefore, only a handful of commonly occurring words are included in this study.

The rubric for terms counts computed in linguistic analysis are given in Table 2.

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<sup>280</sup> Xiang, *Middle Chinese Lexicon 1*, 238-239.

<sup>281</sup> Xiang, 272.

Table 2: Rubric for Term Counts Computed in Linguistic Analysis

Term	Description
哉 <i>zāi</i>	Expresses an exclamatory tone, differentiating inside and outside of 善哉善哉 <i>shànzāi shànzāi</i>
耶 <i>yé</i>	Used at the end of yes or no questions
耳 <i>ěr</i>	Used at the end of declarative sentences to indicate a restrictive tone or at the end of declarative sentences indicating an affirmative tone
也 <i>yě</i>	Used in declarative sentences to express an emphatic or reminding tone or as a sentence final to indicate a restrictive tone
謂 <i>wèi</i>	In delegated agency or as a semi-copula
被 <i>bèi</i>	Using the 被 <i>bèi</i> passive construction
何者 <i>hézhě</i>	Interrogative pronoun
何等人 <i>héděng rén</i>	Interrogative pronoun construction
Secular terms	的 <i>dì</i> in the sense of ‘indeed’ or ‘certainly’, 事故 <i>shìgù</i> in the sense of ‘misfortune’, 一切 <i>yīqiè</i> in the sense of ‘all’, village 村 <i>cūn</i> , to add 添 <i>tiān</i> , yearning or thought 思想 <i>sīxiǎng</i> .

Since the texts all have varying length, the counts of the items above are normalized by dividing by the length of the texts in characters. Of the fifteen term counts used in the analysis listed in Table 2, eight are obtained by querying the AI model and the remainder are found by scanning the text, since they do not involve ambiguity or otherwise require an AI model.

Linguistic characteristics can be used for approximate dates at best. To segment the data into date ranges appropriate for attempting to predict with a model constructed with the linguistic data the texts are assigned a century. For example, 2<sup>nd</sup> century for texts translated by An Shigao.

Frequency counts are better modeled with classical machine learning classification models due to their numeric nature. The **mutual information** between two variables is a statistical measure of how knowledge of one variable can reduce uncertainty in another variable.<sup>282</sup> A mutual information value of 0.0 indicates that there is no correlation between the two variables. There is no upper bound to mutual information, but a value over 1.0 indicates a strong correlation. The scikit-learn open-source library<sup>283</sup> is used to compute the mutual information between the frequency of each linguistics analysis variable and the date range attributed to the text. The computation first requires training a classical machine learning model with a dataset. In this study, a random forest classifier model is used.

The software artifacts for the linguistic analysis and procedure for using them are provided in the GitHub repository.<sup>284</sup>

## Analysis of Translation Style

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<sup>282</sup> T.M. Cover and Joy A. Thomas, *Elements of Information Theory*, second edition, (Hoboken, N.J.: Wiley-Interscience, 2006), loc. 820, ebook.

<sup>283</sup> F. Pedregosa, G. Varoquaux, A. Gramfort, et al., “Scikit-Learn: Machine Learning in Python,” *Journal of Machine Learning Research* 12 (2011): 2825–30.

<sup>284</sup> Alex Amies, “Linguistic Analysis,” March 30, 2026, Silk Road Corpus Repository, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/commits/main/linguistic\\_analysis.md](https://github.com/Silk-Road-Corpus/silk_road_corpus/commits/main/linguistic_analysis.md).

Analysis of style in historic Chinese translations of Buddhist texts and analysis of writing style in modern writing was discussed in Chapter One. Since writing style is difficult to determine algorithmically, human coding has been used for this in style analyses performed by scholars in the past. For example, Kennedy and Long<sup>285</sup> discuss authorship studies of Wikipedia edits to determine how many edits were contributing new content in comparison to those that were curatorial edits. In this pre-LLM era study, the authors describe the manual human coding needed for Wikipedia edits. In this study, an AI model is used instead of human coding, which makes the analysis more consistent and enables a greater volume of text to be analyzed.

The rubric used is shown in Table 3 below.

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<sup>285</sup> Krista Kennedy and Seth Long, “The Trees within the Forest: Extracting, Coding, and Visualizing Subjective Data in Authorship Studies,” in *Rhetoric and the Digital Humanities*, ed. Jim Ridolfo and William Hart-Davidson (Chicago: The University of Chicago Press, 2015), 140-151.

Table 3: Rubric for Style Analysis

<b>Field</b>	<b>Type of value</b>	<b>Notes</b>
Verse, prose, or a mixture?	One of 'verse', 'prose', or 'mixture'	
How many syllables per line or sentence?	Integer number	Only for verse and mixed
Vernacular or literary Chinese?	One of 'vernacular' or 'literary'	
Is the translation literal or fluent?	One of 'literal' or 'fluent'	
Ornate or plain language?	One of 'ornate' or 'plain'	
Terse versus verbose wording?	One of 'terse' or 'verbose'	
Are idioms used?	True or false	

Table 3: Rubric for Style Analysis (Continued)

Field	Type of value	Notes
Is the tone factual or spiritual?	One of 'factual' or 'spiritual'	For example, is a factual term like 'concentration' 定 or a spiritual term like samādhi 三昧 used for meditation?
Were Buddhist teachings interpreted according to indigenous Chinese philosophical concepts?	True or false	This may indicate an East Asian native composition
Does the text include interpolations?	True or false	This may indicate a commentary rather than a <i>sūtra</i>
Is there any interlinear commentary?	True or false	
Are there signs of oral transmission?	True or false	
Are abbreviations used?	True or false	
Does the text use implicit or explicit sentence subjects?	Options: 'implicit' or 'explicit'	

Table 3: Rubric for Style Analysis (Continued)

Field	Type of value	Notes
Notes	Freeform	Used to explain the answers to any notable items above.

The single question in Table 3 for the identification of vernacular elements is too simple, so a separate rubric is used to tease out the details of this complex characteristic.

The rubric for identification of detailed vernacular elements is shown in Table 4 below.

Table 4: Rubric for Analysis of Vernacular Elements of Style

Field	Type of value	Notes
prefix 阿 <i>ā</i>	True or false	
prefix 老 <i>lǎo</i>	True or false	
suffix 兒 <i>ér</i>	True or false	
use reduplicated nouns	True or false	
second-person pronoun 'he / she' 渠 <i>qú</i>	True or false	
personal pronoun 他 <i>tā</i>	True or false	
personal pronoun 伊 <i>yī</i>	True or false	
Notes	Freeform	Used to explain the answers to any notable items above.

The items in Table 4 are clearly documented in the literature on Chinese linguistics discussed in Chapter One as vernacular elements.

The analysis rubric for frequency counts of Chinese terms indicating translation from an Indic source are shown below in Table 5.

Table 5: Analysis Rubric for Chinese Terms indicating Translation from an Indic Source

<b>Indic Grammatical Feature</b>	<b>Meaning</b>	<b>Chinese Term</b>
Explicit sentence subject	I	吾 <i>wú</i>
	I	我 <i>wǒ</i>
	you	汝 <i>rǔ</i>
Plural		諸 <i>zhū</i>
		等 <i>děng</i>
		輩 <i>bèi</i>
Tense	past	已 <i>yǐ</i>
	past	昔 <i>xī</i>
	present	今 <i>jīn</i>
	future	當來 <i>dānglái</i>
	future	當 <i>dāng</i>

The terms in Table 5 were all used in the written Chinese of the historic period of the corpus but were used to a greater degree to cope with translation of explicit use of sentence subject, plural, and tense in Indic languages.

The software artifacts for the translation style analysis and procedure for using them are provided in the GitHub repository.<sup>286</sup>

## **Content Analysis**

In the literature review in Chapter One, several content analysis methods using term frequency and machine learning were mentioned. Rather than using one of these, which requires compilation of a training data set, the method used in this study will be to ask the AI model directly. This requires the development of a rubric, including a set of labels to be used, but takes advantage of the pretraining and ‘thinking’ capability of the AI model. The rubric for content analysis is described in Table 6.

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<sup>286</sup> Alex Amies, “Translation Style Analysis,” April 12, 2026, Silk Road Corpus Repository, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/style.md](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/style.md).

Table 6: Rubric for Content Analysis

Parameter	Description
Top level genre	One of: <i>sūtra</i> , <i>jātaka</i> , commentary, <i>vinaya</i> , or history.
<i>Taishō</i> genre	One of: <i>Āgama</i> , <i>Jātaka</i> and <i>Avadāna</i> , <i>Prajñāpāramitā</i> , ... The corpus used in this study does not include all the <i>Taishō</i> genres.
Is <i>Mahāyāna</i> ?	This should be known from the <i>Taishō</i> genre but many texts in the Miscellaneous section of the <i>Taishō</i> do not appear to be <i>Mahāyāna</i> texts. True or false value.
Parable or miracle tale	Sub-genre: A parable is an expedient means for explaining a teaching of the Buddha. A miracle tale is a story of being saved through belief in a divine power, especially by Avalokiteśvara, Amitābha, or the recitation of a <i>dhāraṇī</i> . Or does the text consist of one or more biographies, possibly in the form of a hagiography?
Commentary type	A <i>sūtra</i> commentary explains the meanings of the terms used in the <i>sūtra</i> and the background context. Abhidharma relates to mainstream (non- <i>Mahāyāna</i> ) Buddhism. A treatise, also known as a <i>Śāstra</i> , covers a subject area and may refer to multiple texts. Possible values: <i>sūtra</i> commentary, Abhidharma, or treatise.

Table 6: Rubric for Content Analysis (Continued)

<b>Parameter</b>	<b>Description</b>
Is a dialog?	Is the text in the form of a dialog? True or false value.
Speaker	The identity of the speaker or empty if there is no speaker.
Contains a <i>dhāraṇī</i>	Does the text contain a <i>dhāraṇī</i> ? True or false value.
Philosophical argumentation	Does the text contain philosophical argumentation? True or false value.
Contains rhetoric	Does the text contain rhetoric? True or false value.
Karmic retribution	Does the text contain a story of karmic retribution or karmic causes and conditions?
Historical people	List the historical people mentioned in the text.
Deities	List the deities mentioned in the text, including bodhisattvas and Buddhas other than Śākyamuni.
Places	List the historical places mentioned in the text.
Text references	If the text is a commentary, list the names of any texts referred to.
Notes	Freeform explanatory notes

The rubric in Table 6 is based on the genre analysis discussion in the literature review in Chapter One. The rubric includes two main categories of variable: genre analysis and identification of named entities, including historical people, places, deities,

and references to other texts. The *Taishō* genres are already known but are included to evaluate the accuracy of the results returned from the AI model.

The prompt sent to the AI model is based on the rubric in the table and is included in the GitHub repository. A different fascicle of the text is uploaded each time the prompt is sent to the AI model. The response from the model is constrained to be a set of labels, one for each of the rows in the table.

The software artifacts for the content analysis and procedure for using them are provided in the GitHub repository.<sup>287</sup>

### **Key Variables**

The purpose of a small set of key variables is to validate predictions by the corpus analysis describing terminology, linguistic characteristics, style, and content. The key variables are listed in Table 7.

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<sup>287</sup> Alex Amies, “Content Analysis,” January 19, 2026, Silk Road Corpus Repository, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/content.md](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/content.md).

*Table 7: Key Variables used in Corpus Analysis*

<b>Variable</b>	<b>Explanation</b>
<i>Chu san zang ji ji</i> number and title	The Chinese title given in the <i>Chu san zang ji ji</i> with English equivalent
Modern reference	<i>Taishō or Manji Supplementary Buddhist Canon</i> number and title.
Attribution assumed for analysis	A merged value of Sengyou's attribution and the attribution in secondary literature
Indic parallel	Indic manuscript, Pali or Tibetan parallel
Source type assumed for hypothesis	One of: Indic source or East Asian indigenous composition

The values of the key variables described in Table 7 are given in Appendix H.

The full set of variables are given in the GitHub repository.

The date range of the *Chu san zang ji ji* is adopted unless the secondary literature disagrees with the translator attribution. For example, the date range for *Sūtra of Forty-Two Sections* is empty because the secondary literature disagrees with the translator attribution in the *Chu san zang ji ji*.

The source type assumed for hypothesis is a variable to be validated. The assumption for the value of this variable is that it is an East Asian indigenous composition if secondary literatures exists that designates it as such, or, otherwise, it is assumed to have an Indic source.

## Validation Methods

Although the AI models used in this study are generative AI models, the primary use of the models is for labelling and extraction of data, not generation of text. The results from the models are constrained to match well defined schemas based on the rubrics with mostly a small, fixed set of possible answers, often just ‘true’ or ‘false’. The type of metrics best suited to evaluate the results similar to classic machine learning classification models. However, information retrieval metrics are more important for extracting Buddhist terminology and named entities from a text. In this study, a combination of evaluation metrics from LLM-era AI, classical machine learning, and information retrieval will be used.

The prompts sent to AI models in this study are formulated so that validation is facilitated. The prompts include as much context as possible, often in the form of a text to be analyzed, that is needed for the model to arrive at an answer. In this way, the results can be grounded with scholarly or primary references.

Qualitative validation by human judgement has many advantages over quantitative validation. As Hubbard<sup>288</sup> remarks in his classic on data analysis *How to Measure Anything*, “The human mind ... has a unique ability to assess complex and ambiguous situations where other measurement instruments would be useless.”

Qualitative human validation is the first step in validation in this dissertation and is used as much as possible.

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<sup>288</sup> Douglas W. Hubbard, *How to Measure Anything: Finding the Value of Intangibles in Business* (Hoboken, New Jersey: John Wiley & Sons, 2014), 307.

The questions asked in qualitative validation include: Does the canonical text provided to the model with the prompt support the results that the AI model reports? Has the model used any data from its training outside of what was provided in the prompt? Do the results agree with any available secondary literature? The schema for each analysis includes a ‘notes’ field for the AI model to explain its results. This should be checked for consistency with canonical text and secondary literature.

Special care is needed with data that has inherent bias. Categorical (non-numeric) data has **inherent bias** when one of the categories is more common than the other categories. For example, the corpus data in this study has inherent bias due to the genre ‘sūtra’ being more common than the other genres. Therefore, a model could simply predict the genre is ‘sūtra’ for every text in the corpus and be mostly correct. That would indicate model bias. **Model bias** is when the model is not adequately adapted to the data.<sup>289</sup>

One form of data **leakage**, that is a concern in machine learning, is where the data that the model is trained on contains prediction results leading to overly optimistic accuracy.<sup>290</sup> For example, suppose we ask an AI model to answer a question about the style of a text, uploading the text with the question. Suppose that the AI model infers the author from the text and then uses its general training knowledge of the author’s style rather than the body of the text to answer the question. This is an example of leakage.

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<sup>289</sup> Steven W. Knox, *Machine Learning: A Concise Introduction* (Hoboken: Wiley, 2018), 126.

<sup>290</sup> Andrea Apicella, Francesco Isgrò, and Roberto Prevete, “Don’t Push the Button! Exploring Data Leakage Risks in Machine Learning and Transfer Learning,” *Artificial Intelligence Review* 58, no. 11 (2025): 339.

Qualitative validation of leakage should be performed. Explanatory notes provided by the AI model are one way of detecting leakage.

More details on AI validation methodology are given in Appendix A.

The goal of the Silk Road Retrieval Augmented Generative (RAG) AI application proposed for this dissertation will be to support grounded semantic search of secondary literature relating to texts in the corpus using the bibliographic database compiled.

**Semantic search** is a kind of search that goes beyond keyword search to ‘understand’ the meaning of the query.<sup>291</sup> The search query response will be **grounded** by linking to scholarly articles, including literature on Chinese historic context and the Indic origins of the texts listed in the *Chu san zang ji ji* catalog, that provide the answers to the queries in question format. The RAG application for the search of secondary literature is described in Appendix B.

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<sup>291</sup> Robert T. Kasenchak, “What Is Semantic Search? And Why Is It Important?” *Information Services and Use* 39, no. 3 (2019): 205–13.

## **Chapter Three: Compilation and Description of the Corpus and Associated Metadata**

The corpus of this study includes 602 texts from the *Taishō* and *Manji* that are related to titles in the *Chu san zang ji ji* with a total of 19.3 million characters. This chapter describes the compilation of the corpus of texts assembled from the catalog of the *Chu san zang ji ji* and related metadata used for the analysis. The corpus and metadata contain a number of unique features, including extraction of metadata from the *Chu san zang ji ji*, relation to a catalog of Indic source texts, and references to secondary literature. The compilation process follows the methodology described in Chapter Two.

The discussion in this chapter also demonstrates that this novel corpus and associated metadata is useful in itself without the application of AI-driven analysis of the content of the corpus.

The key variables of the corpus and metadata are provided in Appendix H. The full corpus metadata is organized in structured form and saved as a comma separated variable file,<sup>292</sup> which can be imported into both a spreadsheet for ease of editing and a into database for analysis.

### **Outline of the *Chu san zang ji ji* Catalog**

An outline of the sections of the *Chu san zang ji ji* is given in Table 8 below.

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<sup>292</sup> Amies, “Chu san zang ji ji CSV.”

Table 8: Outline of the Sections of the Chu san zang ji ji

<b>Fascicles</b>	<b>Section</b>
1	Introduction
2-5	Catalog
6-12	Prefaces
13-15	Biographies

Each of the sections listed in Table 8 contains subsections.

The subsections contained in the Introduction in Fascicle One are listed in Table

9.

Table 9: Subsections in Fascicle One of the *Chu san zang ji ji*

Subsection Title (English)	Subsection Title (Chinese)
Preface	序
Part 1: Origins of the Records of the Buddhist Canon (from <i>Treatise on the Perfection of Great Wisdom</i> )	集三藏緣記第一(出大智度論) <sup>293</sup>
Part 2: Records of the Ten Part Vinaya, the Five Hundred Arhat Recite the Tripiṭaka	十誦律五百羅漢出三藏記第 <sup>294</sup>
Part 3: From the <i>Bodhisattva Garbha Sūtra</i> and the Records of the Eight Divisions of the Canon	菩薩處胎經出八藏記第三 <sup>295</sup>
Part 4: Notes on Translations of Scriptures from Western Languages to Chinese, Similarities and Differences in Pronunciation and Meaning	胡漢譯經音義同異記第四 <sup>296</sup>
Part 5: Records of Changes in Translations of Scriptures over Time	前後出經異記第五 <sup>297</sup>

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<sup>293</sup> T 2145, 55.0001b24.

<sup>294</sup> T 2145, 55.0004a06.

<sup>295</sup> T 2145, 55.0004a23.

<sup>296</sup> T 2145, 55.0004b02.

<sup>297</sup> T 2145, 55.0004b02.

Fascicle One contains the Introduction to the *Chu san zang ji ji*, which will be discussed below.

Fascicle Two contains a list of texts with attributions to known translators. Its main source is Dao'an's Catalog, with the notable exception of the first entry, the *Sūtra of Forty-Two Sections*, and a list of texts translated after the passing of Dao'an. The subsections of Fascicle Two are listed in Table 10.

Table 10: Subsections in Fascicle Two of the *Chu san zang ji ji*

Subsection Title (English)	Subsection Title (Chinese)
Part 1: New List of Records of <i>Sūtras</i> , Vinaya, and Treatises	新集撰出經律論錄第一 <sup>298</sup>
Part 2: New list of Different Translations of <i>Sūtras</i>	新集條解異出經錄第二 <sup>299</sup>

By 'newly compiled' 新集, Sengyou means recompiled from Dao'an's list.

Interestingly, the beginning of Fascicle Two mentions a third subsection, "Part 3: Newly Compiled List of Prefaces from the Four Part Vinaya" 新集表序四部律錄第三<sup>300</sup>, the body of which does not appear in the text. Part 1 of this fascicle forms an important part of the corpus metadata used in this study. Part 2, the list of different translations is used for validation but is not used directly in the corpus metadata.

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<sup>298</sup> T 2145, 55.0005c18.

<sup>299</sup> T 2145, 55.0013c22.

<sup>300</sup> T 2145, 55.0005c18.

Fascicles Three and Four contain lists of anonymously produced texts. As mentioned in Chapter One, anonymously produced texts form the majority of the catalog. The *Chu san zang ji ji* sections containing anonymous texts are listed in Table 11.

Table 11: *Chu san zang ji ji* Sections with Anonymous Texts

Fascicle	Title	Number of Catalog Entries (Sengyou total)	Number Lost or Not Seen
3	Part 1: A Recompilation of Dao'an's List of Old Sūtras	92 (92)	81
3	Part 2: A Recompilation of Dao'an's List of Anonymously Produced Sūtras	142 (142)	50
3	Part 3: A Recompilation of Dao'an's List of Versions of Sūtras from Liangzhou	59 (59)	53
3	Part 4: A Recompilation of Dao'an's List of Versions of Sūtras from Guangzhong	24 (24)	20
4	Part 1: New List of Additional Anonymously Produced and Miscellaneous Sūtras	1300 (1306)	459
	<b>Total Anonymously Produced Texts</b>	<b>1622</b>	

These totals differ slightly from Sengyou's own totals, given in parentheses in Table 11, which do not match the contents of the *Chu san zang ji ji* exactly. The database queries for the totals given in Table 11 and elsewhere in this paper are included in the associated GitHub repository.

Many texts were noted by Sengyou to be either lost or not seen by him. The totals of those texts are also provided in the table. Even though they were not seen by Senyou, many of the titles can still be matched to the entries in the *Taishō*.

The reasons for Dao'an's lists from Liangzhou and Guanzhong are open questions. Rong<sup>301</sup> states that Liangzhou was an important center for translation of Buddhist texts during the Sixteen Kingdoms period (304-439 C.E.) and may have been a major source for texts discovered at Dunhuang. In Fazu's biography in Fascicle Fifteen, Sengyou briefly mentions a connection with the Prince of Hejian 河間王 who was stationed at Guanzhong.<sup>302</sup> In Fascicle Six it is noted that, "For more than ten years, the Guanzhong region has flourished. This was a time of great prosperity for the revival of the Great Dharma."

Fascicle Five of the *Chu san zang ji ji* contains several lists of abridgements, doubtful, and annotated texts. The subsections are listed below in Table 12.

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<sup>301</sup> Xinjiang Rong, *Eighteen Lectures on Dunhuang*, trans. Imre Galambos (Leiden ; Boston: Brill, 2013), 342.

<sup>302</sup> 晉惠之末。太宰河間王顥鎮關中。(T 2145, 0107a27)

Table 12: Subsections in Fascicle Five of the *Chu san zang ji ji*

Subsection Title (English)	Subsection Title (Chinese)
Part 1: Newly Compiled List of Abridged Scriptures	新集抄經錄第一 <sup>303</sup>
Part 2: Newly Compiled List of Dao'an's Doubtful Scriptures	新集安公疑經錄第二 <sup>304</sup>
Part 3: Newly Compiled List of Doubtful Scriptures	新集疑經錄第三 <sup>305</sup>
Part 4: Newly Compiled List of Dao'an's Annotated Scriptures and Miscellaneous Treatises	新集安公注經及雜經志錄第四 <sup>306</sup>
Part 5: Heterodox Ritual Notes Created by Fervent Student of Hīnayāna Zhu Fadu	小乘迷學竺法度造異儀記第五 <sup>307</sup>
Part 6: Doubtful Allegories from Venerable Rui of Chang'an	長安叡法師喻疑第六 <sup>308</sup>

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<sup>303</sup> T 2145, 55.0037c01.

<sup>304</sup> T 2145, 55.0038b08.

<sup>305</sup> T 2145, 55.0038c18.

<sup>306</sup> T2145, 55.0039b17.

<sup>307</sup> T 2145, 55.0040c20.

<sup>308</sup> T 2145, 55.0041b03.

The titles in Fascicle Five are analyzed in the same manner as the previous fascicles. However, only one matched an entry in a modern collection: Entry No. 2196 *Sūtra on the Jeweled Cart* 妙好寶車經 (T 2689). The abridgments are mostly of well-known texts, such as Entry No. 2110 *Abridgment to the Avataṃsaka Sūtra* 抄華嚴經, by Prince Wenxuan 文宣王 and Entry No. 2146 *Compilation of Questions and Discussion on the Prajñāpāramitā Sūtras* 般若經問論集, an abridgment by Huiyuan to Entry No. 322 *Treatise on the Great Perfection of Wisdom* 大智度論. Parts 5 and 6 are narrative text rather than lists, so they were not used directly in compiling the corpus.

### **Prefaces and Biographies**

The prefaces included in the *Chu san zang ji ji* in all cases give color to the lists of texts in the catalog and in some cases give some important information, such as mention of Indic manuscripts, oral transmission, or teamwork involved in translation. Nine of the prefaces were written by Dao'an, which demonstrates his great involvement and influence on the translation and collection of early Chinese Buddhist texts.

The biographies in the *Chu san zang ji ji* provide important context to the lives and work of the translators. In addition to the translators, there are biographies of figures who organized and assisted in the translations, including Dao'an and Huiyuan.

### **Introduction to the *Chu san zang ji ji* by Sengyou**

The Introduction to the *Chu san zang ji ji* is contained in Fascicle One. Sengyou makes liberal use of stories from the canon to justify his project in compiling the *Chu san zang ji ji* and explain his motivations. This begins Sengyou's first major theme of

ensuring the continuity of the Dharma. One story is the “Origins of the Records of the Buddhist Canon” 集三藏緣記<sup>309</sup>, which describes the scene of the Buddha’s passing and the entrustment of the Dharma to Mahākāśyapa. The section title notes that this is extracted from Entry No. 322 *Treatise on the Perfection of Great Wisdom* 大智度論. It can be traced to Fascicle Two.<sup>310</sup>

In the second part of Fascicle One, Sengyou includes the story “Records of the Ten Part Vinaya, the Five Hundred Arhats Recite the Tripiṭaka.”<sup>311</sup> This tells the story of Mahākāśyapa’s actions after the Buddha’s Nirvāṇa in organizing the recitation of the discourses of the Buddha by the five hundred Arhats, establishing the Buddhist canon.

Part Four of the Introduction describes “Notes on Translations of Scriptures from Western Languages to Chinese, Similarities and Differences in Pronunciation and Meaning.”<sup>312</sup> This begins Sengyou’s second major theme of the difficulty of translating the Indic texts. Sengyou writes of the three main scripts used: Brāhmī 梵, which Sengyou notes runs from left to right; Kharoṣṭhī 佉樓, which runs from right to left, and; Chinese, the script created by Cangjie 蒼頡, which runs from top to bottom.<sup>313</sup> This statement is especially interesting considering the discovery of Buddhist manuscripts written in Kharoṣṭhī in the last several decades mentioned in Chapter One.

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<sup>309</sup> T 2145, 55.0001b24.

<sup>310</sup> T 1509, 25.0066b22.

<sup>311</sup> 十誦律五百羅漢出三藏記 (T 2145, 55. 0004a06).

<sup>312</sup> 胡漢譯經音義同異記 (T 2145, 55.0004b02).

<sup>313</sup> 長名曰梵。其書右行。次日佉樓。其書左行。少者蒼頡。其書下行。(T 2145, 55. 0004b02).

In Part Five of the Introduction, “Records of Changes in Translations of Scriptures over Time,” Sengyou gives a short list of new and old translation terms. The need for this section was not explained specifically, but it aligns with Sengyou's general theme of the difficulty of conveying meaning adequately in translation.

### Matching Catalog Titles to Text Entries

This section describes matching titles in the *Chu san zang ji ji* catalog to entries with text content in modern collections, including the *Taishō*.

Some of the challenges of matching the titles to other catalogs and *Taishō* entries are described in Chapter Two. Sengyou mentions his own challenges in making sense of titles in Fascicle Four his introduction to “Part 1: New List of Additional Anonymously Produced and Miscellaneous Sūtras” 新集續撰失譯雜經錄第一:<sup>314</sup>

聲實紛糅尤難銓品。或一本數名。或一名數本。或妄加游字。

The titles and actual contents were often mixed and confused, making it especially difficult to evaluate them. Sometimes one scripture had multiple titles; other times, the same title was used by multiple scriptures. Occasionally, meaningless characters were carelessly added.

The two obvious points that should be expected are, firstly, that we do not have the same texts that Sengyou worked from and, secondly, that the titles have changed over time. Sometimes the titles differ by only a variant character or by the addition of a ‘as spoken by the Buddha’ 佛說 prepended to the title and sometimes Sengyou himself gives

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<sup>314</sup> T 2145, 55. 0021b18.

alternative titles. However, in many cases differences in titles can be substantial and difficult to trace. This leads to the need for an additional check on the consistency of attribution to translator and number of fascicles.

The corpus of texts used in this dissertation includes 612 titles matching entries in the *Taishō Tripitaka* and *Manji Supplementary Buddhist Canon* with a total of 1,855 fascicles. Since ten of the eleven individual fascicles of the *Abhiṣeka Sūtra* 灌頂經 (T 1331) are listed as individual titles, Entry No. 1593 to 1602, in the *Chu san zang ji ji* but form a single entry in the *Taishō*, there are 602 texts from the *Taishō* and *Manji* included in the corpus.

In total, there are 2,109 titles listed in the *Chu san zang ji ji*. Of these, 618 titles were related to currently extant texts. The main source of relationships established is the *Taishō Tripitaka*. There are eight entries from other sources, including Kongō-ji manuscript collection (1), Dunhuang project (3), *Manji Supplementary Buddhist Canon* 卍續藏經 (2), Fangshan (1), and a Nanatsudera Temple manuscript (1). The text content of the Kongō-ji manuscript collection, Dunhuang project, Fangshan, and a Nanatsudera Temple are not included in the corpus. Texts for sources other than the *Taishō* were found via a secondary literature search.

Texts in the *Taishō* and *Manji* from CBETA were used as the sources in the corpus of this study. Data and a detailed explanation of its format are provided in the associated GitHub repository.<sup>315</sup>

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<sup>315</sup> Alex Amies, “Corpus of Related Chinese Texts,” January 25, 2026, Silk Road Corpus Repository, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/corpus.md](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/corpus.md).

The titles of 178 entries exactly matched the titles in the modern collection. In 246 cases the difference is the addition of ‘as spoken by the Buddha’ 佛說 *fo shuo* prepended to the title. Many titles differ by a variant character or the straightforward addition or omission of a character that does not change the meaning of the title. For the remainder, alternative titles were used to establish the relationship.

As an illustration of the use of the *Kaiyuan lu* to find an alternative title, consider *Chu san zang ji ji* Entry No. 1959 *Sūtra on the Power of Physical Giving* 施色力經 *Shi Se Li Jing*, which can be related to the *Sūtra on the Five Blessings Gained from Giving Food* 佛說食施獲五福報經 *Fo shuo Shi shi huo wu fu bao jing* (T 132) through an entry in Fascicle Three of the *Kaiyuan lu*:<sup>316</sup>

食施獲五福報經一卷 (一名施色力經一名福德經)

*Shi shi huo wu fu bao jing* in one fascicle (also known as *Shi se li jing* or *fu de jing*)

Alternative titles can be discovered manually with a full text search or in a more automated way with AI using the following prompt:

Is the title {title} a synonym for any other titles listed in the given text (Kaiyuan lu)? Which fascicle is it listed in?

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<sup>316</sup> T 2154, 55.0738b28.

The prompt is parameterized with {title} taken from the record in the *Chu san zang ji ji* and the text of the *Kaiyuan lu* uploaded with a script.<sup>317</sup> This is a good class of problem to use AI for because it saves the scholar great toil, considering the 2,109 titles that need to be checked, and the results are readily verified.

Gemini 2.5 Flash gives reasoning steps when given this prompt, including: 1. “Analyzing Synonymity,” 2. “Evaluating Definitions,” 3. “Refining Synonymity Analysis,” 4. “Locating the Fascicle,” 5. “Refining Fascicle Identification,” 6. “Finalizing the Summary,” and 7. “Concluding Analysis.” These reasoning steps give some confidence that the AI model processes the problem in a way that is consistent with the prompt given to it. Gemini 2.0 Flash did not provide reasoning steps. Experimentation with a few examples showed that Gemini 2.5 Pro gave correct results more consistently than Gemini 2.0 Flash and Pro and Gemini 2.5 Flash. The results are summarized in Table 13 below.

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<sup>317</sup> Alex Amies, “Search Kaiyuan lu for Alternative Titles,” July 4, 2025, Silk Road Corpus Repository, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/scripts/alt\\_titles.py](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/scripts/alt_titles.py).

Table 13: Examples of Evaluation of Models to Find Alternative Titles in the *Kaiyuan lu*

<i>Chu san zang</i> <i>ji ji</i> Title (No.)	Expected Alternative Title	Model	Result	Notes
施色力經 (No. 1959)	食施獲五福報經 (T 132)	Gemini 2.0 Flash	Incorrect	
		Gemini 2.5 Flash	Correct	Result contained additional incorrect information
		Gemini 2.5 Pro	Correct	
河中大聚沫經 (No. 523)	水沫所漂經 (T 106)	Gemini 2.0 Flash	Correct	
		Gemini 2.5 Flash	Correct	
		Gemini 2.5 Pro	Correct	

The example results above confirmed the expected improvements with newer ‘thinking’ models. More test results with different prompts are provided in the GitHub repository.<sup>318</sup>

Having validated the models’ ability to respond to the task prompt with verbose output with the examples above, the prompt was modified to facilitate automated iteration over all the anonymously produced texts in the catalog:

Is the title {title} a synonym for any other titles listed in the given text (Kaiyuan lu)? Return only the alternative titles in Chinese in the form ["Title 1", "Title 2", ...]. Do not return any other output.

The results demonstrated that Gemini 2.5 Flash was adequate, though not perfect, for the task.

The result of iterating over all the titles confirmed many of the alternative titles found in the *FGDB* and *CBC* and also identified some new ones. However, there were a high number of false positives where the AI model suggested incorrect alternative titles. Entry No. 505 *Madhyama Āgama* Manuscript 中阿含本文 *Zhong ahan ben wen* especially confused the AI model and resulted in the suggestion of many incorrect alternative titles. An example of a correctly discovered alternative title not contained in either the *FGDB* or *CBC* is the [Alternative] *Lotus Sūtra* 薩曇分陀利經 *Satan Fentuoli jing* (T 265), for Entry No. 680 *Fentuoli jing* 分陀利經, which can be verified in Fascicle Nineteen of the *Kaiyuan lu*.

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<sup>318</sup> Alex Amies, “Prompts,” July 4, 2025, Silk Road Corpus Repository, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/data/prompts.csv](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/data/prompts.csv).

In some cases, the AI model found alternative titles that were close synonyms contained in the *Kaiyuan lu* but not listed as alternative titles in the *FGDB* or *CBC*. For example, for Entry No. 1461 *Sūtra on Mahāyāna Treasures* 摩訶乘寶嚴經 *Mohe sheng bao yan jing*, the alternative title *Moheyan bao yan jing* 摩訶衍寶嚴經 (T 351) was found. The alternative title is based on 摩訶乘 *Mohesheng* and 摩訶衍 *Moheyan* as synonyms for *Mahāyāna*.

Notes were added to the catalog table on the origin of the alternative titles in the *Kaiyuan lu*. The analysis and evaluation are in the GitHub repository.<sup>319</sup>

### Attribution to Translators

The attributions to translators used for this study are approximately the same as the attributions in the *Chu san zang ji ji*. If secondary literature consulted overrules the attribution of *Chu san zang ji ji* then an anonymous attribution is assumed for the analysis.

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<sup>319</sup> Alex Amies, “Alternative Titles Review,” July 7, 2025, Silk Road Corpus Repository, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/data/alt\\_titles\\_review.csv](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/data/alt_titles_review.csv).

The example of the problems attributing a translator to the *Sūtra of Forty-Two Sections* was discussed above in Chapter Two. Besides this example, the attributions in the *Chu san zang ji ji* to An Shigao are the most problematic of all the translators. An Shigao is credited with thirty-five texts in the *Chu san zang ji ji* of which twenty-one can be related to an entry in a modern collection.

Nattier<sup>320</sup> and Teng<sup>321</sup> state that Entry No. 23 *Great Sūtra on the Mindfulness of Breathing* 大安般經 (T 602) is probably not the work of An Shigao but note that this is a commentary on Entry No. 2 *Sūtra on the Mindfulness of Breathing* 安般守意經, which is attributed to An Shigao and listed earlier in the catalog. The *Sūtra on the Mindfulness of Breathing* was thought to be lost for many years but a manuscript believed to be this text was discovered in the Kongō-ji collection.<sup>322,323</sup> Dao'an's preface to *Sūtra on the Mindfulness of Breathing* in Fascicle Six<sup>324</sup> states that Kang Seng Hui annotated it and Kang Seng Hui's own preface to the *Sūtra on the Mindfulness of Breathing*<sup>325</sup> also mentions a commentary. The third preface by Xiefu to the *Sūtra on the Mindfulness of Breathing*<sup>326</sup> also mentions that he wrote a commentary. So, it is apparent that commentaries existed, but we are not sure who wrote T 602.

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<sup>320</sup> Nattier, *Earliest Chinese Buddhist Translations*, 60-61.

<sup>321</sup> Chooying Teng, "A Study of Chinese Buddhist Contemplation of Ānāpāna in the Han, Wei and Jin Dynasty: Focusing on the 'An-Ban Shou-Yi Jing' 漢魏晉中國佛教安般禪觀—以《安般守意經》為中心" (Fo Guang University, 2008).

<sup>322</sup> Zacchetti, Stefano. "An Shigao's Texts Preserved in the Newly Discovered Kongo-Ji Manuscript and Their Significance for the Study of Early Chinese Buddhism." *Journal of Indian and Buddhist Studies* (Indogaku Bukkyogaku Kenkyu) 52, no. 2 (2004): 898–895.

<sup>323</sup> Nattier, *Earliest Chinese Buddhist Translations*, 64.

There are other texts attributed to An Shigao but not included in Zürcher's<sup>327</sup> list of authentic translations by An Shigao. This excludes some well-known texts attributed to An Shigao in the *Taishō*, such as Entry No. 27 *Sūtra on Setting in Motion the Wheel of the Dharma* 轉法輪經 (T 109) and Entry No. 10 *Scripture on the Five Dharmas of the Abhidharma* 阿毘曇五法行經 (T 1557). Zürcher<sup>328</sup> states that the attribution of Entry No. 26 *Sūtra on Similes for the Five Aggregates* 五陰喻經 (T 105) and Entry No. 27 *Sūtra on Setting in Motion the Wheel of the Dharma* 轉法輪經 (T 109), to An Shigao is doubtful based on style. Nattier<sup>329</sup> excludes many of the same texts as Zürcher does as translations of An Shigao, based on inconsistency in vocabulary and style.

There are also some attributions to Zhi Qian included the *Chu san zang ji ji* that are debated by modern scholars. Specifically, attributions to Zhi Qian of Entry No. 78 *Da ming du jing* 大明度經 (T 225), Entry No. 79 *Sūtra Spoken at the Request of an Old Woman* 佛說老女人經 (T 559), and Entry No. 81 *Sūtra on Four Wishes* 佛說四願經 (T 735) are considered problematic by Nattier.<sup>330</sup> The *Da ming du jing* is considered

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<sup>324</sup> T 2145, 55.0043c05.

<sup>325</sup> T 2145, 55.0043a01.

<sup>326</sup> T 2145, 55.0043c26.

<sup>327</sup> Zürcher, "Earliest Chinese Buddhist Texts," 442.

<sup>328</sup> Zürcher, 444.

<sup>329</sup> Nattier, *Earliest Chinese Buddhist Translations*, 38-72.

<sup>330</sup> Nattier, 121-122.

problematic by Lancaster.<sup>331</sup> These three texts were treated as anonymously produced for the purpose of analysis of this study and the results of the analysis will be discussed further below.

Another point of uncertainty in attribution is the teamwork involved in producing translations. As an example, the translation of Entry No. 276 *Abhidharmamahā-vibhāṣa* 鞞婆沙論 (T 1547) is attributed to Saṃghabhūti and Zhu Fonian in Fascicle Two of the catalog of the *Chu san zang ji ji*.<sup>332</sup> However, in Saṃghabhūti's biography in Fascicle Thirteen<sup>333</sup> it is stated that

跋澄口誦經本。外國沙門曇摩難提筆受。為胡文佛圖羅刹宣譯秦。沙門智敏筆受。為漢文。

Saṃghabhūti orally recited the scripture. The foreign śramaṇa Dharmanandi recorded it in writing, while Buddharaṣa translated it into Chinese. The śramaṇa Zhimin then recorded it in writing in Chinese.

It was clearly a team effort that involved a number of people not found in the catalog attribution, but it is not clear what role Zhi Qian played. It also hard to say who should be credited for the Chinese translation for the terms.

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<sup>331</sup> Lewis Lancaster, "The Chinese Translation of the Aṣṭasāhasrikā-Prajñāpāramitā-Sūtra Attributed to Chih Ch'ien 支謙," *Monumenta Serica* 28 (1969): 246–57.

<sup>332</sup> T 2145, 55.0010b03.

<sup>333</sup> T 2145, 55.0099a19.

Some catalog entries in the *Chu san zang ji ji* relate to larger collections in the *Taishō*, such as Entry No. 93 *Collection of the Six Perfections* 六度集經 (T 152), *Mahāratnakūṭasūtra* 大寶積經 (T 310) and Entry No. 337 *Mahāsaṃnipātasūtra* 大方等大集經 (T 397). The attribution of these individual entries within larger collections complicates attribution to translators. Some collections give different attributions for the individual entries than for the compilation of the collection, and some do not. However, it does not seem safe to attribute individual entries to the compiler of the collection. Therefore, these were treated as anonymously produced in the corpus analysis.

### **Summary by Translator**

An overview of contributions by translator is presented in this section to begin to build a holistic picture of the corpus.

The counts of texts by translator in the corpus are listed below in Table 14.

Table 14: Number of *Taishō* Entries Attributed to Translator

<b>Translator</b>	<b>Number of <i>Taishō</i> Entries</b>	<b>Number of <i>Taishō</i> Fascicles</b>
An Shigao	15	17
Lokakṣema	8	21
Zhi Qian	19	22
Dharmarakṣa	74	182
Zhu Fonian	7	69
Kumārajīva	28	265
Dharmakṣema	8	138
Buddhabhadra	6	75
Faxian	5	51
Guṇabhadra, Baoyun, Puti, and Fayong	8	67
Anonymous	380	397

Note: Only translators with five or more entries are listed.

Kumārajīva was the most prolific translator followed by Dharmarakṣa. An Shigao and Lokakṣema were especially important because of their early role in forming a foundation for Chinese translations of Buddhist terms. The scale of production of anonymous texts can be seen in this table in that it is by far the greatest in terms of both count of texts and number of fascicles.

## Chronology

Sengyou arranged the catalog in the *Chu san zang ji ji* in approximate chronological order with anonymously produced texts, abridgements, and doubtful texts placed in their own sections. Sengyou also gave date ranges for the texts with attributions to translators. However, many of the date ranges are wide, and there is overlap between texts, leaving some uncertainty in the chronological order of the texts produced by specific translators. Therefore, the assumption in the analysis presented in this study is that the time periods that the translators were active was distinct rather than the order of the production of the texts. In other words, it is assumed that there is a known chronological order for the translators but not for the individual texts.

The assumption of the chronological order of translators is critical for the study. However, it is not strictly true that there are no overlaps.

It is fairly certain that An Shigao was the earliest translator, but there may have been some overlap with Lokāṣema. Sengyou lists all of An Shigao's texts as being composed during the reign of Emperor Huan of Han (146-168 C.E.), none having a more specific date than that. Sengyou lists Lokāṣema after An Shigao and as having produced most of his translations during the reigns of Emperor Huan and Emperor Ling of Han (146-189 C.E.) with some being produced at more specific dates. The earliest still extant text with a specific date is Entry No. 38, the *Sūtra on the Prajñāpāramitā Practice of the Way* 道行般若經 (T 224) in 179 C.E. by Lokāṣema. In Lokāṣema's biography, Sengyou

states that he arrived in the last years of Emperor Huan's reign.<sup>334</sup> This supports the assumption that An Shigao preceded Lokāṣema although there may have been some overlap.

It may also be that the overlaps do not greatly impact the assignment of terminology to translators because the texts mostly had distinct sets of vocabulary. For example, An Shigao and Lokāṣema translated texts of different genres.

A timeline of the active periods of translators who produced at least five corpus entries matched from the *Chu san zang ji ji* is shown in Figure 4.

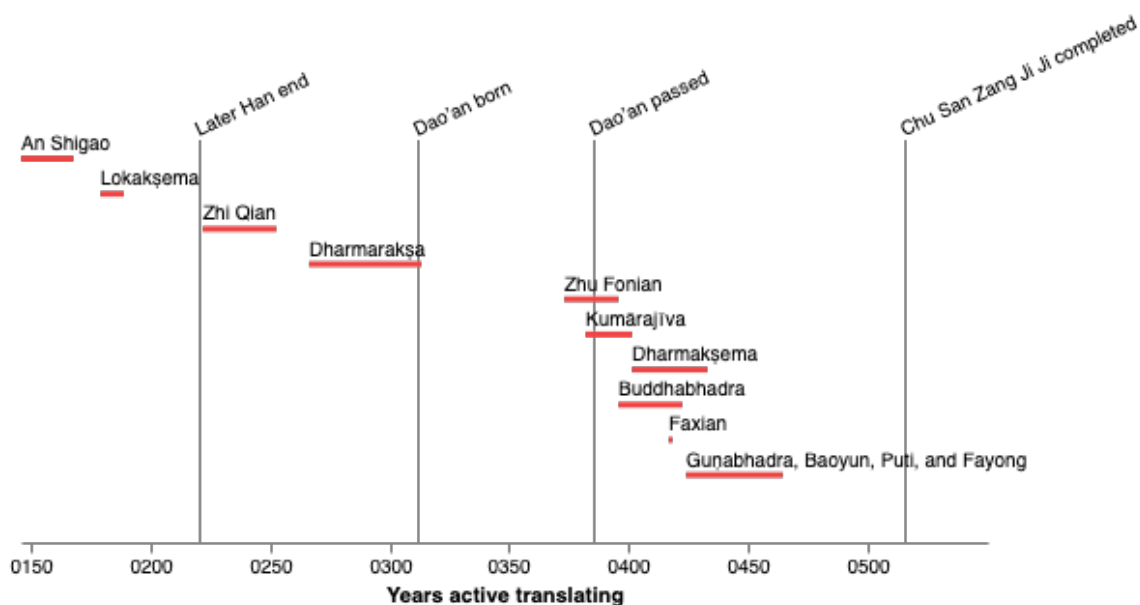


Figure 4: Timeline of Active Years of Key Translators

Due to space, it is hard to show all the translators in the timeline. Note that there was significant overlap between Zhu Fonian, Kumārajīva, and Buddhābhadrā.

<sup>334</sup> T 2145, 55.0095c23.

Another issue is that there are many texts listed in the *Chu san zang ji ji* that have not survived to modern times. It may be that new terminology was established in some of these lost texts and adopted by later translators. If this was the case, then the original source cannot be found. In addition, we don't know the dates of production of the anonymous texts, many of which may have been early.

### **Anonymously Produced Texts in the *Chu san zang ji ji* Catalog**

This section presents an overview of the patterns that can be discerned for anonymously produced texts in the corpus.

The corpus in this study matches 359 titles of anonymously produced texts listed in fascicles three and four of the *Chu san zang ji ji* to entries in the *Taishō*. That makes 349 corpus entries because the individual fascicles of the *Abhiṣeka Sūtra* 灌頂經 (T 1331) are listed as individual titles in the *Chu san zang ji ji*. Although the titles are not ordered chronologically as for Fascicle Two, there is a strong pattern in the order that Sengyou arranges the titles. The first list, “Part 1: A Recompilation of Dao'an's List of Old Sūtras” seems to be the oldest based on the date range of Dao'an's life and the use of ‘old’ 古 in the title of the list. The last part in Fascicle Four is a list compiled by Sengyou himself, which seems to be the newest.

Most of the anonymous texts listed in the *Chu san zang ji ji* are short and simple. There are 1,539 texts with a single fascicle, 36 with two fascicles, 7 with three fascicles, and only a small number any longer. The median length is 1,971 characters.

Of the anonymously produced texts, 82 are related to larger collections. The most common collections are shown in Figure 5 below.

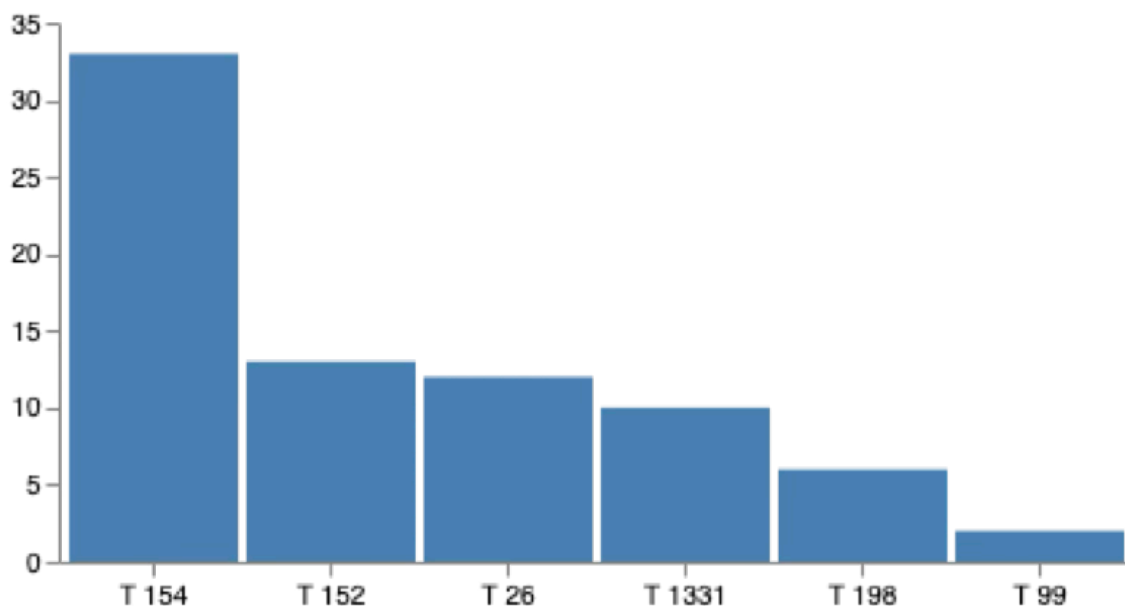


Figure 5: Number of anonymously produced texts related to larger collections in the *Taishō* (groups with only 1 in total are not shown)

Figure 5 shows that the *Jātaka Stories* 生經 (T 154) is the most commonly related compilation, followed by the *Sūtra of the Collection of the Six Perfections* 六度集經 (T 152), *Madhyama Āgama* 中阿含經 (T 26), *Abhiṣeka Sūtra* 灌頂經 (T 1331), *Sūtra on the Fullness of Meaning* 義足經 (T 198), and *Samyukta Āgama* 雜阿含經 (T 99).

In Fascicle Three of the *Chu san zang ji ji*, the list titled “Part 2: New List of Dao'an’s Anonymous Sūtras” 新集安公失譯經錄第二 includes 142 titles. Of these, Sengyou notes that ninety-two existed at the time of his writing.<sup>335</sup> The list of entries that

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<sup>335</sup> T 2145 55. 0018a04.

Sengyou takes from Dao'an's Catalog stops at Entry No. 708 *He da jing* 和達經. The remaining eleven were derived from Sengyou's other sources.

Sengyou includes individual notes on each of 377 texts recorded as extracts. All but one of these occur in Fascicle Four in the “New list of additional anonymously produced and miscellaneous *sūtras*.” Transcription of Buddhist texts for the purposes of accumulation of merit was a common practice historically in China<sup>336</sup> and this practice may have been a source of some of the extract texts. It may be that some of what we have passed down to us today in modern canons are these extracts rather than the original translations. For example, Entry No. 861 *Sūtra on the Praise on the Good Qualities of the Buddhas* 佛說稱揚諸佛功德經 (T 434) is noted as an extract by Sengyou in Fascicle Four.<sup>337</sup>

### Genres of Anonymous Texts

Zürcher<sup>338</sup> comments on the style of the anonymously produced texts, some characterized by ‘colloquial expressions’, and ‘quaint terminology’ and some more refined. Zürcher also notes that the texts exhibit a preference for certain topics, such that they may be regarded as an early Chinese Buddhist scriptural tradition in themselves. These themes emphasize suffering in the world and the workings of karma, in contrast to the deeper philosophy of the well-known, longer *Mahāyāna* texts. As mentioned in

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<sup>336</sup> John Kieschnick, *Buddhist Historiography in China* (Columbia: Columbia University Press, 2022), 3.

<sup>337</sup> T 2145, 55.0022b05.

<sup>338</sup> Zürcher, “Obscure Texts on Favourite Topics,” 163.

Chapter One, Zürcher argues that these may be the product of a ‘sub-elite’ class of translator, in contrast to the famous translators, such as Lokāṣema, Zhi Qian, and Dharmarakṣa, responsible for translation of major works, such as the *Lotus Sūtra*.

Having established the relationship between texts listed in the *Chu san zang ji ji* and modern collections, the genres of the related texts can be analyzed to get a high-level overview of their content. Figure 6 shows the number of texts by *Taishō* classification.

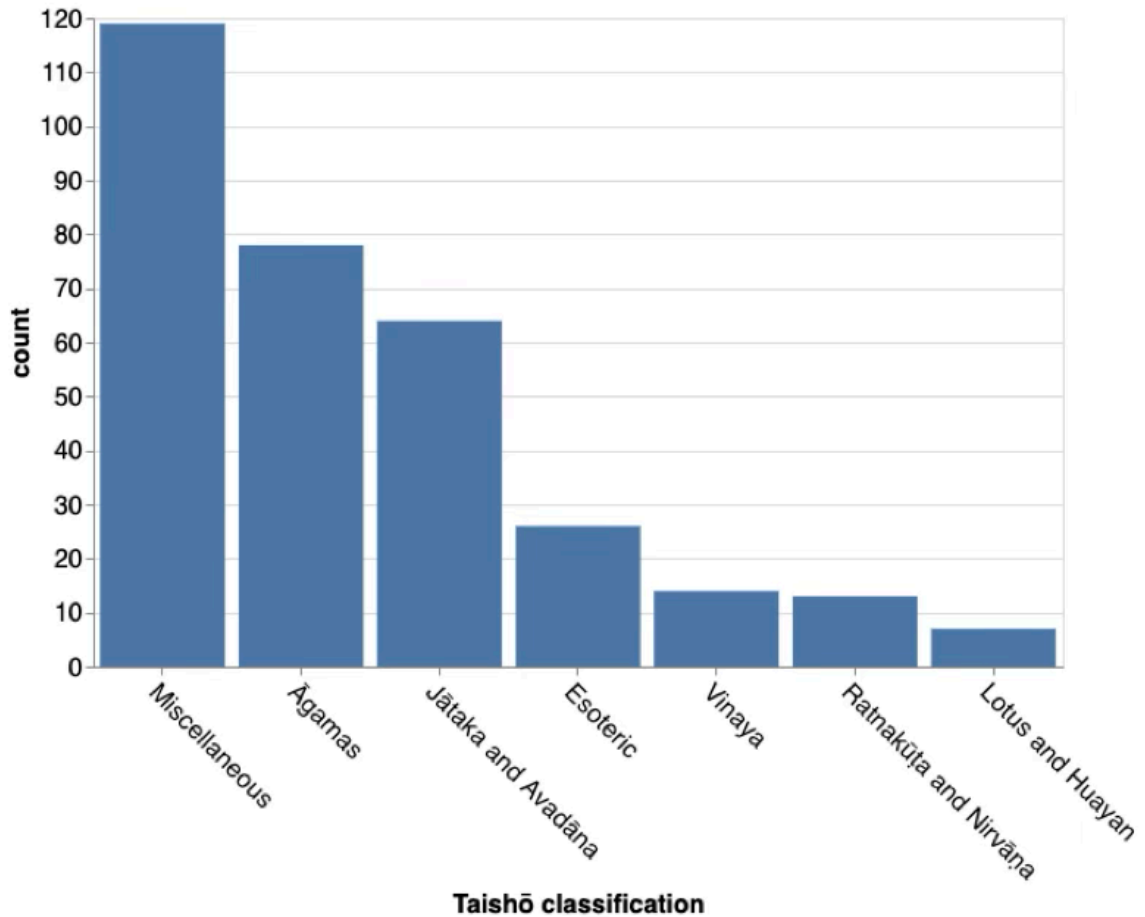


Figure 6: Number of Anonymous Texts by *Taishō* Classification (groups with less than 6 total are not shown)

Figure 6 shows that the most common classification is the ‘Miscellaneous group’ 經集部, which is a collection of difficult-to-classify texts. Many texts in this group contain some *Mahāyāna* elements but are not strongly *Mahāyāna* in character. Based on their content, other texts could readily fit in with the Āgama or Jātaka groups. It is

notable that there are no works in the *Prajñāpāramitā* genre, which is believed to be the earliest form of *Mahāyāna*.<sup>339</sup>

This roughly aligns with the statement by Zürcher that these texts generally tend to be simpler in nature. However, considering the larger set of anonymously produced texts analyzed, there is a wider range of genres than considered by Zürcher.<sup>340</sup> The group of Esoteric texts is notable. These are very early esoteric texts that represent a major departure from Mainstream and other *Mahāyāna* Buddhism and have a strong Indian connection. Examples include Entry No. 666 *Hārītī Sūtra* 鬼子母經 (T 1262), Entry No. 877 *Invocation of Avalokiteśvara Sūtra* 請觀世音經 (T 1043), and Entry 1122 *Sūtra on Prince Punyarasmi and the Twenty-Eight Constellations* 舍頭諫太子二十八宿經 (T 1301).

Twenty-eight of the anonymously produced texts were identified as East Asian native compositions, based on a search of the secondary literature. Examples include Entry No. 667 *Sūtra on the Bodhisattva's Inner Cultivation of the Six Pāramitās* 菩薩內習六波羅蜜經 T 778,<sup>341</sup> and Entry No. 724 *Jingang sanmei jing* 金剛三昧經 T 273.<sup>342</sup>

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<sup>339</sup> Lewis R. Lancaster, “The Oldest Mahāyāna Sūtra: Its Significance for the Study of Buddhist Development,” *The Eastern Buddhist* 8, no. 1 (1975): 30–41.

<sup>340</sup> Zürcher, “Obscure Texts on Favourite Topics.”

<sup>341</sup> Eric M. Greene, “Doctrinal Dispute in the Earliest Phase of Chinese Buddhism: Anti-Mahāyāna Polemics in the Scripture on the Fifty Contemplations,” *Journal of the International Association of Buddhist Studies* 40 (2017): 63–109.

<sup>342</sup> Robert E. Buswell, *The Formation of Ch'an Ideology in China and Korea: The Vajrasamādhi-Sūtra, a Buddhist Apocryphon* (Princeton, NJ: Princeton University Press, 2017).

## Evolution of the Corpus over Time

The part of the corpus with translator attributions was labelled by century since the evolution of linguistic characteristics and other language features happened slowly over the centuries. The distribution of texts by century in the *Chu san zang ji ji* corpus with translator attribution is shown in Figure 7.

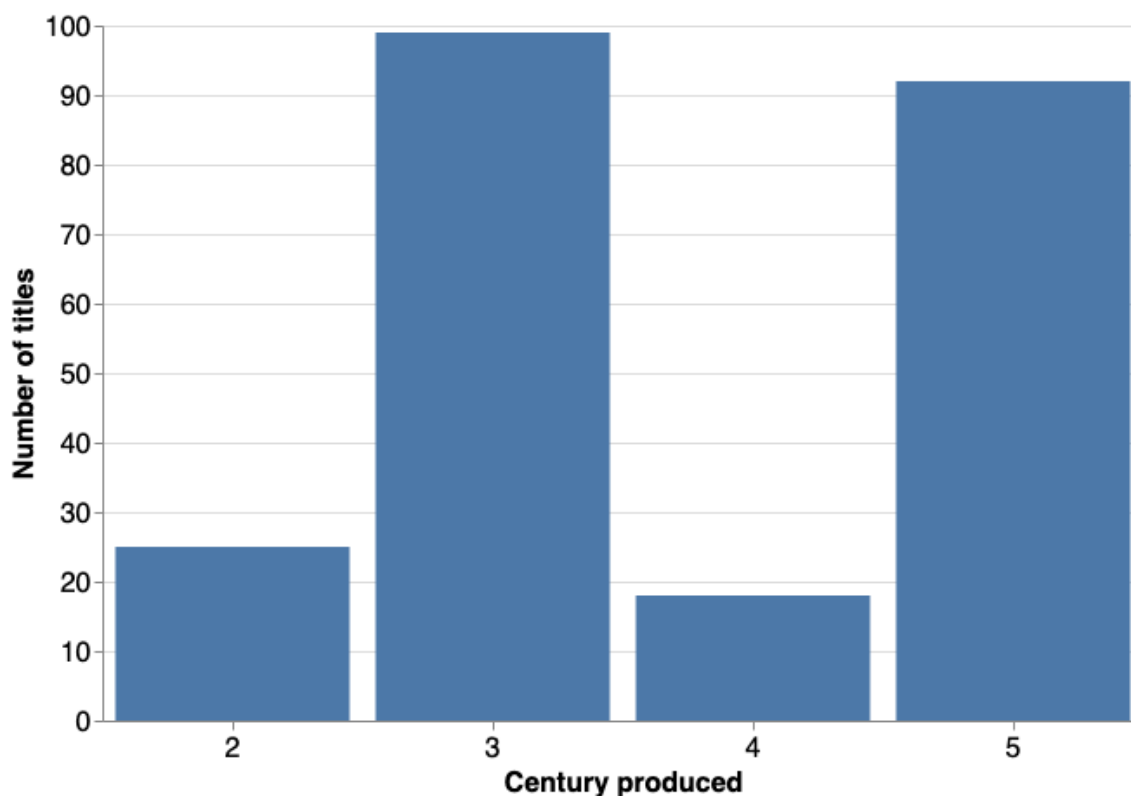


Figure 7: Number of Texts by Century Translated

Figure 7 shows that there were about as many texts translated in the 2<sup>nd</sup> and 3<sup>rd</sup> centuries as there were in the 4<sup>th</sup> and 5<sup>th</sup> centuries. This is explained by the large number

of short texts produced in the earlier period. In particular, Dharmarakṣa translated 75 titles in the 3<sup>rd</sup> century, most of which were short texts.

The 4<sup>th</sup> century shows a drop in the number of texts produced. Saṃghabhūti, Zhu Fonian, Fa Ju, Fa Li, Buddhapalita, and Dharmanandi were active in the 4<sup>th</sup> century. None of these translators were as prolific as either Dharmarakṣa or Kumārajīva in terms of number of texts translated.

If we consider the volume of texts translated, there is a clear and consistent increase over time. The total volume by number of fascicles (as listed in the *Taishō*) in the corpus with translator attribution over time is shown in Figure 8.

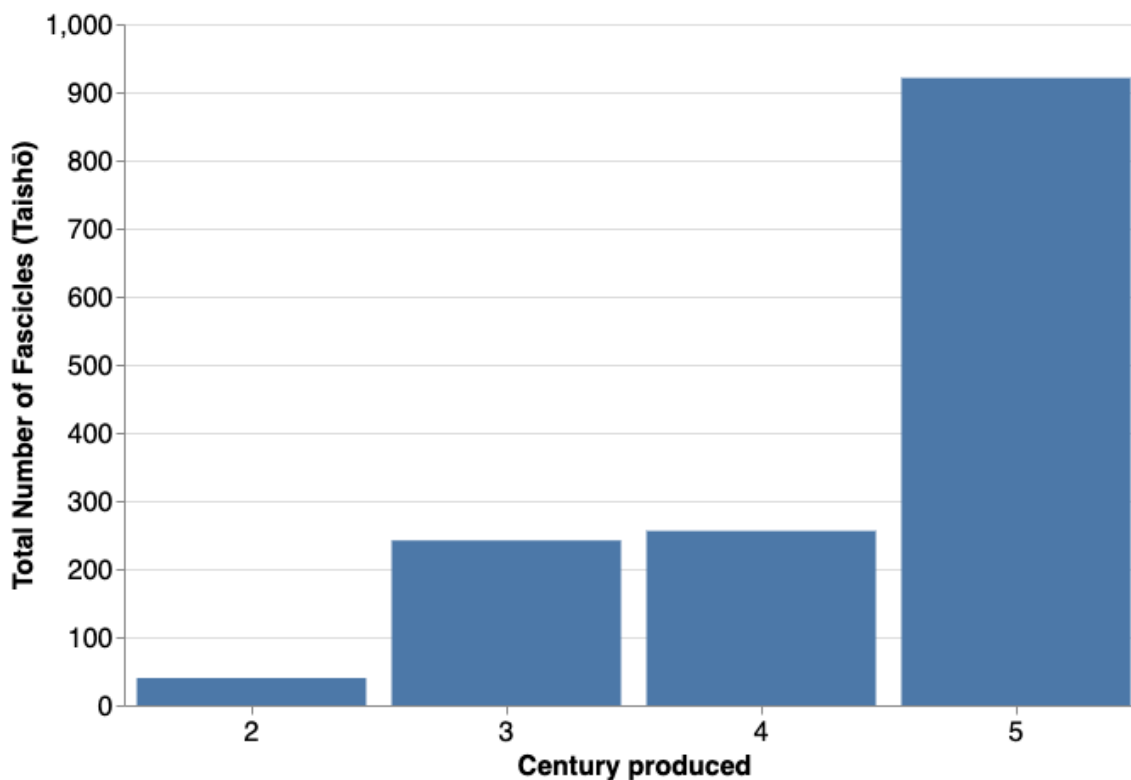


Figure 8: Number of Fascicles in the *Chu san zang ji ji* Corpus over Time

Figure 8 shows that there was a consistent increase as measured by the number of fascicles over the centuries. Even though there were less titles produced in the 4<sup>th</sup> than the 3<sup>rd</sup> century, some of these texts were substantially longer, such as Entry No. 290 *Madhyama Āgama* 中阿含經 (T 26) in sixty fascicles attributed in the *Chu san zang ji ji* to Saṃghadeva.

#### *Dating of Anonymously Produced Texts*

There are several approaches possible to dating early Buddhist texts, including references in other texts, use of terminology, and linguistic analysis.

One way to infer a range of dates for a text is by their mention in other texts with known dates. Dao'an's catalog was a major source for the *Chu san zang ji ji*. Sengyou indicates which entries are included in Dao'an's catalog. Since Dao'an passed away in 385 C.E., we know that any text mentioned in Dao'an's catalog was produced before that time. Sengyou used several other catalogs, including the *Old Catalog*, *Ancient Catalog*, and *Bie Lu*, but we do not know when they were compiled.

### **Manuscripts in Indic Languages and Parallels**

This section relates texts listed in the *Chu san zang ji ji* where possible to manuscripts in Indic languages with a focus on newly discovered texts in archeological finds.

Translation from a manuscript is mentioned in the *Chu san zang ji ji* for 181 titles in the catalog, mostly in Sengyou's notes but also occasionally in biographies and

prefaces. For example, for Entry No. 98 *Radiant Light Prajñāpāramitā Sūtra* 放光般若經 (T 221) with translation attributed to Mokṣala there is a preface in Fascicle Seven which states that Zhu Shixing fetched the manuscript from Khotan.<sup>343</sup> In the case of texts translated by Dharmarakṣa, Fascicle Two of the catalog contains a note stating that Dharmarakṣa himself went to the Western Regions, obtained the manuscripts, and returned.<sup>344</sup> Since Dharmarakṣa translated seventy-five entries in the corpus, this alone accounts for a large proportion of manuscript mentions.

### Catalog of Related Indic and Khotanese Manuscripts

A catalog of related Indic and Khotanese texts was compiled to compare with the corpus of Chinese texts. There are 105 entries in this catalog. The catalog data is

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<sup>343</sup> 惟昔大魏潁川朱士行。以甘露五年出家學道為沙門。出塞西至于闐國。寫得正品梵書。胡本九十章。六十萬餘言。以太康三年。遣弟子弗如檀晉字法饒送經胡本至洛陽。住三年。復至許昌二年。後至陳留界倉垣水南寺。以元康元年五月十五日。眾賢者皆集議。晉書正寫。時執胡本者于闐沙門無叉羅優婆塞竺叔蘭口傳。祝太玄周玄明共筆受。(T 2145, 55.0047c11)

In the past, there was a gifted man from Wei, Zhu Shixing of Yingchuan. In the fifth year of the Ganlu era, he left home to study the dharma and become a śramaṇa. He traveled west out of the pass to the kingdom of Khotan. He copied the Sanskrit manuscript in 90 chapters of foreign text, which had more than 600,000 words. In the third year of the Taikang era, he sent his disciple Furu Tan, whose Chinese name was Fa Rao, to deliver the scriptures to Luoyang. He stayed there for three years, then went to Xuchang for two years. Later, he arrived at the Shui Nan Temple in Cangyuan in the Chenliu district. On the 15th day of the fifth month of the first year of the Yuankang era, virtuous ones gathered to discuss the proper translation into Chinese. At that time, the ones holding the foreign text was the Khotanese śramaṇa Mokṣala and the upāsaka Zhu Shulan who recited it. Zhu Taixuan and Zhou Xuanming acted as scribes.

<sup>344</sup> 合二件。凡一百五十四部。合三百九卷。晉武帝時。沙門竺法護。到西域得胡本還。

These are a combination of two parts with a total of 154 works, comprising 309 fascicles. During the reign of Emperor Wu of the Jin Dynasty, the monk Dharmarakṣa traveled to the Western Regions, obtained foreign manuscripts, and returned. (T 2145, 55.0009b27)

provided in the associated GitHub Repository.<sup>345</sup> For each entry in this catalog, there is at least one citation. A table of citations joins the catalog entries with the bibliographic database.

The language of manuscripts is mainly Sanskrit. However, there are also fifteen Gāndhārī manuscripts and twenty-seven Khotanese manuscripts.

Sixty-one of the entries in the *Chu san zang ji ji* catalog can be related to an Indic manuscript. Twelve of these entries have Gāndhārī manuscripts. The list is given in Table 15.

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<sup>345</sup> Alex Amies, "Indic Catalog," January 19, 2026, Silk Road Corpus Repository, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/indic\\_catalog.md](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/indic_catalog.md).

Table 15: Texts in the *Chu san zang ji ji* Catalog with a Related Gāndhārī Manuscript

Chinese Text	Indic Text	Sources of Indic Text
Entry No. 38 <i>Sūtra on the Prajñāpāramitā Practice of the Way</i> (T 224)	<i>Aṣṭasāhasrikā Prajñāpāramitā</i>	Schøyen Collection; Split Collection; Hayashidera Collection (Matsuda 2013; Falk and Karashima 2013)
Entry No. 49 <i>Akṣobhya Buddha Sūtra</i> 阿闍佛國經 (T 313)	<i>Akṣobhya Buddha Sūtra</i>	Bajaur Collection (Strauch 2008)
Entry No. 56 <i>Dharmapada</i> 法句經 (T 210)	<i>Dharmapada</i>	British Library (Bailey 1945)
Entry No. 78 <i>Da ming du jing</i> 大明度經 (T 225)	<i>Aṣṭasāhasrikā Prajñāpāramitā</i>	Same as above.
Entry No. 100 <i>Bhadrakalpa Sūtra</i> 賢劫經 (T 425)	<i>Bhadrakalpika Sūtra</i>	Schøyen Collection, Hayashidera Collection (Matsuda 2013; Baums, Glass, and Matsuda 2016; Allon, Mark, and Richard Salomon 2010)

Table 15: Texts in the *Chu san zang ji ji* Catalog with a Related Gāndhārī  
Manuscript (Continued)

Chinese Text	Indic Text	Sources of Indic Text
Entry No. 275 <i>Condensed Version of the Mahāprajñāpāramitā Sūtra</i> 摩訶般若鈔經 (T 226)	<i>Aṣṭasāhasrikā Prajñāpāramitā</i>	Same as above
Entry No. 282 <i>Ekottara Āgama</i> 增壹阿含經 (T 125)	<i>Ekottara Āgama</i>	British Library (Salomon 2020)
Entry No. 290 <i>Madhyama Āgama</i> 中阿含經 (T 26)	<i>Madhyama Āgama</i>	Senior Collection and Bajaur Collection (Strauch 2008)
Entry No. 297 <i>Xiaopin boreboluomi jing</i> (T 227) 小品般若波羅蜜經	<i>Aṣṭasāhasrikā Prajñāpāramitā</i>	Same as above

Table 15: Texts in the *Chu san zang ji ji* Catalog with a Related Gāndhārī Manuscript (Continued)

Chinese Text	Indic Text	Sources of Indic Text
Entry No. 313 <i>The Prajñāpāramitā Diamond Sūtra</i> 金剛般若波羅蜜經 (T 235)	<i>Vajracchedikā Prajñāpāramitā Sūtra</i>	Schøyen Collection (Harrison 2009)
Entry No. 334 <i>Dharmaguptaka Prātimokṣa</i> 曇無德戒本 (T 1430)	<i>Prātimokṣasūtra</i>	Bajaur Collection (Strauch 2008)
<i>Samyukta Āgama</i> 雜阿含經 (T 99)	<i>Samyukta Āgama</i>	Senior Collection (Glass and Allon 2007)

The main significance of the data in Table 14 is that the texts are all early. Many of the Gāndhārī texts are only fragments. They are all dated roughly within the period of the *Chu san zang ji ji* catalog, with the *Aṣṭasāhasrikā Prajñāpāramitā* being the earliest, as discussed in Chapter One. This aligns at a macro scale with the early appearance and later replacement of Gāndhārī with Sanskrit in the process of Sanskritization of Indian literature discussed in Chapter One.

There are ten entries in the *Chu san zang ji ji* catalog with related Khotanese manuscripts. These are all later versions of well-known texts, such as the *Lotus Sūtra* and *Vimalakirti Sūtra*, with the manuscripts dating to between 500 and 1,000 C.E.<sup>346</sup> This implies that they were not used as source texts for translations of Chinese texts in the corpus.

### **Pali and Tibetan Parallels**

Parallels in Pali and Tibetan are also an indication that the Chinese text was translated from an Indic source. However, the existence of a Tibetan parallel is not as strong an indication as the existence of an Indic manuscript. Pali and Tibetan parallels were sourced from the Korean Buddhist Canon *Descriptive Catalogue*.<sup>347</sup> There are seventy-three texts in the *Chu san zang ji ji* catalog that can be related to a Pali parallel. There are 129 texts with Tibetan parallels.

This leaves 356 corpus entries with no manuscript mention in the *Chu san zang ji ji*, no Indic manuscript discovered, no Pali parallel, and no Tibetan Parallel.

### **References to Indic Scripts in the Corpus**

Using the corpus assembled and the results of the n-gram analysis mentioned in Chapter Two, a number of interesting references can be found to Indic writing concepts

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<sup>346</sup> Prods Oktor Skjærvø, “Khotan, An Early Center of Buddhism in Chinese Turkestan,” in *Buddhism Across Boundaries: The Interplay of Indian, Chinese, and Central Asian Source Materials*, ed. John R. McRae and Jan Nattier (Philadelphia: University of Pennsylvania, 2012), 107.

<sup>347</sup> Lancaster, *Korean Buddhist Canon*.

besides those in the Introduction to the *Chu san zang ji ji* already discussed above. The term Kharoṣṭhī 佉樓 appears in four locations in the corpus: Fascicle One of Entry 408 *Sūtra on Past and Present Causes and Effects* 過去現在因果經 (T 189), Fascicle 55 of Entry 337 *Mahāsaṃnipāta Sūtra* 大方等大集經 (T 397), Fascicle 43 of Entry 348 *Abhidharmamahāvibhāṣa* 阿毘曇毘婆沙論 (T 1546), and Fascicle 11 of Entry 276 *Vibhāṣāsāstra* 鞞婆沙論 (T 1547).

The *Sūtra on Past and Present Causes and Effects* states, “Within Jambudvīpa, various scripts are used including Brāhmī script, Kharoṣṭhī script, and Lotus script, totaling sixty-four such kinds.”<sup>348</sup> Fascicle 55 of the *Mahāsaṃnipāta Sūtra* uses the characters for Kharoṣṭhī 佉樓 as part the transliteration of a longer proper noun. Fascicle 42 of the *Abhidharmamahāvibhāṣa* gives an analogy of learning to write in Kharoṣṭhī and learning Brāhmī 梵書.<sup>349</sup> The quote in Fascicle Eleven of the *Vibhāṣāsāstra* is similar to the *Abhidharmamahāvibhāṣa*.

The synonym of Kharoṣṭhī 佉盧虱吒 *qūlúshīzhà* is found in fascicles 41 and 42 of Entry No. 337 *Mahāsaṃnipāta Sūtra* 大方等大集經 (T 397). This is used in reference to the name of a sage: Kharoṣṭha. The synonym of Kharoṣṭhī 佉盧吒 *qūlúzhà* occurs in

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<sup>348</sup> 閻浮提中，或有梵書，或佉樓書，或蓮花書，有如是等六十四種 (T 189, 3. 0627c18).

<sup>349</sup> T 1546, 28.0316c17.

Fascicle 51 of Entry No. 348 *Abhidharmamahāvibhāṣa* 阿毘曇毘婆沙論 (T 1546), which states that Kharoṣṭhī was created by the sage Kharoṣṭha.<sup>350</sup>

Both Brāhmī 梵書 and the synonym of Kharoṣṭhī 佉留書 *qūliú shū* are mentioned in Fascicle Three of Entry No. 102 *Lalitavistara* 普曜經<sup>351</sup> which lists the sixty-four scripts referred to in the Introduction to the *Chu san zang ji ji*, discussed above. Although, there is a Sanskrit parallel to this text with similar content,<sup>352</sup> none of the scripts enumerated, other than Brāhmī and Kharoṣṭhī, have been positively identified with known historic Indic scripts.<sup>353</sup>

The arapacana alphabet, more accurately referred to as a syllabary, consists of forty-two syllables beginning with the sequence of the five syllables a-ra-pa-ca-na. Salomon<sup>354</sup> argues, based on epigraphic evidence, that the syllabary originated in Gandhāra and was associated with the Gāndhārī language. The arapacana alphabet

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<sup>350</sup> 時旃陀羅王。語婆羅門言。夫種族姓尊卑。無有常定。汝頗曾聞。誰造梵書耶。婆羅門答言。我聞是瞿頻陀羅婆羅門所造。復問。誰造佉盧吒書耶。婆羅門答言。我聞是佉盧吒仙人所造。 Then King Chandra said to the Brahmin, “The status of castes and lineages is not fixed or permanent. Have you heard who created the Brāhmī script?” The Brahmin replied, “I heard that it was created by the Brahmin Govinda.” The asked again, “Who created the Kharosthi script?” The Brahmin replied, “I have heard that it was created by the Sage Kharostha.” (T 1456, 28.0377c04).

<sup>351</sup> T 186, 3.0498b04.

<sup>352</sup> Rājendralāla Mitra, *The Lalitavistara Or, Memoirs of the Early Life of Śākya Siṅha* (Calcutta: Baptist Mission Press, 1881), 182-183.

<sup>353</sup> Salomon, *Indian Epigraphy*, 8-9.

<sup>354</sup> Richard Salomon, “New Evidence for a Gāndhārī Origin of the Arapacana Syllabary” *Journal of the American Oriental Society* (1990), 255–73.

appears in a number of places in the Buddhist canon,<sup>355</sup> including Fascicle 48 of Entry No. 322 *Treatise on the Great Perfection of Wisdom* 大智度論<sup>356</sup> and in a less obvious form using semantic translation in the *Lalitavistara*.<sup>357</sup> A search for the string ‘a-syllable’ 阿字門 on the n-gram analysis results identifies the other references in the corpus: Fascicle Ten of Entry No. 300 *Hua shou jing* 華手經<sup>358</sup> and Fascicle Five of Entry No. 296 *Perfection of Wisdom in 25,000 Lines* 摩訶般若波羅蜜經.<sup>359</sup>

The evidence from the *Chu san zang ji ji*, from the corpus content, and from manuscript discoveries all point towards Sanskrit being the primary source language for translation of early Chinese texts and Gāndhārī being a second source language. There was no evidence found for other written languages as sources. However, other languages may have been used in oral transmission.

### Notes on Oral Transmission

Oral transmission is mentioned by Sengyou for sixteen catalog entries.<sup>360</sup> The length of some of these texts transmitted orally is surprising. For example, the oral

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<sup>355</sup> John Brough, “The Arapacana Syllabary in the Old Lalita-Vistara,” *Bulletin of the School of Oriental and African Studies* 40, no. 1 (1977): 85–95.

<sup>356</sup> T 1509, 25.0407c11.

<sup>357</sup> T 186, 3.0498c08.

<sup>358</sup> T 657, 16.0203a15.

<sup>359</sup> T 223, 8.0256a06.

<sup>360</sup> Oral transmission is mentioned for the following texts: *Sūtra on the Four Noble Truths* 四諦經 (T 32), *Sūtra of the Dharma Mirror* 法鏡經 (T 322), *Abhidharmamahāvibhāṣa* 鞞婆沙論 (T 1547), *Collection of Treatises Compiled by Venerable Vasumitra* 尊婆須蜜菩薩所集論 (T 1549), *Scriptures Compiled by*

transmission of Entry No. 332 *Four Part Vinaya* 四分律 (T 1428) of the Dharmaguptaka school with translation attributed to Buddhayaśas and Zhu Fonian in sixty fascicles is discussed by Sengyou in Fascicle Three under Entry No. 806 *Dharmaguptaka Four Part Vinaya* 曇無德四分律.<sup>361</sup> There was no manuscript, but Buddhayaśas claimed to have memorized it. There was disbelief that the translation of such a long work was possible without a manuscript. Buddhayaśas was given tests for his memory including a scroll of medical prescriptions, household records, and other items, which he recited without an error. After having passed the test, the translation was allowed to proceed. Buddhayaśas recited the *Four Part Vinaya* and Zhu Fonian translated.<sup>362</sup>

Evidence of oral transmission within the texts of the corpus will be discussed further in Chapter Six with respect to the analysis of translation style.

### East Asian Native Compositions

A total of thirty-three texts in the *Chu san zang ji ji* catalog were identified as East Asian native compositions, based on literature searches. These are listed in Appendix F.

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*Samgharakṣa* 僧伽羅刹所集經 (T 194), *Ekottara Āgama* 增壹阿含經 (T 125), *Four Part Vinaya* 四分律 (T 1428), *Sūtra on the Wise and Foolish* 賢愚經 (T 202), *Samyukta Āgama* 雜阿含經 (T 99), *Sūtra of the Great Dharma Drum* 大法鼓經 (T 270), *Śrīmālā Sūtra* 勝鬘師子吼一乘大方便方廣經 (T 353), *Sūtra on the Eight Lucky Mantras* 八吉祥經 (T 430), *Laṅkāvatāra Sūtra* 楞伽阿跋多羅寶經 (T 670), *Aṅgulimāliya Sūtra* 央掘魔羅經 (T 120), *Sūtra on Past and Present Causes and Effects* 過去現在因果經 (T 189), and the *Sūtra on Liberation from the Continuity of Causal Connections* 相續解脫地波羅蜜了義經 (T 678).

<sup>361</sup> T 2145, 55.0020b23.

<sup>362</sup> T 2145, 55.0020b23.

As mentioned above, the individual fascicles of the *Abhiṣeka Sūtra* 佛說灌頂經 (T 1331) are listed separately in the *Chu san zang ji ji*, so this can be shortened to twenty-three texts.

All of the texts that were natively composed in East Asia, with the exception of four, are listed as anonymously produced in the *Chu san zang ji ji*. The four are Entry No. 1 *Sūtra of Forty-Two Sections* 四十二章經 (T 784), Entry No. 23 *Great Sūtra on the Mindfulness of Breathing* 大安般守意經 (T 602), Entry No. 285 *Sūtra on the Bodhisattva's Jade Necklace* 菩薩瓔珞經 (T 656), and Entry No. 286 *Sūtra on Cutting Ties in the Ten Dwellings* 最勝問菩薩十住除垢斷結經 (T 309) all of which were discussed above.

Entry No. 322 *Great Perfection of Wisdom Treatise* 大智度論 (T 1509) was not treated as an East Asian native composition, although there has been no Indic manuscript discovered and scholars have noted that the commentary attributed to Nāgārjuna is mixed with glosses by Kumārajīva.<sup>363</sup> If this was included as an East Asian native composition, it would dominate the results due it is great length of one hundred fascicles.

So far texts with mention of manuscripts, with Indic manuscripts discovered, with Pali and Tibetan parallels, with mention of oral transmission, and native Chinese compositions have been discussed. However, this still leaves the origin of 359 texts in the corpus not accounted for.

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<sup>363</sup> Hureau, "Emergence of the Buddhist Canon," 748.

East Asian native compositions will be discussed further in Chapter Six on analysis of translation style.

### **References to Places of Translation in the *Chu san zang ji ji***

The *Chu san zang ji ji* mentions the places where many of the texts were translated. These notes have been extracted and added to the corpus metadata. The locations with the largest number of mentions are Chang'an (42), Jiankang (34), Liangzhou (13), Guangzhou (8), Guanzhong (7), Luoyang (5), Lushan (2), Yangzhou (2), Anhui (1), Cangyuan (1), Xiao Yao Yuan Temple in Shaanxi (1), Gaochang (1), Ye (1), Danyang (1), Wuchang (1), and Zhongshan (1). The listing of a large number of texts translated in Jiankang may show bias by Sengyou reflecting a greater knowledge of events in his own locale.

## **Bibliographic Database and Application for Secondary Literature**

### **Queries**

A bibliographic database table of over six hundred references was compiled. A citation table links the bibliographic table to the entries of the *Chu san zang ji ji* catalog and the results of the corpus analysis. The data for the database and instructions on loading it are given in the associated GitHub repository.<sup>364</sup>

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<sup>364</sup> Amies, "Bibliographic Database."

## Chapter Four: Analysis of Buddhist Terminology in Chinese Translation

Chapter Two described the methodology for extraction of terminology and for analysis of introduction, usage, and translation type. The results of that analysis are presented and discussed in this chapter.

The translation of Buddhist texts during the initial development of Chinese Buddhism required the development of a huge volume of new terminology and language constructs to express the ideas contained in the texts arriving from India. The process of establishing this body of terminology accompanied great changes in the Chinese language that have left their imprint down to modern times. This chapter addresses goal two, providing a holistic view of the translation of the texts in the corpus, and describing the use of terminology to predict attribution.

The development of Chinese Buddhist terminology during the period under study is an important source of evidence for attribution of translation and dating. In the Introduction to the *Chu san zang ji ji* Sengyou mentions issues of language, challenges with translation, and the use of transliteration.<sup>365</sup> The Chinese language and its spoken dialects also changed during the period that the *Chu san zang ji ji* catalog covers, adding a further complication.

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<sup>365</sup> T 2145, 55.0004b02

The challenges of accuracy and readability in translation are age-old. In the introduction to the *Chu san zang ji ji*, Sengyou wrote on the challenges in translation to Chinese and the importance in choices of style. He stated,<sup>366</sup>

The success or failure in conveying the meaning is up to the translator as the quality of writing depends on the author. Some were good at accurately adhering to the meaning of the foreign text but did not express the intent well in Chinese.

## Overview of Results

A total of 80,910 Buddhist terms were extracted from the corpus. Each term was associated with the translator who first used the term, and each subsequent usage of the term was tracked as an instance of adoption. The types of translation were distinguished in subsequent analysis discussed below.

### Adoption of Terminology between Translators

Document frequency is a measure of how widely a term is used. It was defined in Chapter Two. Figure 9 shows the variation of document frequency over the corpus.

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<sup>366</sup>是以義之得失由乎譯人。辭之質文繫於執筆。或善胡義而不了漢旨。或明漢文而不曉胡意。(T 2145, 55.0004b02)

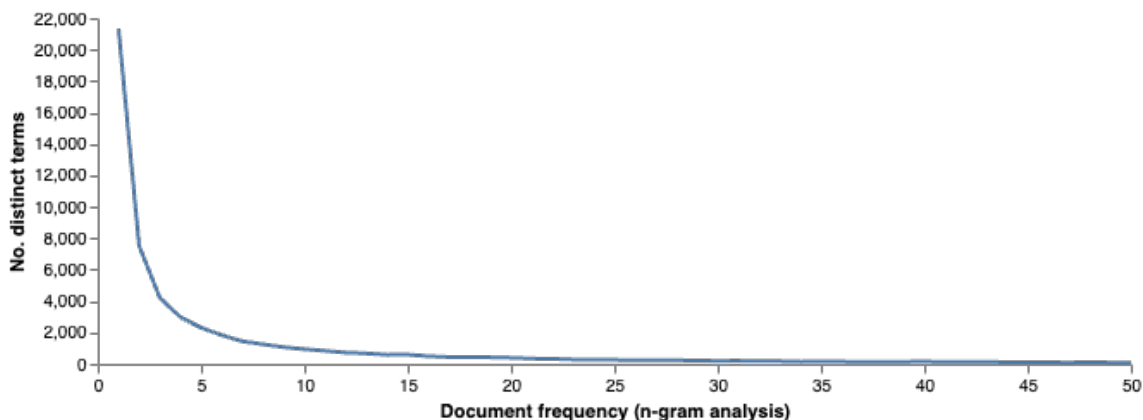


Figure 9: Variation of Document Frequency (document frequencies greater than 50 are not shown)

Figure 9 shows that most terms were used only a small number of times. That is, towards the left side of the figure, most terms had a low adoption rate. On the right side of the figure, only a small number of terms had a high rate of adoption. Only 96 terms have a document frequency of 50. This indicates that, beyond a small core of highly adopted terms, translators of texts in the corpus tended to invent their own translations of Buddhist terms. This finding is useful for two reasons: firstly, because terms with high adoption rates are useful for inferring influence and, secondly, because terms with low adoption rates can be useful for inferring attribution of translations or authorship.

Chinese Buddhist dictionaries other than the glossaries discussed in Chapter One do not inform of the person who introduced the term. However, this information is critical in understanding the evolution of terminology. Table 16 below lists the ten most widely used terms and the translators who introduced them, ranked by document frequency.

Table 16: Most Widely Adopted Terms Ranked by Document Frequency

Rank	Term	English Equivalent	Introduced by
1	佛	Buddha	An Shigao
2	比丘	<i>bhikṣu</i>	An Shigao
3	世尊	World Honored One	Lokakṣema
4	如來	Tathāgata	An Shigao
5	沙門	<i>śramaṇa</i>	An Shigao
6	菩薩	bodhisattva	Lokakṣema
7	三藏	<i>tripiṭaka</i>	An Shigao
8	解脫	liberation	An Shigao
9	精進	diligence	An Shigao
10	聲聞	<i>śrāvaka</i>	Lokakṣema

Table 16 shows that An Shigao and Lokakṣema were the most influential translators in the sense of establishing the most widely adopted terms. The terms listed in the table are a core set of fundamental terms needed in most *sūtras*. These pioneers laid the foundation for the translators that followed.

As an example of terminology adoption consider the opening passage of Entry No. 38 *Sūtra on the Prajñāpāramitā Practice of the Way* 道行般若經 by Lokāṣema,<sup>367</sup>

佛在羅閱祇耆闍崛山中，摩訶比丘僧不可計，諸弟子舍利弗、須菩提等；摩訶薩菩薩無央數，彌勒菩薩、文殊師利菩薩等。

The **Buddha** was at **Mount Grdhrakuta** in **Rājagṛha**, with an **immeasurable** number of **great bhikṣus**, including disciples such as **Śāriputra** and **Subhūti**; and a **countless** number of **mahāsattva bodhisattvas**, including **Maitreya** and **Mañjuśrī**.

The terms established by An Shigao are colored in blue and those established by Lokāṣema are colored in red. Notice that there is more red text than blue. That is because Lokāṣema established most of his own terms.

Notice also that the terms in blue are extremely common terms like Buddha and bhikṣu. This is because An Shigao, as the translator with the earliest credible attributions, established this core terminology. This visualization technique does not scale well. Another way is needed to visualize a larger amount of data.

A summary of the results of the introduction and adoption of Buddhist terminology by translators is shown in Figure 10 below. The heights of the bars represent counts of distinct terms used, and the colors represent counts of distinct terms introduced by individual translators. Translators after Kumārajīva are not shown.

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<sup>367</sup> T 224, 8.0425c06.

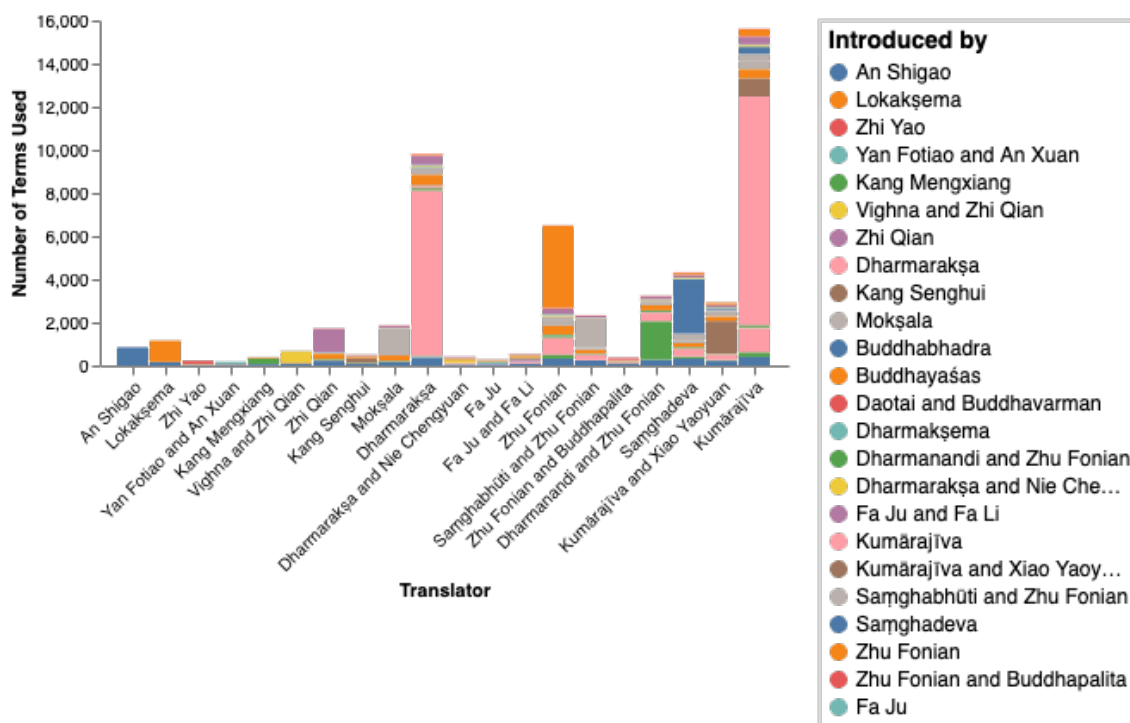


Figure 10: Introduction and Use of Terminology up until Kumārajīva

Figure 10 shows that all the translators up to and including Kumārajīva, although they did adopt some terminology from earlier translators, primarily invented their own terminology. The database queries and numerical values are available in the GitHub repository.<sup>368</sup>

<sup>368</sup> Amies, “Terminology Analysis;” Alex Amies, “Terminology Evolution CSV,” March 22, 2026, Silk Road Corpus Repository, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/data/terminology\\_evolution.csv](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/data/terminology_evolution.csv).

The translators who introduced the greatest number of distinct terms were Kumārajīva, followed by Dharmarakṣa, and Dharmakṣema. Analysis of Kumārajīva's and Zhu Fonian's work is complicated by the fact that they collaborated with other translators.

Validation of the results of the terminology extracted from the texts with the AI model is discussed below.

### Translation Type

The percentages of distinct terms by translation type are shown in Table 17 below.

Table 17: Counts of Distinct Terms by Translation Type

Translation Type	Percentage of Total
Semantic	77.0
Mixed	15.5
Transliteration	4.2
Buddhist saying	1.6
Buddhist idiom	1.5
New meaning	0.1

Table 17 shows that semantic translations are by far the most common type of translation. This is noteworthy because above we saw that most of the very widely used terms are transliterations. This contrast can be appreciated by considering the experience of reading canonical text. When reading canonical texts, one may get the impression that

most Chinese Buddhist terms are transliterations because they are conspicuous and because they are used frequently while the semantically translated terms are not as conspicuous.

The top few most widely used semantic translations are listed above, including World-Honored One 世尊, ‘liberation’ 解脫, and Tathāgata 如來.

The most widely used mixed semantic and transliterated terms are listed in Table 18.

Table 18: Most Widely Used Mixed Translations Ranked by Document Frequency

Rank	Term	English Equivalent	Introduced by
1	佛法	Buddha Dharma	An Shigao
2	禪定	Meditative absorption	An Shigao
3	佛道	Buddhist practice	Lokakṣema
4	梵天	Brahma	Lokakṣema
5	四禪	Four <i>dhyānas</i>	An Shigao

It is notable that all the terms in Table 18 are two-character compounds. This may reflect the shift in preference from one-character compounds in the classical period to two-character compounds in later periods. It also means that one-character transliterations must be paired with one-character semantic translations to make these compact but very rich compounds. This represents a step on the path of integration of Buddhism into Chinese language and culture.

The most widely used transliterations are listed in Table 19.

Table 19: Most Widely Used Transliterations Ranked by Document Frequency

Rank	Term	Sanskrit Equivalent	Introduced by
1	佛	<i>buddha</i>	An Shigao
2	比丘	<i>bhikṣu</i>	An Shigao
3	沙門	<i>śramaṇa</i>	An Shigao
4	菩薩	<i>bodhisattva</i>	Lokakṣema
5	三昧	<i>samādhi</i>	Lokakṣema
6	阿羅漢	<i>Arhat</i>	An Shigao
7	涅槃	<i>nirvāṇa</i>	Dharmarakṣa
8	比丘尼	<i>bhikṣuṇī</i>	Lokakṣema
9	辟支佛	<i>pratyekabuddha</i>	An Shigao
10	優婆塞	<i>upasaka</i>	An Shigao

A notable point in Table 19 is the syllable mismatch between the Chinese and Sanskrit. For example, for *bodhisattva* the form 菩薩 *púsà* was preferred over the longer but more closely phonetically matching form 菩提薩埵 *pūtisàduō*. The Sanskrit term ‘*bodhisattva*’ is four syllables whereas the Chinese form 菩薩 *púsà* is only two syllables

in length. The discussion by Liang<sup>369</sup> of these ‘abbreviated translations’ 節譯 was mentioned in Chapter One.

Table 20 shows the ten most widely adopted terms that were formed as new meanings of existing words.

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<sup>369</sup> Liang, *Fojiao ciyu de gouzao yu hanyu cihui de fazhan*, 3.

Table 20: Most Widely used Terms Established as New Meanings Ranked by Document Frequency

Rank	Term	English Equivalent	Introduced by
1	空	emptiness, <i>śūnyatā</i>	An Shigao
2	法	Dharma; phenomena	An Shigao
3	苦	suffering, <i>duḥkha</i>	An Shigao
4	經	scripture, <i>sūtra</i>	An Shigao
5	識	consciousness, <i>viññāna</i>	An Shigao
6	色	form, <i>rūpa</i>	An Shigao
7	道	path, <i>mārga</i>	An Shigao
8	行	volition, <i>saṃskāra</i>	An Shigao
9	慧	wisdom, <i>prajñā</i>	An Shigao
4	天	heaven, <i>deva</i>	An Shigao

Table 20 shows that An Shigao introduced all of the ten most widely used terms established with new meanings. An Shigao's use of 'emptiness' 空 is interesting in that it is often considered a *Mahāyāna* term. The shift in meaning of this term will be discussed below. There are a number of terms for which it is debatable whether they are semantic translations or new meanings, including 'suffering' 苦, 'precept' 戒, 'consciousness' 識, and 'volition' 行. The classification is also complicated by the fact that some terms have

multiple senses that overlap with secular senses, such as ‘empty; śūnyatā’ 空, ‘law; teaching of the Buddha; or phenomena’ 法, and ‘deva’ or ‘heaven’ 天.

The most widely used Buddhist idiom in the corpus is ‘content with few desires’ 少欲知足, introduced by Lokakṣema.

### **Validation of Results from the AI Model**

There are two ways that document frequency can be calculated. Firstly, document frequency can be calculated by summing the number of documents that terms are found directly in the terminology extraction from the AI model. Secondly, document frequency can be calculated from n-gram analysis for Buddhist terms that have been identified by the AI model in at least one document. Each method has advantages and disadvantages.

The advantage of using the AI model results directly is that the AI model can distinguish different senses of words. For example, it can differentiate between the senses of 有 *yōu*, which may mean ‘have’ in a secular sense or it may mean ‘existence’ in a Buddhist sense. The disadvantage of using AI model results directly is that, since the AI model is non-deterministic, it may return different results at different times. Having identified a Buddhist term in one document, it may not identify all the occurrences throughout the corpus.

The advantage of the n-gram analysis is that it is a deterministic method. We can be confident that all the occurrences of a term throughout the corpus will be identified. The disadvantage of the n-gram analysis is that it cannot distinguish different senses of polysemous words. It will overcount the frequency of terms like 有 *yōu*, so both ‘have’ in a secular sense and ‘existence’ in a Buddhist sense will be counted together. Other

important examples that the n-gram analysis over-counts are 經 *jīng* that could have a number of secular senses in addition the Buddhist sense of *sūtra* and 無 *wú* which is very frequently functions as the adverb ‘not’ or occasionally used with the Buddhist sense of ‘non-existence’.

Thus, the document frequency computed from the AI model results is used for widely used terms that have multiple senses and from n-gram analysis is used for seldomly used terms in the analysis of uniquely shared terminology.

The AI model identified too many terms to validate manually. A total of 318 terms were validated manually. The false positive rate of this sample was 7%. The most common variety of false positives was that the terms identified by the AI model as terminology were generic phrases rather than Buddhist terminology.

The full set of terms identified by the AI model were validated with a second query to the AI model. This analysis resulted in 62,644 valid terms found,<sup>370</sup> a false positive rate of 22%. The comparison with manual validation shows that the AI model was overly aggressive in dismissing phrases as invalid Buddhist terminology, especially rarely used terms. For example, it classified the ‘Heaven of Immeasurable Water’ 水無量天 is not valid with the note, “This term, literally 'Heaven of Immeasurable Water', is not found as a standard or recognized heaven (*devaloka*) in traditional Buddhist cosmology. It likely represents a non-standard or erroneous designation ...” The term was

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<sup>370</sup> Amies, “Terminology Usage and Analysis.”

used by Zhi Qian in Entry No. 62 *Sūtra on Stories of the Former Karma of the Bodhisattva* 菩薩本業經 (T 281) and is a valid term.

Defining what is and what is not terminology is not straightforward. Firstly, there is no strict definition of what terminology is. In general, words or phrases that can be considered Buddhist terminology are the kinds that are found in Buddhist dictionaries. This is made more difficult because many of the terms are rarely used, so they are not included in dictionaries. However, they could be considered terminology on the basis that they are translations of Buddhist terms from Sanskrit or are synonyms for terms that are included in Buddhist dictionaries.

It can also be hard to differentiate Buddhist concepts from generic phrases in many cases. For example, the term 知時 *zhī shí*, which may be understood as ‘knowledge of time,’ appears to be a generic phrase but it also appears in the *Mahāvīyūtpatti* under the Sanskrit equivalent *kārajñāḥ*.

Polysemous terms with specialized usage are a challenge to validate. For example, the term ‘count’ 數 *shǔ* is only used as Buddhist terminology in certain contexts, such as relating to the counting of breaths in An Shigao’s texts on meditation.<sup>371</sup> Checking in the terminology usage database table shows that ‘count’ 數 *shǔ* was correctly identified by the AI model as Buddhist terminology in Entry No. 23 *Great Sutra on the Mindfulness of Breathing* 大安般守意經 (T 602). Similarly, the terms

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<sup>371</sup> Florin Deleanu, “The Newly Found Text of the An Ban Shou Yi Jing Translated by An Shigao,” 國際仏教学大学院大学研究紀要 *Kokusai bukkyōgaku daigakuin daigaku kenkyū kiyō* 6 (2003): 165.

‘follow’ 隨 *suí* and ‘focusing’ 止 *zhǐ* were correctly identified by the AI model as Buddhist terminology in this text.

The false positive rate decreases the more documents that the term is found in, becoming close to zero after a document frequency of 5. Only the valid terms were included in the summary results presented above. The AI model had trouble distinguishing the ‘semantic’ translation type from the ‘new meaning’ type. Indeed, there is an overlap between these two categories creating ambiguity. For example, the character 食 *shí* is a very common character and has multiple senses, the most frequent of which are ‘food’ and ‘to eat’. In this usage, 食 *shí* is not a Buddhist term. The AI model classified this as a valid Buddhist term in some cases. It could be arguably a Buddhist term when used in the collocation 乞食 *qǐshí*, meaning ‘to beg for alms.’ The earliest occurrence identified by the AI model is in Fascicle Two of Entry No. 113 *Avaivartikacakra Sūtra* 阿惟越致遮經 (T 266), translated by Dharmarakṣa, used in the sense of a donation of ‘alms’,<sup>372</sup>

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<sup>372</sup> T 266, 9.0211a01.

聽衣食施、計物之施，所與薄耳

As for the offerings of clothing and alms, and the dispensing of material things, what is given is meager.

In the above instance, the identification of the term as Buddhist terminology is correct.

The term 食 *shí* also occurs in Fascicle One of the *Avaiivartikacakra Sūtra* in a secular sense,<sup>373</sup> “from dawn to dusk” 從明至食. This occurrence was correctly ignored by the AI model since it is not used as a Buddhist term. The widely used terms Dharma 法 and *duḥkha* 苦, introduced by An Shigao, were misclassified as semantic translations by the AI model. These are mistakes; they should be considered terms established by new meanings. The AI model also mistakenly classified *upāya* 方便, also introduced by An Shigao, as a new meaning. It should be a semantic translation because it preceded the modern Chinese meaning of ‘convenience’. The term will be discussed below. The model made more mistakes of this type, notes for which are saved in the GitHub repository.<sup>374</sup>

Comparison of AI model counts with n-gram counts was performed to validate that the terms identified by the AI model actually existed in the corpus and that, once identified, all the occurrences were identified. However, it was found that the AI model under-counted.

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<sup>373</sup> T 266, 9.0199a17.

<sup>374</sup> Alex Amies, “Terminology Analysis,” March 25, 2026, Silk Road Corpus Repository, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/data/terminology\\_analysis.csv](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/data/terminology_analysis.csv).

For example, the AI model identified the less common form of ‘monk’ 除饑 in Entry No. 53 *Sūtra of the Dharma Mirror* 法鏡經 (T 322), Fascicle Five of Entry No. 78 *Da ming du jing* 大明度經 (T 225), and Entry No. 1024 *Sūtra on the Nirvāṇa of the Buddha’s Mother* 佛母般泥洹經 (T 145). The n-gram analysis confirmed that each of these texts do actually contain the term. However, the n-gram analysis also confirmed that the term occurred in a number of other texts that the AI model failed to identify.

Comparing the entire list of terms identified by the AI model with n-grams, there are 1,277 (1.6%) terms without matching n-grams. These are terms that the AI model has invented but do not exist in the text. This is a form of AI hallucination.

### **Language Change**

As discussed in Chapter One, pronunciations of Chinese characters have changed with time, and this has impacted how transliteration has been applied at different points in history. Table 21 compares Sanskrit with Old Chinese, Later Han, and Middle Chinese pronunciations for several early Buddhist terms that illustrate a Chinese phonetic shift.

Table 21: Transliterations Illustrating Chinese Phonetic Shift

Term	First Use	Shift	Notes
Buddha 佛 <i>fó</i>	Entry No. 7 <i>Greater Sūtra on the Grounds of the Way</i> 大道地經 (T 607) by An Shigao	b-f	Middle Chinese: <i>bjut</i> . <sup>375</sup> Cannot find Old Chinese.
Buddha or Buddha- stūpa 浮圖 <i>fútú</i>	Fascicle 25 of Entry No. 282 <i>Ekottara Āgama</i> 增一阿含經 (T 125, 2.0684b21) by Dharmanandi and Zhu Fonian	b-f	<i>FGDB</i> , s.v. “浮圖”. Middle Chinese: <i>bjuw du</i> <sup>376</sup> Later Han: bu da Old Chinese: *bu *dâ <sup>377</sup>
<i>brahma</i> 梵 <i>fàn</i>	Fascicle 1 of Entry No. 13 <i>Sūtra on the Law of Ten Rewards in the Dīrgha Āgama</i> 長阿含十報法經 (T 13, 1.0236b28) by An Shigao	b-f	Middle Chinese: <i>bjomH</i> . <sup>378</sup> Cannot find Old Chinese or Later Han pronunciations. Short for 梵摩 <i>fānmó</i> . <sup>379</sup>

<sup>375</sup> Paul W. Kroll, *A Student's Dictionary of Classical and Medieval Chinese* (Leiden; Boston: Brill, 2015), 116.

<sup>376</sup> Kroll, *Dictionary of Classical and Medieval Chinese*, 120 and 458.

<sup>377</sup> Axel Schüssler, *ABC Etymological Dictionary of Old Chinese* (Honolulu: University of Hawaii Press, 2006), 242 and 218.

<sup>378</sup> Kroll, *Dictionary of Classical and Medieval Chinese*, 107.

<sup>379</sup> Xiang, *Middle Chinese Lexicon 1*, 43.

Table 21: Transliterations Illustrating Chinese Phonetic Shift (Continued)

Term	First Use	Shift	Notes
‘person’ 富伽羅 <i>fùjiālúó</i> , Sanskrit: <i>pudgala</i> (BCSD, 385)	Fascicle 38 of Entry No. 337 <i>Mahāsaṃnipāta Sūtra</i> 大方等大集經 (T 397, 13.0254c25) by Dharmakṣema (401- 433 CE)	p-f	Later form is 補特伽羅 <i>būtéjiālúó</i> . Middle Chinese: <i>pjuwH</i> <i>kae la</i> (using 迦 variant). <sup>380</sup> Cannot find all character for Old Chinese.
<i>Mañjuśrī</i> 文殊師利 <i>wénshūshīlì</i>	Entry No. 132 <i>Mañjuśrī Teaches</i> <i>Rules of Pure Conduct</i> 文殊師利淨律經 (T 460) by Lokakṣema	m-w	文 Later Han: <i>mun</i> , Old Chinese: <i>mən</i> , <sup>381</sup> Middle Chinese: <i>mjun</i> . <sup>382</sup>

<sup>380</sup> Kroll, *Dictionary of Classical and Medieval Chinese*, 123, 192, and 289.

<sup>381</sup> Schüssler, *Etymological Dictionary of Old Chinese*, 514.

<sup>382</sup> Kroll, *Dictionary of Classical and Medieval Chinese*, 476.

The phonetic resemblance to the Sanskrit terms in Table 21 is much clearer when considering the Later Han and Middle Chinese pronunciations than the modern pronunciation. For example, the Middle Chinese for Buddha 佛 *fó* is *bjut*.<sup>383</sup> This was first used by An Shigao, for example, in Entry No. 7 *Greater Sūtra on the Grounds of the Way* 大道地經 (T 607). The Old Chinese and Later Han pronunciations cannot be found for the character 佛 *fó*. A less common transliteration of Buddha is 浮圖 *fútú*, for which the Later Han pronunciation is *bu da*. This translation was introduced by Dharmanandi and Zhu Fonian in Fascicle 25 of Entry No. 282 *Ekottara Āgama* 增一阿鎗.<sup>384</sup>

A second example is the term brahma 梵 *fàn* introduced by An Shigao, for example, in Entry No. 13 *Sūtra on the Law of Ten Rewards in the Dīrgha Āgama* 長阿含十報法經 (T 13). The Middle Chinese pronunciation is *bjomH*.<sup>385</sup> The Old Chinese and Later Han pronunciations cannot be found for this character. Xiang and the *FGDB*<sup>386</sup> note that 梵 *fàn* is an abbreviation for 梵摩 *fàn mó*. However, the form 梵摩 *fàn mó* was introduced later by Kang Senghui in Fascicle Eight of Entry No. 93 *Sūtra of the Collection of the Six Perfections* 六度集經.<sup>387</sup>

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<sup>383</sup> Kroll, *Dictionary of Classical and Medieval Chinese*, 116.

<sup>384</sup> Schüssler, *Etymological Dictionary of Old Chinese*, 242 and 218; T 125, 2.0684b21.

<sup>385</sup> Kroll, *Dictionary of Classical and Medieval Chinese*, 107.

<sup>386</sup> *FGDB*, s.v. “梵”.

<sup>387</sup> T 152, 3.0052a01.

A third example Mañjuśrī 文殊師利 *wénshūshīlì*, a transliteration introduced by Lokakṣema, for instance in the title of Entry No. 132 *Mañjuśrī Teaches Rules of Pure Conduct* 文殊師利淨律經 (T 460). The character 文 *wén* is pronounced Middle Chinese as *mjun*,<sup>388</sup> which is much closer to the Sanskrit pronunciation than the Hanyu pinyin. These examples illustrate several changes: first, a change in preference for two syllable words; second, the phonetic shift from ‘b’ to ‘f’ and ‘m’ to ‘w’, and; third, a tendency to revisit and refine early transliterations. The examples confirm the shift in preference for monosyllabic words in classical and Han period Chinese to a preference for polysyllabic words in Middle Chinese, as was mentioned in Chapter One. The impact of Buddhism on this process was important because the imported foreign words were mostly polysyllabic.

The change in pronunciation from the ‘b’ in the Sanskrit *buddha* to the ‘f’ in the Modern Standard Chinese 佛 *fó* is due to reduction in labialization, ‘p’ and ‘b’ initial consonants, and the emergence of the labiodental fricative, ‘f’ initial consonants, in Middle Chinese. In this process, ‘p’ and ‘b’ initial consonants shifted to ‘f’. This is also demonstrated in secular words, for example, ‘house’ 房 *fáng* in Modern Standard Chinese was pronounced as *bjan* in Middle Chinese.<sup>389</sup>

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<sup>388</sup> Kroll, *Dictionary of Classical and Medieval Chinese*, 476.

<sup>389</sup> Shen, *Phonological History of Chinese*, 314-315; Kroll, *Dictionary of Classical and Medieval Chinese*, 108.

Another related phonetic shift is devoicing, which affected Middle Chinese voiced initial consonants. For example, ‘b’ shifted to ‘p’ in 平 *píng* in Modern Standard Chinese, which was *bjaeng* in Middle Chinese.<sup>390</sup> The process of revisiting transliterations may have been due to dissatisfaction with earlier transliterations as Chinese pronunciation shifted over time, and also due to regional differences. In terms of regional differences, there were major translation activities in Liangzhou in the Northwest,<sup>391</sup> in Chang’an and Luoyang in the Central Plains, and in Jianye in the South. These locations are a large distance apart and would have had substantial differences in local dialects.

In addition to changes in pronunciation, language change also included changes in semantics. This can be demonstrated by examining concordances built from the corpus. A concordance for the term 方便 *fāngbiàn* is shown in Table 22 below.

Table 22: Concordance for 方便 *fāngbiàn*

T 607, An Shigao,	當為求方便治, 至死若病痛橫有病, 可能得活, 若命盡但說去, skillful means
T 474 (1), Zhi Qian,	菩薩行善權方便故, 於佛國得道, skillful means
T 221 (8), Mokṣala,	若善男子、善女人以無央數方便持般若波羅蜜, skillful means
T 425 (2), Dharmarakṣa,	諦受興發諸菩薩眾善權方便, skillful means

The concordance shows that, even though ‘skillful means’ (Sanskrit: *upāya*) 方便 is often associated with *Mahāyāna* and An Shigao is considered a Mainstream Buddhist translator, he used the term in a similar sense. Obvious *Mahāyāna* contexts are demonstrated by the examples of Mokṣala and Dharmarakṣa in the table, which refer to the bodhisattva path.

A concordance for 空 *kōng* is shown in Table 23 below. Only selected instances are shown due to space.

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<sup>390</sup> Shen, *Phonological History of Chinese*, 313-314; Kroll, *Dictionary of Classical and Medieval Chinese*, 346.

<sup>391</sup> Rong, *Eighteen Lectures on Dunhuang*, 342.

Table 23: Concordance for 空 *kōng*

T 607, An Shigao:	如是世間輪不斷，無所屬、空、如幻，逐不止, without substance
T 224 (3), Lokakṣema:	知般若波羅蜜空無所有，無近無遠，是故為菩薩摩訶薩般若波羅蜜, without substance
T 210 (1), Vighna and Zhi Qian:	說意精神雖空無形，造作無竭。 , formless
T 474 (1), Zhi Qian:	是身非有，四大為家；是身為空，無我無性無命無人, without inherent existence
T 221 (1), Mokṣala:	志在無常、苦、空、無我人想，無所樂想, without inherent existence

The concordance for 空 *kōng* illustrates that variety of senses that are used and that they are all related to An Shigao's sense of 'without substance.' These two examples show that the Mokṣala usage evolved from the Mainstream Buddhist senses of the terms.

### The Impact of Buddhist Terminology on the Chinese Language

A number of words in the corpus in this study can be traced to everyday modern Chinese. For example, the word 'convenient' 方便 *fāngbiàn* in modern Chinese evolved from the Buddhist term *upāya* 方便, meaning 'skillful means'.<sup>392</sup> Liang<sup>393</sup> also traces the

<sup>392</sup> Xiang, *Middle Chinese Lexicon 1*, 79.

<sup>393</sup> Liang, *Fojiao yu Hanyu Cihui*, 81-86.

evolution of the term from its origin as a Buddhist term to its modern Chinese usage as ‘convenience.’ The translation for the term was established by An Shigao. An Shigao used the term in a number of texts that he translated. For example, in Entry No. 7 *Sūtra on the Grounds of the Way* 道地經,<sup>394</sup>

聽說 要止意，二因緣方便行得止意：一者念惡露，二者念安般守意。

It is said that to calm the mind, one can employ two causes and conditions as **skillful means**: first, be mindful of defilements, and second, the mindfulness of breathing.

How do we know that there was no secular use of 方便 *fāngbiàn* before An Shigao? The highly regarded etymological dictionary *Ciyuan*<sup>395</sup> gives the origin as Buddhist but not the earliest use. The two quotes given by *Ciyuan* are a poem by the Tang dynasty poet Meng Haoran 孟浩然 and the *Jingde Records of the Transmission of the Lamp* 景德傳燈錄 (T 2076), also compiled in the Tang. Those examples are far later than the examples identified by the methodology in this dissertation.

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<sup>394</sup> T 607, 15.0235c14.

<sup>395</sup> Guangdong, Guangxi, Hunan, Henan Ci yuan xiu ding zu, *Ciyuan* 辭源 (Hong Kong: Commercial Press, 1979), 1383.

The modern Chinese word ‘present’ 現在 *xiànzài* also originated as a Buddhist term.<sup>396,397</sup> Zhi Qian established this term in the third century. For example, in Fascicle Two of Entry No. 57 *Vimalakīrti Sūtra* 維摩詰經,<sup>398</sup>

是諸去、來、現在佛得道者，皆說是法。

All Buddhas who have attained the Way, whether past, future, or present, all speak this Dharma.

Liang<sup>399</sup> also describes the influence of Buddhism on modern Chinese vocabulary giving examples, of ‘past’ 過去, ‘present’ 現在, and ‘future’ 未來. Liang quotes Fascicle 94 in the *Ratnakūṭa* 大寶積經 (T 310), which is later than the example from the *Vimalakīrti Sūtra* found with the methodology in this dissertation.

Liang<sup>400</sup> argues that the modern Chinese term ‘digest’ 消化 has a Buddhist origin. Liang also notes that, although *Ciyuan* 辭源, gives credit to Buddhism as the origin the word, it quotes *Fayuan zhulin* 法苑珠林, which is not the earliest use. An earlier date can be found by searching the corpus: Fascicle Eight of Entry No. 284 *Udānavarga* 出曜經<sup>401</sup> by Zhu Fonian (373-396 C.E.).

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<sup>396</sup> Xiang, *Middle Chinese Lexicon 1*, 123.

<sup>397</sup> Liang, *Fojiao yu Hanyu Cihui*, 391-396.

<sup>398</sup> T 474, 14.0535b21.

<sup>399</sup> Liang, *Fojiao yu Hanyu Cihui*, 391-396.

<sup>400</sup> Liang, 161.

<sup>401</sup> T 212, 4.0654b09.

More examples are given in Appendix D.

### Infrequently Used Terminology

As discussed above in this chapter, the majority of terms occur in the corpus a small number of times or just once. Reasons for the extensive invention of new terminology may be the pioneering nature of these early translations, but it may also be that the translators of earliest texts did not have dictionaries available to them. As mentioned in Chapter One, dictionaries of Buddhist terms did not emerge until the Southern and Northern dynasties period (420–589 C.E.). The earliest extant dictionaries are from the Tang dynasty. Also, it is unlikely that these dictionaries were used by translators after they were compiled because they were not written for Sanskrit to Chinese translation but rather to explain the Chinese terms. In this section, the potential use of these seldom used terms will be investigated for their use in determining attribution of translations.

As mentioned in Chapter One, Nattier<sup>402</sup> discusses the opening formula ‘thus I have heard,’ used in many *sūtras*. The term 聞如是 *wen rushi* could be considered an **extinct** term because it ceased to be used after Kumārajīva established 如是我聞 *rushi wo wen*. The number of anonymously produced texts with and without the phrases ‘Thus have I heard’ 如是我聞 *rushi wo wen* and 聞如是 *wen rushi* is shown in the table in Table 24.

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<sup>402</sup> Nattier, “Now You Hear It.”

Table 24: Anonymously Produced Texts Containing Variants of ‘Thus have I heard.’

如是我聞 <i>rushi wo wen</i>	聞如是 <i>wen rushi</i>	Count
Absent	Present	227
Absent	Absent	86
Present	Absent	32
Present	Present	6

‘Thus, I have heard’ 聞如是 *wen rushi* is the most common form amongst the anonymously produced texts, which is a signal indicating that they were mostly produced before the time of Kumārajīva. However, interestingly, some texts contain both phrases. For example, Entry No. 978 *Nandappravrajyā Sūtra* 佛說難提釋經 (T 113) opens with 聞如是 *wen rushi* and then in the body has a quote with 如是我聞 *rushi wo wen*. This counterexample demonstrates that use of 聞如是 *wen rushi* should not be considered conclusive evidence.

Having developed a database of which terminology was established by different translators and how they were used by later translators, more extinct terms like this can be found by querying the database. However, a simpler and more convincing form of evidence for translation attribution is **shared, unique terminology** that was created by a translator and not adopted by any others, except an anonymously produced text. The utility of this is that these unique terms are markers for the style of those translators. As discussed above, a number of texts listed as anonymously produced in the *Chu san zang ji ji* are attributed to certain translators in the *Taishō*. This unique terminology may be used to suggest translation attribution, copying, referencing, or a date range for production of the text.

A database query was developed<sup>403</sup> to identify all terms that were established by An Shigao and only adopted in anonymous texts. These terms are listed in Table 25.

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<sup>403</sup> Amies, “Terminology Usage and Analysis.”

Table 25: Uniquely Shared Terminology between An Shigao's Translations and  
Anonymously Produced Texts

Anonymous Text	An Shigao Text	Term
Entry No. 654 <i>Xin Sui Jing</i> 新歲經 (T 62, 1.0861a08)	Fascicle 1 of Entry No. 3 <i>Sūtra on the Skandha, the Dhātu, and the Ayatana</i> 陰持入經 (T 603, 15.0174b19)	'four wounds' 四瘡
Entry No. 634 <i>Sūtra on Distinguishing the Consequences of Wholesome and Unwholesome Actions</i> 佛說分別善惡所起經 (T 729, 17.0519b24)	Entry No. 7 <i>Greater Sūtra on the Grounds of the Way</i> 道地經 (T 607, 15.0233c10)	'knife leave tree' 刀葉樹
Entry No. 1928 <i>Sūtra on the Roots of Causes and Conditions</i> 緣本致經 (T 37, 1.0820c25)	Entry No. 32 <i>Sūtra on the Causes of Forms of Existence</i> 本相猗致經 (T 36, 1.0820a25)	'three pure actions' 三清淨行

Table 25: Uniquely Shared Terminology in An Shigao's Translations and Anonymously Produced Texts (Continued)

Anonymous Text	An Shigao Text	Term
Fascicle 1 of Entry No. 831 <i>Nāgasena Sūtra</i> 那先比丘經 (T 1670A, 32.0697b09)	Entry No. 16 <i>Sūtra on the Explanation of Āsrava</i> 漏分布經 (T 57, 1.0852a12)	'eight kinds of practice' 八種道行
Entry No. 19 <i>Sūtra on the Nine Causes of Untimely Death</i> 九橫經 (T 150B, 2.0883a15); Entry No. 1045 <i>Sūtra on the Disciple who Died and Returned to Life</i> 弟子死復生經 (T 826, 17.0869a12); Fascicle 1 of Entry No. 1593 <i>Abhiṣeka Sūtra</i> 灌頂經 T 1331 (1, 21.0497b25)	Entry No. 18 <i>Sūtra on Seven Places and Three Subjects for Contemplation</i> 七處三觀經 (T 150A, 2.0880b20)	'nine untimely forms of death' 九橫
Fascicle 2 of Entry No. 23 <i>Great Sūtra on the Mindfulness of Breathing</i> 大安般守意經 (T 602, 15.0173a12)	Fascicle 1 of Entry No. 13 <i>Sūtra on the Law of Ten Rewards in the Dīrgha Āgama</i> 長阿含十報法經 (T 13, 1.0236b04)	'to know one's rebirth destination' 知往生何所

The database query used to generate Table 25 uses n-gram analysis results to make sure that the AI model did not miss occurrences of the terms. In addition, the results were validated against a full text search of the *Taishō*.

Possible reasons for the unique shared terminology can be explored with other information in the corpus. Uniquely shared terminology between two texts does not necessarily indicate that they share the same translator. Patterns of word usage should be considered before concluding that. If there is just a single shared term and it is a short phrase, then it may be just a coincidence. If there are many uniquely shared terms in close proximity, it may indicate copying. As discussed in Chapter One, Sengyou notes that many texts in the catalog are extracts. Uniquely shared terminology may be due to a treatise or retranslation written with reference to an earlier scripture. In addition, it may be an argument against conclusions in secondary literature that texts should not be attributed to a translator when, in fact, there is uniquely shared terminology.

The term ‘four wounds’ 四瘡 is uniquely shared by Entry No. 654 *Xin Sui Jing* 新歲經 (T 62), treated as anonymously produced in the *Chu san zang ji ji* and Entry No. 3 *Sūtra on the Skandha, the Dhātu, and the Ayatana* 陰持入經 (T 603) translated by An Shigao. The *Xin Sui Jing* is attributed to Tanwulan 曇無蘭 in the *Taishō*. The *Sūtra on the Skandha, the Dhātu, and the Ayatana* discusses the concepts of five aggregates (skandha), eighteen elements (dhātu), and twelve entrances (ayatana) in the context of understanding the path to enlightenment. In the *Xin Sui Jing* the Buddha teaches the importance of morality and repentance for a meaningful observance of the new year.

There are only two titles with translation attributed to Tanwulan in the *Chu san zang ji ji*: Entry No. 280 *Sūtra of the Thirty Seven Chapters on Meditation* 三十七品經

and Entry No. 281 *Sūtra on the Names of a Thousand Buddhas* 賢劫千佛名經. Neither of these titles match an entry in the *Taishō*. However, there are twenty-six entries<sup>404</sup> in

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<sup>404</sup> Entries in the corpus with Taishō translation attributions to Tanwulan:

Fanzhi poboluo yan wen zun zhong jing 梵志頗波羅延問種尊經 (T 71),

Sūtra on Foam Floating in a River 佛說水沫所漂經 (T 106),

Ting shi biqiu jing 比丘聽施經 (T 504),

Sūtra on the Transformations of Life and Death 佛說見正經 (T 796),

Sūtra on Loving Oneself and Not Loving Oneself 佛說自愛經 (T 742),

Pravāraṇa Sūtra 新歲經 (T 62),

Ānanda's Seven Dreams Sūtra 阿難七夢經 (T 494),

Suffering in the Five Realms 五苦章句經 (T 741),

He tiao anahan jing 佛說呵雕阿那鎗經 (T 538),

Sūtra on the Fragrances of Upholding Precepts and Living with Virtue 佛說戒德香經 (T 116),

The King's Flower Pickers Receive a Prediction from the Buddha 採花違王上佛授決號妙花經 (T 510),

Sūtra on Kāśyapa Attending the Buddha at his Nirvāṇa 迦葉赴佛般涅槃經 (T 393),

An Elder Tells the Buddha that His Daughter-in-Law Does not Respect Him 玉耶經 (T 143),

Great Fish Sūtra 大魚事經 (T 216),

Sūtra on the Hell with Walls of Iron 鐵城泥犁經 (T 42),

Niraya Sūtra 泥犁經 (T 86),

Sūtra on the Four Hells 四泥犁經 (T 139),

Sūtra on the Fruits of the Contemplative Life 寂志果經 (T 22),

Anoufeng jing 阿耨風經 (T 58),

Sūtra on a Sincere Mind and Forthright Practice 佛說忠心經 (T 743),

Spells Taught by the Magician Bhadra 幻師鬘陀神呪經 (T 1378b),

the corpus with *Taishō* translation attributions to Tanwulan. The very large discrepancy of texts attributed to Tanwulan between the *Chu san zang ji ji* and the *Taishō* is very unusual.

We do not know much about the life and work of Tanwulan. There is no biography of Tanwulan in the *Chu san zang ji ji* or the *Biographies of Eminent Monks* (T 2059). There are two prefaces associated with Tanwulan in Fascicle Eleven of the *Chu san zang ji ji*. One of these prefaces is titled “Part Sixteen: *The Thousand Buddha Names*, Preface (extracted from the *Bhadrakalpika Sūtra*), an extract by the Monk Zhu Tanwulan”,<sup>405</sup> which states that the work was an extract.

The *Xin Sui Jing* also contains uniquely shared terminology with other texts in the corpus: the term *pravāraṇā* ‘ceremony of repentance’ 鉢和蘭 is shared with Entry No. 188 *Sūtra on the Vow of Individual Enlightenment Samādhi* 獨證自誓三昧經<sup>406</sup> translated by Dharmarakṣa and shares the term ‘inconceivable’ 無思議 with Entry No. 104 *Sūtra on the Chapter of Going Across the World* 度世品經,<sup>407</sup> also translated by

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Mañiratna Mantra 佛說摩尼羅宣經 (T 1393),

Sesame Oil Tantra 佛說檀特羅麻油述經 (T 1391),

Zhou shiqi 佛說呪時氣病經 (T 1326),

Mantra for Children 佛說呪小兒經 (T 1329),

Mantra for Tooth Decay 佛說呪齒經 (T 1327)

<sup>405</sup> 千佛名號序第十六(出賢劫經) 沙門竺曇無蘭抄 (T 2145, 55.0082b05).

<sup>406</sup> T 623, 15.0348a15.

<sup>407</sup> T 292. 10.0623c19.

Dharmarakṣa. A reasonable explanation for this uniquely shared terminology is that the *Xin Sui Jing* borrows content from multiple sources.

Although it is listed as an anonymously produced text in the *Chu san zang ji ji*, the translation of Entry No. 634 *Sūtra on Distinguishing the Consequences of Wholesome and Unwholesome Actions* 佛說分別善惡所起經 (T 729) is attributed to An Shigao in the *Taishō*. There may be some merit to this because this text and Entry No. 7 *Greater Sūtra on the Grounds of the Way* 道地經 (T 607) are the only two locations in the corpus that the term ‘knife leave tree’ 刀葉樹 is used.

The translation of Entry No. 19 *Sūtra on the Nine Causes of Untimely Death* 九橫經 (T 150B) is attributed to An Shigao in both the *Chu san zang ji ji* and the *Taishō* but it is not by Zürcher (2013, 442). This may be an oversight because no other translator uses the term ‘nine untimely deaths’ 九橫. The content is closely related to Entry No. 18 *Sūtra on Seven Places and Three Subjects for Contemplation* 七處三觀經 (T 150A) attributed to An Shigao.

It was mentioned above that Entry No. 23 *Great Sūtra on the Mindfulness of Breathing* 大安般經 (T 602) appears to be a commentary on Entry No. 2 *Sūtra on the Mindfulness of Breathing* 安般守意經, only recently discovered in the Kongō-ji manuscript, so it may be a mixture of An Shigao’s words with the writing of a later commentator. This would explain the uniquely shared use of the term ‘to know one’s rebirth destination’ 知往生何所 noted in the table.

More uniquely shared terminology for other translators will be discussed in Chapter Eight, and there is an extensive list in Appendix C.

## Synonym Analysis

One of the reasons for the large amount of Buddhist terminology is the large number of synonyms accumulated over the history of translation of Buddhist texts into Chinese. It can be important to be able to identify rarely used terms with their more common synonyms to be able to find the proper entries in dictionaries.

The FGDB has a very useful structure that lists synonyms for many entries. For example, the entry for the ‘five aggregates’ 五蘊 *wǔ yùn* reads,

五蘊

梵語 *pañca-skandha*，巴利語 *pañca khandhā*。又作五陰、五眾、五聚。

The five aggregates: Sanskrit: *pañca-skandha*, Pali: *pañca khandhā*. Also written as *wǔ yīn*, *wǔ zhòng*, or *wǔ jù*.

This is very helpful when reading canonical texts because it helps identify translation variants used in different texts. Unfortunately, the FGDB entry does not include the variant ‘five aggregates’ 五種 *wǔ zhǒng* used by An Shigao. Word embeddings can be used to discover synonyms.

A **word embedding** is a numerical vector representation of a word derived from its context in a corpus.<sup>408</sup> These are the numeric word representations that large language models use. Word embeddings organize words into a semantic space. Semantically similar words are located close together<sup>409</sup> in the semantic space formed by the word embeddings. If all the word embeddings were added to a database and the distances between each pair were computed, candidates for synonyms could be found.

Trying this out with an example, the cosine distance between 五蘊 *wǔ yùn* and 五種 *wǔ zhǒng* is 0.033, the distance between 五蘊 *wǔ yùn* and 五陰 *wǔ yīn* is 0.032. In contrast, the distance between 五蘊 *wǔ yùn* and the unrelated term ‘Sanskrit’ 梵語 is greater at 0.076. This example uses the Google Text Embeddings API<sup>410</sup> with the Gemini embeddings model for convenience, rather than computing the word embeddings from the corpus.

The process is complicated by the fact that words closely matching in the semantic space are not necessarily synonyms. For example, ‘king’ and ‘queen’ are semantically similar words but are not synonyms. Nevertheless, this concept can be applied as the core of a process to identify synonyms.

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<sup>408</sup> Tomas Mikolov, Kai Chen, Greg Corrado, and Jeffrey Dean, “Efficient Estimation of Word Representations in Vector Space,” arXiv Preprint, 2013, arXiv:1301.3781.

<sup>409</sup> As measured by the cosine distance.

<sup>410</sup> Google, “Text Embeddings API,” 2025, <https://docs.cloud.google.com/vertex-ai/generative-ai/docs/model-reference/text-embeddings-api>.

## Chapter Five: Linguistic Analysis

The methodology for linguistic analysis was described in Chapter Two. This chapter discusses the results in support of goal one - providing a holistic understanding of the corpus, predicting the attribution of translation of texts in the corpus, and using the methodology to derive and validate new findings. Although there have been previous studies that have described the linguistic characteristics of small numbers of texts before, there has not been a comprehensive survey of the corpus of texts related to the *Chu san zang ji ji* before.

### Evolution of Linguistic Characteristics over Time

In the literature survey of Chapter One it was mentioned that Gao and Meng<sup>411</sup> argued that the use of sentence-final modal particles 耶 *yé*, 耳 *ěr*, 哉 *zāi*, and 也 *yě* could be used as criteria to help to establish the period of a text.

The frequencies of 耶 *yé* as a final particle by century are shown in Figure 11.

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<sup>411</sup> Lieguo Gao and Meng Yichen, “Jiyu yuqi zhuci de keyi an shigao yijing kaobian.”

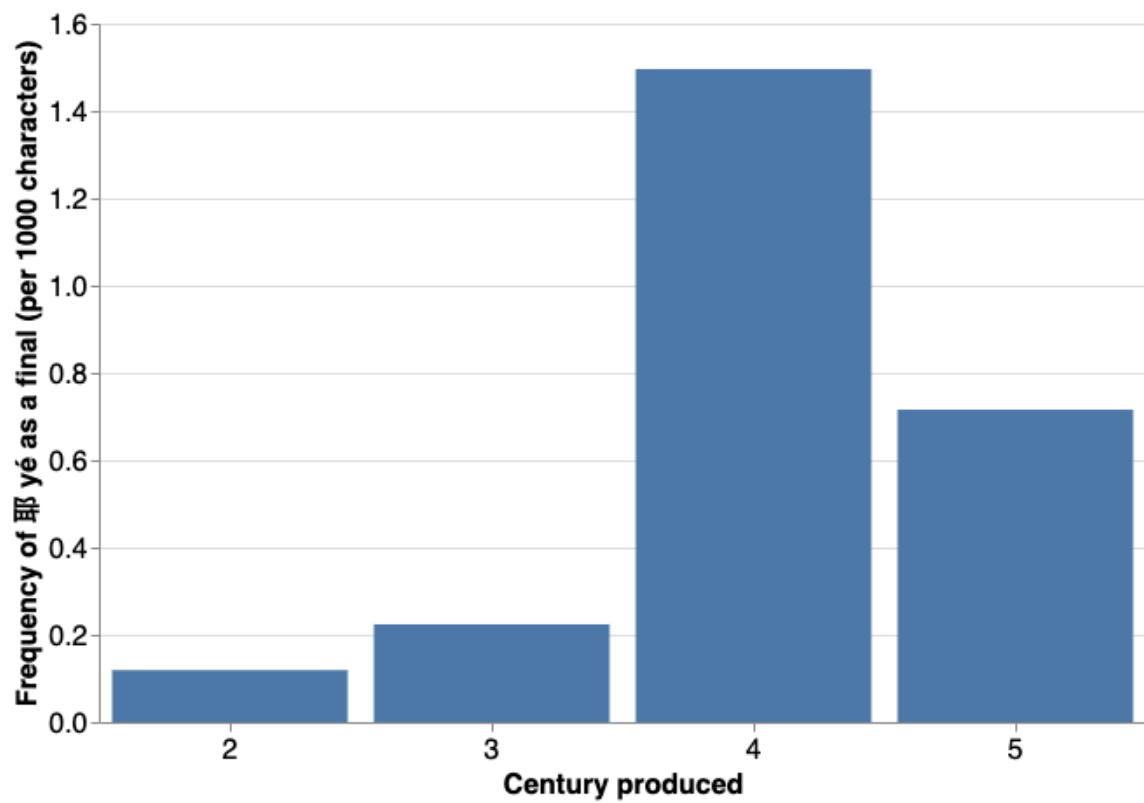


Figure 11: Frequency of 耶 yé as a Final Particle over Time

Figure 11 shows that there is very sparse use of 耶 *yé* as a final particle in the second and third centuries, which is consistent with Gao and Meng's statement of the frequency being very low in the Later Han dynasty and only increasing later. However, the pattern shown in the figure is not one that is a steady increase that can be used to provide an estimate of the age of a text, even to the nearest century. This vague pattern is typical of what the other final particles show.

The frequency of the 被 *bèi* passive construction over time is shown in Figure 12.

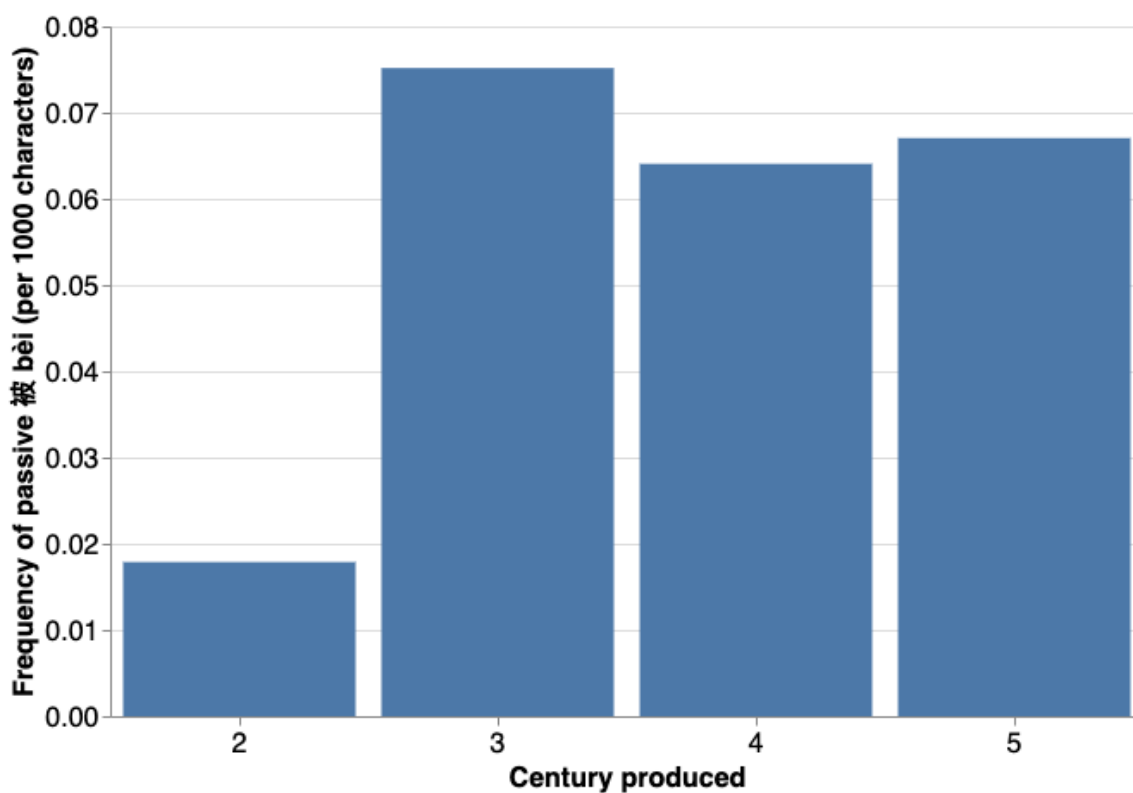


Figure 12: Frequency of 被 *bèi* Passive Construction over Time

Figure 12 shows that the frequency of the 被 *bèi* passive construction was considerably less in the second century than the later centuries.

There was no notable correlation in other features discussed in Chapter Two, other than the 耳 *ěr* final particle frequency, which trends in the opposite direction to that expected.

The variables with the greatest mutual information were final particle 耳 *ěr* frequency (0.22), delegated agency or semi-copula 謂 *wèi* frequency (0.15), and passive 被 *bèi* frequency (0.07). These values indicate that there is only a weak correlation between the linguistic variables and time over the period of this study.

One reason that may explain the weakness of the correlation is that the linguistic elements viewed above as part of the evolution of the Chinese language were actually vernacular elements that co-existed in written form together with literary Chinese over a very long period. This co-existence of vernacular and literary Chinese is argued by Mair.<sup>412</sup> Another possibility is that the period of time that the corpus covers is too short to clearly observe the language changes in question. This second explanation seems more plausible because Dobson<sup>413</sup> clearly documented changes in the structure of written Chinese over time in the Late Archaic-Han shift. The problems may also be combined: there is a combination of changes in written form and varying levels of surfacing of vernacular forms, and the timespan of the corpus is short. The role of adoption of vernacular language into written form will be examined in the next chapter.

### **Variation of Linguistic Characteristics with Translator**

The linguistic markers also vary by individual translators. The frequencies of 耶 *yé* as a final particle for the most prolific early translators are shown in Figure 13.

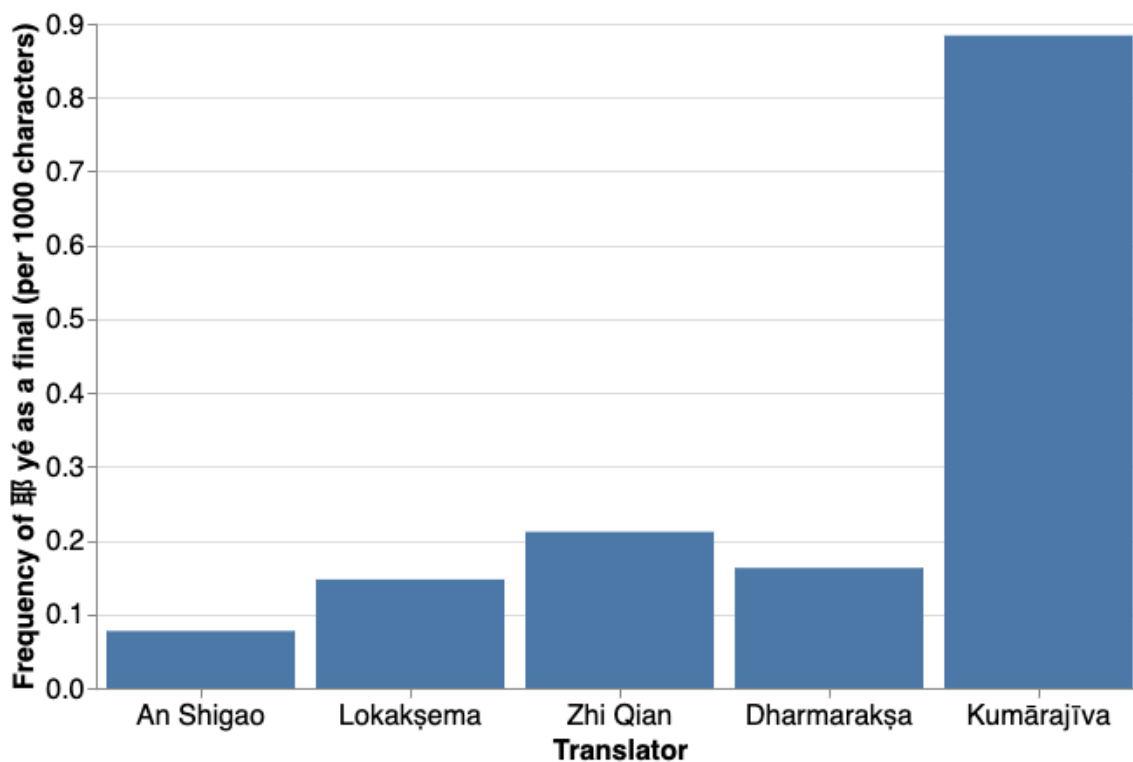


Figure 13: Variation of 耶 *yé* as a Final Particle for the Most Prolific Early Translators

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<sup>412</sup> Mair, “Rise of the Written Vernacular in East Asia.”

<sup>413</sup> Dobson, *Late Han Chinese*.

Figure 13 shows that individual translators do distort the pattern expected over time. Dharmarakṣa used 耶 *yé* as a final particle less frequently than Zhi Qian counter to the pattern expected over time. Then there is a huge increase for Kumārajīva.

In Chapter Two it was also mentioned that certain secular words, such as ‘village’ 村 *cūn*, which emerged in the Six Dynasties (220-589 C.E.), may be able to be used as to predict date ranges. The early translators An Shigao and Lokāṣema did not use this word, whereas the later translators Dharmarakṣa and Kumārajīva did. The earliest use of the word in the corpus is in Fascicle Ten of Entry No. 98 *Radiant Light Sūtra* 放光經 translated by Mokṣala in 291 C.E.,<sup>414</sup>

若起想念郡國縣邑丘聚村落

If one should give rise to thoughts of provinces, states, districts, cities, towns, **villages**, or hamlets ...

However, there are three texts<sup>415</sup> attributed to An Shigao in the *Taishō*, which are treated as anonymously produced in the *Chu san zang ji ji*, that use ‘village’ 村 *cūn*. This

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<sup>414</sup> T 221, 8.0074a16.

<sup>415</sup> Texts attributed to An Shigao in the *Taishō* that use ‘village’ 村 *cūn*:

Entry No. 951 *Sūtra on Ānanda’s Childhood Companion* 阿難同學經 (T 149, 2.0874b22)

Entry No. 1160 *Shi Zhi Jushi Ba Cheng Ren Jing* 十支居士八城人經 (T 92, 1.0916c10)

Entry No. 1321 *Sūtra on the Hell for Education of Karmic Retribution* 佛說罪業應報教化地獄經 (T 724, 17.0451b13)

implies that the texts were translated later than An Shigao's time, which is another point where the *Taishō* attributions and dates are problematic.

### **Linguistic Characteristics of Anonymously Produced Texts**

In the discussions above, some anonymously produced texts are characterized as generally predating Kumārajīva's time, with linguistic and terminological analysis suggesting a potential origin in the second or third century. While this may not be surprising considering previous studies in the secondary literature covering a small number of example texts, this dissertation systematically studies the entire list of anonymously produced texts listed in the *Chu san zang ji ji*.

A comparison of linguistic analysis results for anonymously produced texts by sections of the catalog is shown in Table 26.

Table 26: Comparison of Linguistic Analysis for Anonymously Produced Texts by *Chu san zang ji ji* Section

<b>Fascicle</b>	<b>Section</b>	<b>Number of Texts with occurrences of 聞如是 <i>wen rushi</i></b>	<b>Number of Texts with 聞如是 <i>wen rushi</i> and no Final particles</b>
3	1	12	6
3	2	61	24
3	3	4	1
3	4	3	0
4	1	153	77

The section titles listed in Table 26 are given in Chapter Three. The types of final particles are described in Chapter Two.

The data in the table show that there are texts in each section, except for “Part 4: A Recompilation of Dao'an’s List of Versions of Sūtras from Guanzhong,” that could have been produced as early as the second or third century C.E. Perhaps the ones most likely to be very early are those included in “Part 1: A Recompilation of Dao'an’s List of Old Sūtras.” These six are Entry No. 523 *Sūtra on Foam Floating in a River* 佛說水沫所漂經 (T 106), Entry No. 526 *Sūtra on Heedfulness and Heedlessness* 佛說不自守意經 (T 107), Entry No. 530 *Sūtra on the Three Attributes of a Good Horse* 佛說馬有三相經 (T 114), Entry No. 531 *Sūtra on Horses with Eight Faults* 佛說馬有八態譬人經 (T 115), Entry No. 499 *Sūtra on Mara Harassing and Agitating* 魔嬈亂經 (T 66), and Entry No. 524 *Reflecting on the Twelve Nidānas under a Patra Palm* 貝多樹下思惟十二因緣經 (T 713).

### **Validation of Results**

Validation of the results presented in this chapter is given in Appendix E.

## **Chapter Six: Analysis of Translation Style**

This chapter discusses aspects of translation style as found in the corpus analysis in support of goal two - providing a holistic view of the translation of the Indic source texts - and goal three - providing a holistic view of the differences between the texts translated from Indic sources and texts composed natively in East Asia. Although this includes discussion of the styles of some individual translators, a more detailed discussion of individual translators will be deferred to Chapter Eight.

Table 27 gives a summary of the style indicators for the most prolific early translators.

Table 27: Summary of Style Indicators Prolific Early Translators

	<b>Most Common Classification (based on count of fascicles with the classification)</b>			
<b>Style measure</b>	<b>An Shigao</b>	<b>Lokakṣema</b>	<b>Dharmarakṣa</b>	<b>Kumārajīva</b>
Verse or prose	prose	prose	mixed	prose
Syllables per line (verse)	-	-	5	-
Vernacular or literary	vernacular	vernacular	literary	literary
Literal or fluent	literal	literal	literal	fluent
Ornate or plain language	plain	plain	plain	plain

Table 27 shows the most common classification by the AI model for each style indicator based on the number of fascicles classified with the particular value.

Dharmarakṣa was the translator in the set with most mixed verse and prose translations, although we will see below that Zhi Qian was most noteworthy for his translation of verse. An Shigao and Lokakṣema had literal and vernacular styles in comparison with Kumārajīva, who had a fluent and literary style. The discussion below will describe the measurement of these subjective and subtle attributes of style with examples.

## Verse and Prose

The style analysis estimated that the number of purely verse fascicles in the corpus is only 7, the number of purely prose fascicles is 785, and the number of fascicles with a mixture is 1,030. The most common pattern is to have prose with some accompanying verse. This is an extensive amount of verse that deserves some discussion.

The designation of ‘mixed’ ranges from mostly text with a very small amount of verse to nearly all verse with just a little prose. For example, Entry No. 56 *Dharmapada* 法句經 (T 210) in two fascicles, with translation attributed to Vighna 祇難 and Zhi Qian 支謙 in 225 CE in the *Chu san zang ji ji*, is one of the best-known poetic works in early Buddhism. The style analysis classified both fascicles as mixed verse and prose. Fascicle One contains a preface, and Fascicle Two contains a very small amount of prose, so the classification as ‘mixed’ is somewhat misleading. The AI model included the note, “The style often uses 4-character lines, characteristic of early Chinese Buddhist translations.” A visual examination of the text shows that most sections use a four-character per line meter, and other sections use a five-character per line meter.

The translation of the *Dharmapada* into Chinese was not a trivial effort. Li<sup>416</sup> describes challenges to Zhi Qian in its translation. The first challenge described by Li to Zhi Qian was reworking the previous translation by Vighna. Li and others, including Nattier,<sup>417</sup> consider Zhi Qian as the primary translator of the version of the *Dharmapada* Chinese included in the *Taishō*. The *Chu san zang ji ji* states that there were two different versions of the *Dharmapada*: the first translated by Vighna and the second translated by Zhi Qian.<sup>418</sup> The preface,<sup>419</sup> written by Zhi Qian states that his translation was based on Vighna's and mentions that Zhu Jiangyan 竺將焰 also contributed to the first translation.

The second challenge described by Li is reconciling layers with multiple linguistic influences. There are Pali, Sanskrit, and Gāndhārī versions of the *Dharmapada* and each may have influenced the Chinese translation. Li gives the example of the word 'large container' 大器 *dàqì* that seems closer to the Sanskrit term *mahākumbho*, used in the *Udānavarga*, than the Pali or Gāndhārī terms used. Zhi Qian also uses the term 'large container' 大器 in Fascicle One of the *Dharmapada*.<sup>420</sup>

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<sup>416</sup> Li, "Four Challenges."

<sup>417</sup> Nattier, *Earliest Chinese Buddhist Translations*, 121.

<sup>418</sup> T 2145, 55.0015a11.

<sup>419</sup> T 210, 4.0566b15.

<sup>420</sup> Bhikkhu Ānandajoti, *A Comparative Edition of the Dhammapada with Parallels from Sanskritised Prakrit Edited Together with A Study of the Dhammapada Collection* (Ancient-buddhist-texts.net, 2020), 1-4, ebook; Li, "Four Challenges Faced by Early Chinese Buddhist Translators: A Case Study of Zhi Qian's Chinese Translation of Dhammapada," 4; T 210, 4.0564c19.

According to the style analysis performed, the most popular meter in the corpus is five syllables per line, followed by four, followed by seven. An example of a text with five-syllable verse is the *Lotus Sūtra* (T 262), translated by Kumārajīva, in fascicles one, three, six, and seven. Although four-syllable verses are present, five-syllable verses are predominant. The four-syllable verses in the *Dharmapada* have already been mentioned above. An example of seven-syllable verse is Entry No. 40 *Pratyutpanna-Samādhi Sūtra* 般舟三昧經 (T 418) translated by Lokakṣem. The *siloka* structure is the prevalent form in the Pali version of the *Dhammapada*.<sup>421</sup> Zhi Qian favored four syllable verse<sup>422</sup> and used it heavily in the Chinese *Dharmapada*. This could be considered parallel to the Indic forms or it could be due to the classical Chinese preference for four-syllable prosody.

The reason for five-syllable (pentasyllable) and seven-syllable forms probably had more to do with their popularity in Chinese poetry than an Indic origin. Sun<sup>423</sup> states that five-syllable verse was the predominant form in pre-Tang times. Liu<sup>424</sup> states that five-syllable and seven-syllable forms arose in the Han dynasty.

In summary, the corpus analysis showed that Chinese translators translated large quantities of verse but the analysis did not show that they adopted Indic forms of verse.

### Vernacular Elements

The general style analysis classified 106 fascicles as containing vernacular elements and 1,716 as literary translations. The highest numbers of fascicles of texts with

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<sup>421</sup> Ānandajoti, *Outline of the Metres in the Pāli Canon*, 18.

<sup>422</sup> Nattier, *Earliest Chinese Buddhist Translations*, 129.

vernacular elements are anonymously produced texts (70 fascicles), followed by those translated by Lokakṣema (14), Dharmarakṣa (9), An Shigao (8), and others. An example of a text marked as vernacular by the AI model is Entry No. 17 *Sūtra on the Four Noble Truths* 四諦經 (T 32) attributed to An Shigao. The notes from the AI model include, “It is not strictly vernacular but lacks the polish of high literary Chinese ... and sometimes repetitive phrasing.” Lack of polish and repetition are also points noted by Zürcher, as discussed above. For Fascicle Nine of Entry No. 38 *Practice of the Way* 道行般若經 (T 224) by Lokakṣema, the AI model noted, “The language is plain and vernacular, reflecting an early stage of Buddhist translation in China, lacking ornate literary devices or distinctively Chinese idioms.”

Another example is Entry No. 42 *Kāśyapa-parivarta* 遺日摩尼寶經 (T 350) translated by Lokakṣema. The AI model notes include, “The language leans towards a vernacular or simplified literary style, making it accessible but sometimes less refined than later classical Chinese.” Other model responses for translations by Lokakṣema and Dharmarakṣa are similar. These comments align with Zürcher’s<sup>425</sup> theory of a ‘sub-elite’ Buddhist community, discussed in Chapter One. However, the generic nature of the notes by the AI model makes this difficult to measure and validate.

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<sup>423</sup> Cecile Chu-chin Sun, *Pearl from the Dragon’s Mouth: Evocation of Scene and Feeling in Chinese Poetry* (Ann Arbor: University of Michigan, 2020), chap. 2, ebook.

<sup>424</sup> James J. Y. Liu, *The Art of Chinese Poetry* (Chicago: University of Chicago Press, 2022), loc. 557, ebook.

<sup>425</sup> Zürcher, “Obscure Texts on Favourite Topics.”

The high-level definition of ‘vernacular’ used in general style analysis rubric was augmented with a more detailed analysis of vernacular elements. As mentioned in the literature review of Chapter One, although spoken language is believed to be a driver for changes in written Chinese, vernacular writing was rare during the period of the corpus. The best examples of early written vernacular Chinese are later than the period of the corpus.<sup>426</sup> Nevertheless, some of the elements of vernacular Chinese were identified in the corpus using the rubric described in Chapter Two.

The analysis detected use of the prefix 阿 *ā*. For example, with the word ‘mother’ 阿母 in Fascicle Ten of Entry No. 101 *Lotus Sūtra* 正法華經, translated by Dharmarakṣa:<sup>427</sup>

於時二子，從虛空下行至母所，自白其母，而又手言：『阿母威德，則化父王 ...

At that time, the two sons descended from the void to their mother’s side, and with palms pressed together said: “Mother [阿母], through your majesty and virtue you have transformed our father the King ...”

In total, there are five occurrences of the word ‘mother’ 阿母 in the corpus.<sup>428</sup>

There is one occurrence of the vernacular term ‘father’ 阿父 in the corpus, Fascicle 21 of

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<sup>426</sup> Dong, *History of the Chinese Language*, 133.

<sup>427</sup> T 263, 9.0131b08.

<sup>428</sup> Occurrences of the word ‘mother’ 阿母 in the corpus:

Entry No. 102 *Lalitavistara* 普曜經 (T 186, 3.0519b24), fascicle 6, translated by Dharmarakṣa

Entry No. 363 *Mahāsaṅghika Vinaya* 摩訶僧祇律 (T 1425, 40.0381c28), fascicle 19, translated by Faxian

Entry No. 328 *Ten Part Vinaya* 十誦律<sup>429</sup> translated by Kumārajīva. There are five occurrences of the vernacular term 'uncle' 阿叔 in the corpus.<sup>430</sup>

The prefix 老 *lǎo* is used in the corpus. For example, the word 'mother' 老母 in Fascicle Six of Entry No. 282 *Ekottara Āgama*, translated by Dharmanandi and Zhu Fonian.<sup>431</sup>

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Entry No. 363 *Mahāsaṅghika Vinaya* 摩訶僧祇律 (T 1425, 40.0510b28), fascicle 35, translated by Faxian

Entry No. 282 *Ekottara Āgama* 增壹阿含經 (T 125, 2.0719c21), fascicle 31, translated by Dharmanandi and Zhu Fonian

Entry No. 101 *Lotus Sūtra* 正法華經 (T 263, 9.0131b08), fascicle 10, translated by Dharmarakṣa

<sup>429</sup> T 1435, 23.0151b04.

<sup>430</sup> Occurrences of the word 'uncle' 阿叔 in the corpus:

Entry No. 383 *Sūtra on the Virtuous Precepts of the Bodhisattvas* 菩薩善戒經 (T 1582, 30.0960a07), fascicle 1, translated by Guṇavarman

Entry No. 323 *Treatise of Establishing Reality* 成實論 (T 1646, 32.0241b03), fascicle 1, translated by Kumārajīva

Entry No. 336 *Mahāparinirvāṇa Sūtra* 大般涅槃經 (T 374, 12.0421c02), fascicle 9, translated by Dharmakṣema

Entry No. 336 *Mahāparinirvāṇa Sūtra* 大般涅槃經 (T 374, 12.0555c06), fascicle 32, translated by Dharmakṣema

Entry No. 336 *Mahāparinirvāṇa Sūtra* 大般涅槃經 (T 374, 12.0601b26), fascicle 40, translated by Dharmakṣema

<sup>431</sup> T 125, 2.0572a21.

The suffix 兒 is also used in the corpus. For example, in the word ‘child’ 小兒 in Fascicle Six of Entry No. 93 *Sūtra of the Collection of the Six Perfections* 六度集經, translated by Kang Senghui.<sup>432</sup>

Reduplicated nouns are also present in the corpus. For example, in Entry No. 7 *Sūtra on the Grounds of the Way*, translated by An Shigao,<sup>433</sup>

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<sup>432</sup> T 152, 3.0035b23.

<sup>433</sup> T 607, 15.0235b09.

譬如火起城中，火風吹，舍舍相燃

Like a fire breaking out in a city; driven by the wind, it spreads from house to house [舍舍], setting them all ablaze.

The verb ‘say’ 道 *dào*, characteristic of vernacular language, appears in the corpus. For example, in the anonymously produced Entry No. 653 *Sūtra on the Teachings to Sudatta's Daughter-in-Law* 玉耶女經, which reads,<sup>434</sup>

道他好醜

“Said that he was very ugly.”

The pronoun 這 *zhè*, also characteristic of vernacular language, is found in fifty-five locations in the corpus, although not in any texts translated by An Shigao. The earliest use was three instances by Lokāṣema. Thirty-six of the occurrences are in texts translated by Dharmarakṣa. For example, in a dialog in Fascicle Two of Entry No. 120 *Zhu fo yao ji jing* 諸佛要集經, which reads

向者何定修何道行，這興起乎？

“In the past, what did you cultivate and what path did you follow to achieve such prosperity?”<sup>435</sup>

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<sup>434</sup> T 142A, 2.0864a22.

<sup>435</sup> T 810, 17.0763b25.

The verb ‘to say’ 道 *dào* was found in one hundred and nine fascicles in the corpus. The earliest use were two instances by Lokāṣema in Fascicle Seven of Entry No. 38 *Sūtra on the Prajñāpāramitā Practice of the Way* 道行般若經. The first was misclassified by the AI model. It reads, 魔語言道 “Māra said the following about the Way, ...”<sup>436</sup> In this passage 道 *dào* means ‘Way’. The other instance in the same fascicle was correctly identified by the AI model,

我所道遠離菩薩摩訶薩不爾也。

What I call ‘avoiding’ is not the same as that of the Bodhisattva-Mahasattvas.<sup>437</sup>

The second instance was in Fascicle One of Entry No. 44 *King Ajātaśatru Sūtra* 佛說阿闍世王經.<sup>438</sup> It was invaluable to use AI to identify instances of the verb ‘to say’ 道 *dào* because the character commonly means ‘way’ and is very frequently used in Buddhist texts. Searching manually would have been too time-consuming.

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<sup>436</sup> T 224, 8.0461a14.

<sup>437</sup> T 224, 8.0461b08.

<sup>438</sup> T 626, 15.0393a17.

The second-person pronoun ‘he / she’ 渠 *qú*, the personal pronoun 伊 *yī*, the later period vernacular pronoun ‘you’ 你 *nǐ*, and the Wu regional variant ‘I’ 儂 *nóng* were not found anywhere in the corpus. The AI model often misclassified transliterations for the prefix 阿 *ā* and mistook ‘other’ 他 *tā* in the sense of the personal pronoun for the form of ‘another person’ 他人. Zürcher<sup>439</sup> gives some examples of terms used by An Shigao and Lokasema that he states diverge from classical use and should be considered vernacular, including ‘to see’ 觀見, ‘joy’ 喜樂, ‘again’ 還復, and ‘mourn’ 悲哀. However, the word ‘to see’ 觀見 is also used in *Han Feizi* 韓非子<sup>440</sup> circa 3rd century BCE. The word ‘joy’ 喜樂 is used in the *Book of Songs* 詩經<sup>441</sup> dating between the 11th and 7th centuries B.C.E. The word ‘again’ 還復 is used in the *Book of Han* 漢書<sup>442</sup> completed in 111 C.E. The word ‘mourn’ 悲哀 is also used in the *Book of Songs*.<sup>443</sup> These words should not be considered vernacular because of their use in classical texts.

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<sup>439</sup> Zürcher, “Late Han Vernacular Elements,” 29-33.

<sup>440</sup> Wai chu shuo, Zuo shang 外儲說·左上.

<sup>441</sup> Lessons from the States - Odes of Tang - Shan you shu 國風·唐·山有樞.

<sup>442</sup> Fascicle 70: Fu, chang, zheng, gan, chen, and duan 卷七十 傅常鄭甘陳段傳.

<sup>443</sup> Lessons from the states - Odes of Wei – Mang 國風·衛·氓.

Zürcher also states that the verbal compounds ‘send out’ 送出 and ‘abandon’ 捨去 and the phrases ‘beautiful’ 姝好 and ‘activate’ 發動 are also evidence of vernacular Chinese in early Buddhist texts. However, these phrases do not occur in the texts attributed to the Han translators listed in the *Chu san zang ji ji*: An Shigao, Lokāṣema, or Yan Fotiao and An Xuan. Zürcher statements on vernacular Chinese in the Han are inconsistent with the examples he gives. The results of the analysis show that the presence of known vernacular elements in the corpus is sparse in Han dynasty texts. Although there was linguistic change in written Chinese and spoken language is believed to be an important driver of that, the early translations are better described as “unrefined” rather than vernacular. The presence of vernacular elements is more common starting with Dharmarakṣa.

### Ornate Language

The style analysis performed classified 1,704 fascicles as translated with plain language and 117 fascicles as translated with ornate language. Notable examples of texts with ornate language are the translation of Entry No. 101 *Lotus Sūtra* 正法華經 (T 263) by Dharmarakṣa, the translation of Entry No. 108 *Daśabhūmika Sūtra* 漸備一切智德經 (T 285) by Dharmarakṣa, and the translation of Entry No. 350 *Avataṃsaka Sūtra* 大方廣佛華嚴經 (T 278) by Buddhahadra. The style analysis classified seven of the ten fascicles of T 263, three of the five fascicles of T 285, and thirty-five of the sixty fascicles of T 278 as having an ornate translation style.

For Fascicle One of Buddhahadra’s translation of the *Avatamsaka Sūtra*, the explanatory note of the style analysis states, “It uses ornate and descriptive language, particularly when depicting the Buddha’s environment and the qualities of various beings.” This may have to do as much with the content of the text, which, for example, includes the sentence “The ground is made of diamond, fully adorned and pure, decorated with various jewels and flowers.”<sup>444</sup>

### Terse and Verbose Styles

In the distinction between terse or verbose styles, the AI model classified 1,597 fascicles as verbose and 225 fascicles as terse. Examples of texts with terse styles are the translation of Entry No. 292 *Abhidharmahr̥daya* 阿毘曇心 (T 1550) by Saṃghadeva, the translation of Entry No. 325 *Fundamental Verses on the Middle Way* 中論 (T 1564) by Kumārajīva, the translation of Entry No. 388 *Sarvāstivādinayamātrkā* 薩婆多部毘尼摩得勒伽 (T 1441) by Saṅghavarman. Three of the four fascicles of T 1550 were classified as terse, two of the four fascicles of T 1564, and eight of the ten fascicles of T 1441.

For Fascicle One of *Abhidharmahr̥daya*, the explanatory notes of the style analysis included that “The language is plain and terse, focused on analytical exposition rather than ornate style.” A plain and terse style is appropriate for this text which contains many lists and explanations of characteristics of dharmas. The results of this analysis are limited by the lack of demonstratable evidence.

Use of Indigenous Chinese Philosophical Concepts The style analysis identified 86 fascicles where Buddhist teachings were interpreted according to indigenous Chinese

philosophical concepts. These include Entry No. 644 *Sūtra on the Filial Son* 孝子經 (T 687), Entry No. 646 *Sūtra on Self Love* 自愛經 (T 742), and Entry No. 667 *Sūtra on the Inner Practice of the Six Pāramitās* 菩薩內習六波羅蜜經 (T 778), all of which were anonymously translated. The explanatory note from the style analysis states for T 778 that, “A significant feature is the influence of indigenous Chinese philosophical concepts, particularly Daoist thought, in interpreting Buddhist doctrines, as evidenced by the use of terms like '道' (Dao) and '無為' (wuwei).” Greene<sup>445</sup> suggests that T 778 is a Chinese native composition, while a literature review did not find suggestions that T 687 or T 742 are Chinese native compositions.

Of the texts marked as containing Chinese philosophical concepts, seven<sup>446</sup> are classified as East Asian native compositions, according to secondary literature. Entry No. 285 *Sūtra on the Bodhisattva's Jade Necklace* 菩薩瓔珞經 (T 656) with translation

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<sup>444</sup> 其地金剛具足嚴淨，眾寶雜華以為莊飾 (T 278, 9.0395a07)

<sup>445</sup> Greene, “Doctrinal Dispute in the Earliest Phase of Chinese Buddhism: Anti-Mahāyāna Polemics in the Scripture on the Fifty Contemplations” 100-101.

<sup>446</sup> Texts using Chinese philosophical concepts and classified as East Asian indigenous compositions:

Entry No. 285 *Sūtra on the Bodhisattva's Jade Necklace* 菩薩瓔珞經 (T 656) attributed to Zhu Fonian

Entry No. 667 *Sūtra on the Inner and Outer Six Pāramitās* 佛說菩薩內習六波羅蜜經 (T 778), anonymous

Entry No. 724 *Vajrasamādhi Sūtra* 金剛三昧經 (T 273), anonymous

Entry No. 825 *Samādhi-Sūtra on Liberation through Purification* 佛說淨度三昧經 (X 15), anonymous

Entry No. 1382 *Yulan jing* 佛說盂蘭盆經 (T 685), anonymous

Entry No. 1592 to 1602 *Abhiṣeka Sūtra* 灌頂經 (T 1331), anonymous

Entry No. 1915 *King Yama Sūtra* 佛說預修十王生七經 (X 21)

attributed to Zhu Fonian in the *Chu san zang ji ji* is the only one of this set that was not anonymously produced. Lin and Radich<sup>447</sup> argue that this text is a composition rather than a translation based on borrowings from several texts translated by Dharmarakṣa and one by Lokakṣema. Overall, this shows that the presence of Chinese philosophical concepts to explain Buddhist teachings is a strong indicator of an East Asian indigenous composition.

### Interpolations

The style analysis classified 315 fascicles as containing interpolations. Examples include the *Great Sūtra on the Mindfulness of Breathing* 大安般守意經 (T 602), the *Drumakinnararājaparipṛcchā* 侖真陀羅所問如來三昧經 (T 624) and the *Sūtra on the Bodhisattva's Jade Necklace* 菩薩瓔珞經 (T 656). T 602 was discussed above.

For the *Sūtra on the Eightfold Noble Path* 八正道經 (T 112), the explanatory notes generated by the style analysis stated, “The repeated and expanded explanations for the eightfold path (especially the second set of interpretations) suggest interpolations for the benefit of Chinese readers.”

Of the texts containing interpolations that are classified as *sūtras*, most (38) are anonymously produced, followed by those translated by Dharmarakṣa (19). Of the *sūtras* containing interpolations, ten<sup>448</sup> are classified as East Asian indigenous compositions.

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<sup>447</sup> Lin and Radich, “A Computer-Assisted Analysis,” 151.

<sup>448</sup> Entry No. 23 *Great Sūtra on the Mindfulness of Breathing* 大安般守意經 (T 602)

Entry No. 285 *Sūtra on the Bodhisattva's Jade Necklace* 菩薩瓔珞經 (T 656)

This shows that the presence of interpolations is also a strong indicator of an East Asian indigenous composition.

### Interlinear Commentary

The style analysis classified 193 fascicles as containing interlinear commentary. It might be expected that most texts containing interlinear commentary would have a top-level genre of commentary. However, many are classified as *sūtras*. Of the *sūtras* containing interlinear commentary, most (15) are anonymously produced, followed by those translated by Dharmarakṣa (14). Examples are the anonymously produced Entry No. 816 *Sūtra of the Divine and Limitless Transformations of the Way* 道神足無極變化經 (T 816) and the translation of Entry No. 128 *Sūtra on the Magician Bhadra* 幻士仁賢經 (T 324) by Dharmarakṣa.

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Entry No. 286 *Sūtra on Cutting Ties in the Ten Dwellings* 最勝問菩薩十住除垢斷結經 (T 309)

Entry No. 667 *Sūtra on the Inner and Outer Six Pāramitās* 佛說菩薩內習六波羅蜜經 (T 778)

Entry No. 825 *Samādhi-Sūtra on Liberation through Purification* 佛說淨度三昧經 (X 15)

Entry No. 1382 *Yulan jing* 佛說盂蘭盆經 (T 685)

Entry No. 1484 *Prajñāpāramitā Sūtra on Humane Kings and Protection of the State* 佛說仁王般若波羅蜜經 (T 245)

Entry No. 1593 to 1602 *Abhiṣeka Sūtra* 灌頂經 (T 1331)

Entry No. 1649 *Mantra for a Safe Home* 佛說安宅神呪經 (T 1394)

Entry No. 1915 *King Yama Sūtra* 佛說預修十王生七經 (X 21)

An example of an interlinear comment in the *Sūtra on the Magician Bhadra* is “called Renxian in Chinese” 晉言仁賢.<sup>449</sup> The phrase is parenthesized in the *Taishō*.

A pattern has emerged that anonymously translated texts and those translated by Dharmarakṣa are most likely to contain both interpolations and interlinear commentary. The only *sūtra* containing interlinear commentary and classified as an East Asian indigenous composition is the *Abhiṣeka Sūtra* 灌頂經 (T 1331). So, interlinear commentary is not a good indicator of whether a *sūtra* is a Chinese native composition.

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<sup>449</sup> T 324, 9.0031a27.

## Traces of Oral Transmission

The style analysis found that most of the texts in the corpus had signs of oral transmission. For example, for Entry No. 8 *Sūtra on the Conditions for Desire and Rebirth* 人本欲生經 (T 14) the AI model noted, “Its verbose nature is evident in the frequent repetition of phrases, especially in the enumeration of causal chains and the question-and-answer dialogues, which also strongly suggest a text intended for oral transmission and memorization.”<sup>450</sup>

## Literal versus Fluent Translation Style

The style analysis classified the overwhelming majority of the corpus (1,537 fascicles) as literal and the minority (285 fascicles) as fluent. The translators marked most frequently as fluent are Kumārajīva followed by Zhi Qian. Translators marked as having a literal style by the style analysis include An Shigao, Lokakṣema, Dharmarakṣa, Kang Senghui, and others. Zhi Qian had mixed results being marked as fluent in some texts and literal in others.

The explanatory notes by the AI model demonstrate data leakage. For example, for Fascicle Two of Entry No. 101 *Lotus Sūtra* 正法華經 (T 263) translated by Dharmarakṣa, the AI model stated, “Dharmarakṣa's style is generally recognized as literal, often translating Indic phrases word-for-word.” While it may be correct, this implies that the AI model used data about Dharmarakṣa's translation style from its training rather than the text that was supplied to it. Boucher<sup>451</sup> notes that Dharmarakṣa's translation style was often quite literal, so it may be a source of this information.

In another example, for Entry No. 53 *Sūtra of the Dharma Mirror* 法鏡經 (T 322), translated by Yan Fotiao and An Xuan, the notes by the AI model included, “highly literal, often sacrificing fluent Chinese syntax and natural flow to adhere closely to the source text's structure.” This comment reveals a big assumption by the AI model, which did not have the source text to compare the Chinese with.

The high-level style analysis rubric field for whether the translation style is literal or fluent is a subjective assessment without comparing the Chinese text against a Sanskrit source. However, assuming that Chinese texts were translated from some Indic source texts the translators needed to adapt the more complex grammar of Indic languages to Chinese. Markers for this adaptation of Indic grammar into Chinese were discussed in the literature review in Chapter One and their measurement was discussed in Chapter Two. Table 28 compares the high-level AI model assessment of literal versus fluent translation style to the word frequencies related to adaptation of Indic grammar.

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<sup>450</sup> Alex Amies, “Style CSV,” Silk Road Corpus Repository, March 28, 2026, [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/data/style.csv](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/data/style.csv).

<sup>451</sup> Boucher, “Buddhist Translation Procedures,” 220.

Table 28: Average Frequencies of Chinese Terms Literally Translating Indic Grammatical Features versus AI Model Assessment of Literal or Fluent Translation

Chinese term	Frequency per 1,000 characters	
	Classified as a literal translation	Classified as a fluent translation
First-person 'I' 吾 <i>wú</i>	0.17	0.07
First-person 'I' 我 <i>wǒ</i>	5.08	2.83
Second-person 'you' 汝 <i>rǔ</i>	2.01	1.11
Plural 諸 <i>zhū</i>	6.9	6.58
Plural 等 <i>děng</i>	2.88	3.29
Plural 輩 <i>bèi</i>	0.04	0.04
Past tense 已 <i>yǐ</i>	3.32	1.2
Past tense 昔 <i>xī</i>	0.13	0.04
Present tense 今 <i>jīn</i>	1.78	1.1
Future tense 當 <i>dāng</i>	2.78	1.95

Table 28 shows that there is merit in the subjective assessment of the literal style of translations by the model. As discussed in Chapter One, in Sanskrit it is generally required to indicate the subject of a sentence explicitly whereas in Chinese it is optional and the Chinese pronouns can function as either the subject or object. Thus, the presence of personal pronouns is an indication but not a direct measure of explicit use of a subject. Nevertheless, there is a clear pattern. The table shows that the use of the personal pronouns 'I' 吾 *wú*, 'I' 我 *wǒ*, and 'you' 汝 *rǔ* were each used approximately two times more frequently in texts assessed to be literal translations than those assessed to be fluent. There was not a substantial difference in the frequencies of the plural markers 諸 *zhū*, 等 *děng*, and 輩 *bèi*. The tense adverbs were used 1.5 to 2.5 times more frequently for texts assessed to be literal than those assessed to be fluent.

Table 29 shows the variation of these style markers for several of the most prolific early translators.

Table 29: Measures of Adaptation to Indic Grammar for Prolific Early Translators

Chinese term	Frequency per 1,000 characters			
	An Shigao	Lokakṣema	Dharmarakṣa	Kumārajīva
'I' 吾 <i>wú</i>	0.25	0.09	1.13	0.03
'I' 我 <i>wǒ</i>	1.65	4.35	<b>2.26</b>	4.08
'you' 汝 <i>rǔ</i>	0.0	0.73	0.43	1.93
Plural 諸 <i>zhū</i>	1.47	6.2	8.91	7.19
Plural 等 <i>děng</i>	4.76	2.23	3.32	3.37
Plural 輩 <i>bèi</i>	0.16	0.37	0.12	0.03
Past 已 <i>yǐ</i>	<b>6.51</b>	1.66	1.45	1.89
Past 昔 <i>xī</i>	0.0	<b>0.19</b>	0.11	0.04
Present 今 <i>jīn</i>	0.51	1.19	1.27	1.49
Future 當 <i>dāng</i>	5.11	<b>6.65</b>	3.16	2.25

Table 29 shows that it is overly general to characterize translation style as either 'literal' or 'fluent'. Each translator has their predisposition for different aspects of the translation of grammatical features of Indic sources.

It is striking that Dharmarakṣa uses 'I' 吾 *wú* far more frequently than any of the other translators. In preclassical Chinese 我 *wǒ* was used as a plural form and in classical

times, both were used with 吾 *wú* being more common of the two.<sup>452</sup> In Modern Standard Chinese, 我 *wǒ* has completely replaced 吾 *wú*. Dharmarakṣa's frequent use of 吾 *wú* gives his translations an archaic feel. Kumārajīva's nearly exclusive use of 我 *wǒ* is more natural for modern readers.

An Shigao's very frequent use of the past tense adverb 已 *yǐ* is striking and may contribute to the perception of his translation style as being literal. Similarly, Lokakṣema's comparatively frequent use of the past tense adverb 昔 *xī* and the future tense adverb 當 *dāng* may contribute to the perception of his translation style as being literal.

Table 30 compares the frequencies of Chinese terms used to literally render the grammatical features of the Indic source texts into Chinese for both translations of Indic texts and East Asian native compositions.

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<sup>452</sup> Pulleyblank, *Outline of Classical Chinese Grammar*, 77.

Table 30: Average Frequencies of Chinese Terms Literally Translating Indic Grammatical Features for Translations from Indic Sources and East Asian Indigenous Compositions

Chinese term	Frequency per 1,000 characters	
	Indic source text	East Asian indigenous composition
First-person 'I' 吾 <i>wú</i>	0.46	0.88
First-person 'I' 我 <i>wǒ</i>	4.63	3.29
Second-person 'you' 汝 <i>rǔ</i>	1.79	1.3
Plural 諸 <i>zhū</i>	6.43	6.44
Plural 等 <i>děng</i>	2.73	2.55
Plural 輩 <i>bèi</i>	0.1	0.49
Past tense 已 <i>yǐ</i>	2.95	1.38
Past tense 昔 <i>xī</i>	0.17	0.21
Present tense 今 <i>jīn</i>	1.79	1.91
Future tense 當 <i>dāng</i>	3.31	3.35

Table 30 shows that there is no clearly recognizable pattern in the average frequencies of the terms in East Asian indigenous compositions compared with texts known to be translated from Indic sources. This suggests that the East Asian indigenous compositions were either patchworks of Indic sources assembled in China or imitated the style of literal translations.

## East Asian Indigenous Compositions

The results of the style analysis show that East Asian indigenous compositions are not obvious forgeries, although many use Chinese philosophical concepts to explain Buddhist teachings. It is possible that a large number of texts are not translations but are explanations, summaries, and compositions of sincere religious devotion.

Buswell<sup>453</sup> uses the word ‘apocryphon’ to describe the Korean composition of the *Vajrasamādhi Sūtra*, a term which carries the connotation of ‘forgery’. However, Silk<sup>454</sup> describes a variety of text that was put down in writing in China but based on what the compilers sincerely believed were valid Indian Buddhist concepts, describing the case of the *Sūtra on the Twelve Ascetic Practices* 十二頭陀經 (T 783). Another example is the *Sūtra on King Ajātaśatru’s Reception of his Prediction* 阿闍世王受決經一卷 (T 509) described by Wu<sup>455</sup> as a patchwork text drawing from a number of Indian sources but with no specific parallel of the combination in Indian literature.

The majority of texts in the *Chu san zang ji ji* are anonymous and Sengyou does not state that they are translations. Sengyou gives a sense of the origin of many of the miscellaneous scriptures in Fascicle Four in his introduction to “Part One: New List of

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<sup>453</sup> Buswell, *Formation of Ch’an Ideology*.

<sup>454</sup> Jonathan A. Silk, “Assembled in China: A Study of the Shi’er Toutuo Jing 十二頭陀經” in *Ratnakūṭa Studies*, Volume I, ed. Rafal Felbur. Ratnakūṭa Studies (Leiden; Boston: Brill, 2024): 122–197.

<sup>455</sup> Juan Wu, “From Perdition to Awakening: A Study of Legends of the Salvation of the Patricide Ajatasatru in Indian Buddhism” (Cardiff: Cardiff University, 2012), 38.

Additional Anonymously produced and Miscellaneous Sūtras”

新集續撰失譯雜經錄第一:<sup>456</sup>

其一卷以還五百餘部。率抄眾經全典。蓋寡觀其所抄。多出四銙六度道地大集出曜賢愚及譬喻生經。並割品截揭撮略取義。強製名號仍成卷軸。

There are over five hundred works of one scroll or less. These are generally excerpts from complete canonical scriptures. Judging from what they excerpted, most are drawn from the four Āgamas, *Sūtra of the Collection of the Six Perfections*, *Sūtra on the Grounds of the Way*, *Mahāsaṃnipāta Sūtra*, *Udānavarga*, *Sūtra on the Wise and Foolish*, as well as scriptures of parables and rebirth stories. They often involve cutting out sections, rearranging or condensing the meanings, and forcefully creating titles to form scrolls.

This process of extraction and repackaging into stand-alone texts may have taken place in India or China, first orally and then later written down or written down directly.

### Validation of Results

The issue of data leakage was mentioned in the discussion above on literal versus fluent translation style with the example of the translation of the *Lotus Sūtra*, translated by Dharmarakṣa.

The style analysis of elements of oral transmission presented above possibly indicates model bias because the explanatory notes for different texts were very similar and were based on generic descriptions rather than elements from the particular texts provided. Therefore, more weight should be given to the analysis based on word frequencies.

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<sup>456</sup> T 2145, 55.0021b18.

## Chapter Seven: Content Analysis

This chapter discusses content analysis, including genre analysis, topic analysis, and named entity recognition. Genre analysis includes top-level and *Taishō* genres. Named entity recognition is most directly related to goal one, discovering the people, places, and texts in the corpus of early Chinese texts and describing their role in the transmission of Buddhist teachings. The period after Aśoka to the end of the period of the corpus is particularly interesting because of the general lack of historical facts on Indian Buddhism during this time. The historical setting of the period between the Buddha and Aśoka (consecrated circa 268-267 B.C.E.) is described in substantial detail by multiple sources, including the Chinese canon and the Sinhalese tradition<sup>457</sup> as well as archeological finds in India. Our knowledge of Kaniṣka I and the Kuṣāṇa Empire comes mainly from inscriptions and coins and has been challenging to date but thought to have begun around 127 C.E.<sup>458</sup>

### Topic Analysis

The topic analysis for the presence of parables, miracles, and biographies of *sūtras* is summarized in Figure 14 below.

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<sup>457</sup> Etienne Lamotte, *History of Indian Buddhism: From the Origins to the Saka Era* (Louvain-la-Neuve: Université catholique de Louvain, Institut orientaliste, 1988), 13-14.

<sup>458</sup> Skinner, “Marks of Empire,” 9.

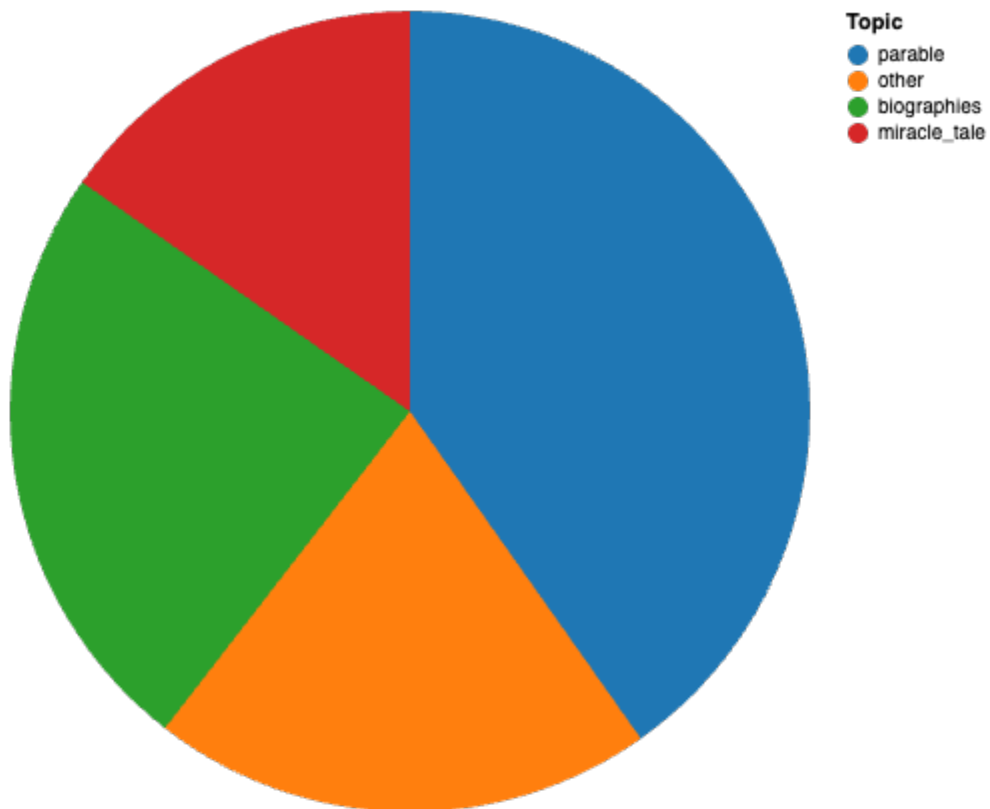


Figure 14: Topic Analysis of Sūtras for Parables, Miracles, and Biographies (proportion of fascicles)

The striking aspect of Figure 14 is the large proportion of fascicles falling into the ‘other’ category (orange), which indicates the broad spectrum of *sūtra* genres. Examples of ‘other’ include discourses, such as Entry No. 20 *Sūtra on the Eightfold Noble Path* 八正道經 (T 112), instruction on meditation, such as Entry No. 35 *Sūtra on the Perception of Dharmas in Meditation Practice* 禪行法想經 (T 605), and poetry like Entry No. 56 *Dharmapada* 法句經 (T 210). Sixty percent of the ‘other’ category includes philosophical argumentation. Examples of *sūtras* with philosophical argumentation include Entry No. 98 *Radiant Light Prajñāpāramitā Sūtra* 放光般若經 (T 221), Entry No. 99 *Sūtra in Praise of the Light* 光讚經 (T 222), and Entry No. 296 *Perfection of Wisdom in 25,000 Lines* 摩訶般若波羅蜜經 (T 223). The *Prajñāpāramitā* literature is strongly marked by philosophical argumentation, but it is not the only genre that contains it.

A topic analysis of commentary types is shown below in Figure 15.

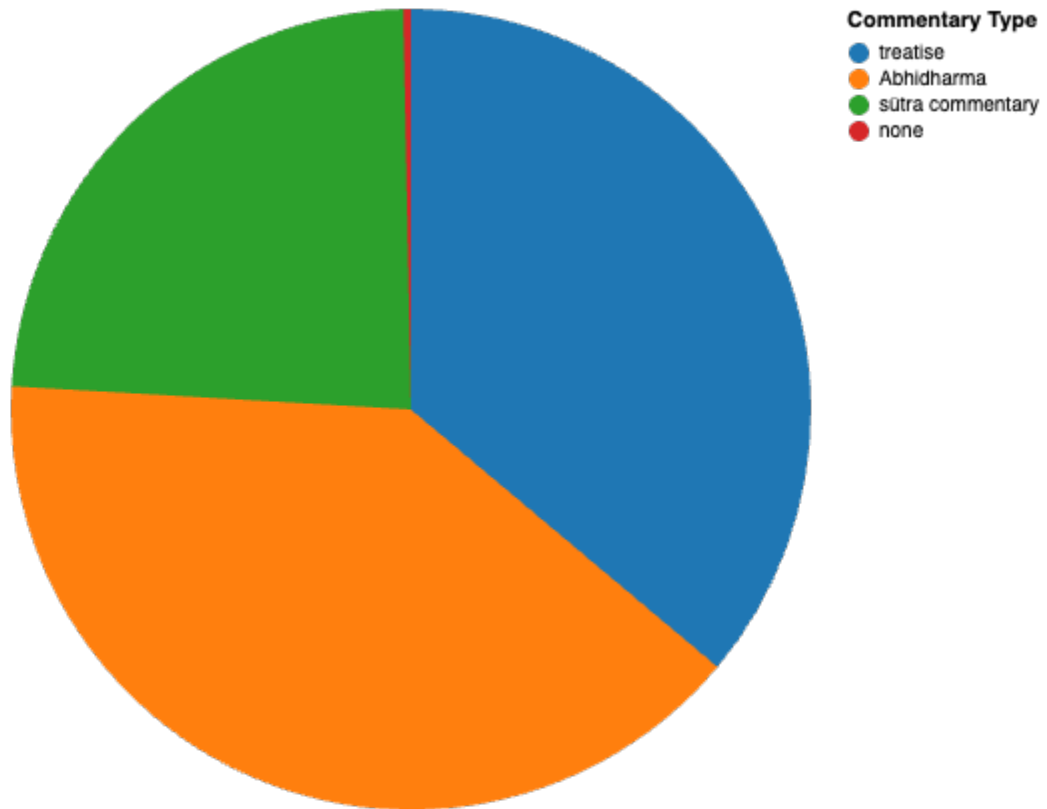


Figure 15: Summary of Commentary Types (proportion of fascicles)

Figure 15 shows that commentaries are a more uniform and predictable genre than *sūtras*. They are roughly divided between treatises, Abhidharma, and *sūtra* commentaries. Only a single commentary does not fit into one of these categories.

### References to Historic People, Places, and Texts

As mentioned above, in tracing historic context, the historic references to people, places, and texts mentioned in the corpus are especially interesting.

Using the database of results of the n-gram analysis, the corpus can be searched for references to historic figures. When searching for specific Chinese strings this can be done without the need for named entity recognition. In Chapter One the literature review mentioned the patriarchs Aśvagoṣa 馬鳴, Nāgārjuna 龍樹, and Āryadeva 提婆. In the corpus there are three references to Aśvagoṣa Bodhisattva 馬鳴菩薩, 131 references to Nāgārjuna 龍樹, and three references to Āryadeva Bodhisattva 提婆菩薩. The specific locations of these references are given in Appendix G. An example of a reference in the preface to Entry No. 322 *Treatise on the Great Perfection of Wisdom* 大智度論 by Sengrui 僧叡 is,

Therefore, the Indian records state: “At the end of the Semblance and True Dharma periods, were it not for Aśvagoṣa and Nāgārjuna, the gates of spiritual learning would have surely been lost and submerged!”<sup>459</sup>

It is not clear what “Indian records” 天竺傳 are referred to this passage.

Hagiographies were able to be pieced together by later authors based on references to the patriarchs sprinkled throughout the corpus, like this one.

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<sup>459</sup> 故天竺傳云：「像、正之末，微馬鳴、龍樹，道學之門其淪胥溺喪矣！」(T 1509, 25.0057b13).

The corpus includes four texts in the History and Biographies section of the *Taishō*: Entry No. 941 *Kāśyapa's Collection* 迦葉結經 (T 2027), Entry No. 1761 *Jia Ding Biqu Shuo Dang Lai Bian Jing* 迦丁比丘說當來變經 (T 2028), Entry No. 289 *Story of How King Aśoka's Son Lost his Sight* 阿育王息壤目因緣經 (T 2045), and Entry No. 430 *History of the Transmission of the Dharma Treasury* 付法藏因緣傳 (T 2058). *Kāśyapa's Collection* describes the situation just after the passing of the Buddha, where Arhats gathered to recite the scriptures. Kāśyapa urged his fellow monks to come together to protect the Buddha Dharma for the benefit of future generations. The content is very similar to the extract from the *Treatise on the Perfection of Great Wisdom* that Sengyou includes in Fascicle One of the *Chu san zang ji ji*.<sup>460</sup> The translation of *Kāśyapa's Collection* is treated as anonymously translated in the *Chu san zang ji ji* catalog but attributed to An Shigao in the *Taishō*.

The *Jia Ding Biqu Shuo Dang Lai Bian Jing* tells of the decline of Buddhist teachings and morality in a future era. There has been little published on this text and the content analysis did not find anything notable in it.

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<sup>460</sup> T 2145, 55.0001b24.

The *History of the Transmission of the Dharma Treasury* is an important text that was used in narratives by later Chinese Buddhist schools connecting them with the Indian Buddhist tradition.<sup>461</sup> Translation of the text is attributed to Kiñkara and Tanyao in the Northern Wei (386-535 C.E.) in six fascicles in both the *Chu san zang ji ji* and the *Taishō*. The text has been controversial in that the source and composition of the content is not clear. The *History of the Transmission of the Dharma Treasury* narrates stories of twenty-four monks who pass the Dharma to a successor. The first fascicle describes the transmission of the Dharma from the Buddha to Mahākāśyapa. The second fascicle tells of Ānanda and other early Indian patriarchs. The fourth fascicle tells of King Aśoka and his son Prince Kunala. The fifth fascicle tells of later Indian patriarchs, including Aśvaghōṣa and Nāgārjuna. The sixth fascicle ends with Siṃha, the last in the series. Numerous other historic figures are mentioned in the text, including Bimbisāra, Ajātaśatru, Śuddhodana, Aśoka, and Kaṇiṣka. The AI model was successfully able to retrieve all the historic people mentioned in the text. Details are given below.

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<sup>461</sup> Elizabeth Morrison, “Contested Visions of the Buddhist Past and the Curious Fate of an Early Medieval Chinese Buddhist Text,” *Journal of Chinese Buddhist Studies* 36 (2023): 1–30.

Morison<sup>462</sup> argues that the text is not the translation of a single Sanskrit source but rather a compilation from a number of sources, borrowing most heavily from the *Biography of King Aśoka* 阿育王傳 (T 2042). The *Biography of King Aśoka* is not included in the *Chu san zang ji ji* and thus is not included in corpus under study but it is based on the Sanskrit source text the *Aśokāvadāna*.<sup>463</sup> The Chinese translation in T 2042 is attributed to An Faqin in the Western Jin, in the *Taishō*, circa 306 C.E.<sup>464</sup> However, Palumbo<sup>465</sup> states that the source of this attribution is the *Li Da San Bao Ji* and is not reliable. A second source is Entry No. 328 *Ten Part Vinaya* 十誦律 (T 1435) of the Sarvāstivādan school, which is included in the corpus of the present study. Fascicle Sixty of the *Ten Part Vinaya* contains the story of Mahākāśyapa finding out about the Nirvāṇa of the Buddha and convening the meeting of the five hundred arhats<sup>466</sup> that is repeated both in the *History of the Transmission of the Dharma Treasury* and in the introduction in Fascicle One of the *Chu san zang ji ji*. A social network for the historical people retrieved by the named entity recognition for Fascicle One of T 2058 is shown in Figure 16.

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<sup>462</sup> Morrison, “Contested Visions.”

<sup>463</sup> Strong, *Legend of King Aśoka*, 16.

<sup>464</sup> Lancaster, *Korean Buddhist Canon*, s.v. “K 1017”.

<sup>465</sup> Palumbo, “Models of Buddhist Kingship in Early Medieval China” 311.

<sup>466</sup> T 1435, 23.0447a12.

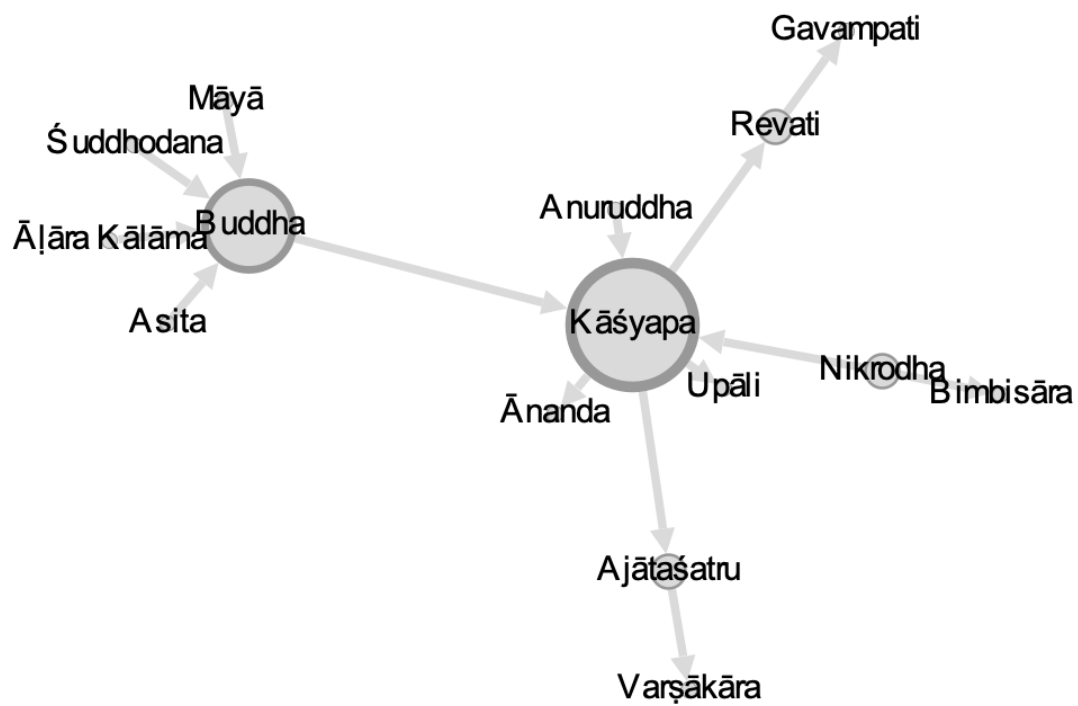


Figure 16: Social Network for People in Fascicle One of T 2058

Figure 16 highlights a major difference between n-gram search and named entity recognition: whereas n-gram search finds the texts containing items that you are looking for, named entity recognition finds all the characters in a text. Thus, named entity recognition may be more useful for discovery of new facts.

There are two focal points in the figure: the Buddha and Mahākāśyapa. However, notice that the direction of all the edges but one are in towards the Buddha. The reason for this is that the text recollects the life of the Buddha rather than depicting him as an active character. The one outward directed edge represents the Buddha entrusting the Dharma to Kāśyapa,<sup>467</sup>

如我今者將般涅槃。以此深法用囑累汝。

As I am about to enter Parinirvāṇa, I entrust the profound Dharma to you.

The main focal node in the network is Mahākāśyapa and the outward nodes reflect the content of the remainder of the text in the fascicle, which is about the actions that Mahākāśyapa took, and the people that he interacted with, to preserve the Dharma.

Transmission of teachings from master to disciple was an important principle in Indian culture predating Buddhism, described by the Sanskrit term *paramparā*.<sup>468</sup> It was mentioned in Chapter One that the narrative about the lineage of patriarchs in the *History of the Transmission of the Dharma Treasury* was viewed as an important in connecting Indian and Chinese traditions. After the story of the Buddha passing the Dharma to Mahākāśyapa, the text lists the lineage from Mahākāśyapa to Simha bhikṣu.

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<sup>467</sup> T 2058, 50.0297a08.

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<sup>468</sup> Robert H. Sharf, “Buddhist Veda and the Rise of Chan,” in *Chinese and Tibetan Esoteric Buddhism*, ed. Meir Shahar and Yael Bentor (Leiden: Brill, 2017), 88-89.

As Gregory notes,<sup>469</sup> the *History of the Transmission of the Dharma Treasury* later became an indispensable item in the Chan construction of a lineage. However, it inconveniently ended the transmission with Simha bhikṣu, whose head was cut off before he could transmit the Dharma to an heir. This doctrinal difficulty in the continuity of Dharma transmission was later resolved by Zongmi's conception of 'mind transmission' 心地.

One of the most interesting points about the named entity recognition analysis is the list of texts references discovered. For example, in Fascicle One of Entry No. 322 *Treatise on the Great Perfection of Wisdom* 大智度論 (T 1509), the named entity recognition reports references to the *Mahāprajñāpāramitā Sūtra*, *Madhyama Āgama*, *Dharmapada*, *Buddha's Two Nights Sūtra*, *Raft Parable Sūtra*, and other texts. This fascicle is a preface by Sengrui 僧叡, an Eastern Jin dynasty monk and senior member of Kumārajīva's translation team.<sup>470</sup> This is a very useful item of information that tells what texts Kumārajīva's translation team had access to and likely referred to in their adoption of Buddhist terminology in Chinese translation.

### **Transmission of Buddhism along the Silk Road**

It was mentioned above that it is believed that Kaniṣka I and the Kuṣāṇa Empire played an important role in the spread of Buddhism over the Silk Road. A reference to King Kaniṣka with the variant 罽呢吒王 *jì nī zhā wáng* was discovered by named entity

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<sup>469</sup> Peter N. Gregory, "The Missing Link: Simha Bhikṣu and the Construction of an Indian Chan Lineage, with Special Attention to Zongmi," *Journal of Chinese Buddhist Studies* 32 (2019).

recognition. This variant is not listed in the FGDB<sup>471</sup> entry for Kaniṣka or in the Buddhist Studies Person Authority Database,<sup>472</sup> which demonstrates the important advantage named entity recognition that it can discover previously unknown entities. This reference occurs in Fascicle Five of the *History of the Transmission of the Dharma Treasury* 付法藏因緣傳,<sup>473</sup> which describes him as a ‘Yuezhi king’ 月支國王. A search of the corpus for all the synonyms in the FGDB<sup>474</sup> and Buddhist Studies Person Authority Database<sup>475</sup> confirms that this is the earliest reference to Kaniṣka I in the Chinese Buddhist canon.

One of the most interesting references to a place along the Silk Road is in Entry No. 715 *Sūtra Illustrating the Origins of the Stūpa Commemorating Bodhisattva’s Body-Sacrifice to Save a Starving Tigress* 菩薩投身餓餓虎起塔因緣經 (T 172). The text body mentions that the story takes place in Gandhāra. The stupa in this story has been connected with the Mānikyāla Stūpa near Islamabad.<sup>476</sup> The *Taishō* attributes the text to

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<sup>470</sup> Xinzhang Luo, “Seng Rui (353?-420? CE),” in *An Anthology of Chinese Discourse on Translation: From Earliest Times to the Buddhist Project*, ed. Martha P. Y. Cheung, translated by Jane Lai. (London and New York: Taylor & Francis, 2014), 151, ebook.

<sup>471</sup> FGDB, s.v. “迦膩色迦王”.

<sup>472</sup> Bo-Yong Zhang, and Grace Ge. “Buddhist Studies Person Authority Database,” Dharma Drum Buddhist College, 2008, <https://authority.dila.edu.tw/person/>.

<sup>473</sup> T 2058, 50.0313b09.

<sup>474</sup> FGDB, s.v. “迦膩色迦王”.

<sup>475</sup> Zhang and Ge 2008, s.v. “迦膩色迦一世”.

<sup>476</sup> Junko Matsumura, “The Sūtra Illustrating the Origins of the Stūpa Commemorating Bodhisattva’s Body-Sacrifice to Save a Starving Tigress, Transmitted in Gandhāra: Text and English Translation,” *Journal of Nāṇasaṃvara Centre for Buddhist Studies (JNCBS)* 1 (2018): 126–127.

Fasheng, who visited the stupa. However, the *Chu san zang ji ji* lists the text as anonymous. The named entity recognition extracted the following places from the text: Gandhāra', Viśāla, and Peidi She.

## Validation

Quantitative validation was done with the top-level and the *Taishō* genre. The prediction of top-level genre is shown in Table 31.

Table 31: Prediction of Genre

Measure	Top-Level Genre	<i>Taishō</i> Genre
Accuracy	0.90	0.37
False positive rate	0.10	0.63

The definitions of accuracy, false positive rate, and the possible values of top-level genre used in the table are given in Appendix A. The prediction of top-level genre was good. However, the prediction of *Taishō* genre was very poor. The reasons for this may be the large number of classes and the arbitrary nature of the genres. Many of the texts fall in the Miscellaneous genre, which is a collection of texts that do not fit well with any of the well-defined genres.

The list of historic people retrieved by the content analysis in T 2058 is shown in Table 32.

Table 32: Historic People Discovered in T 2058 with Named Entity Recognition

Fascicle	Num. Correct (Incorrect)	Historical People Retrieved by the AI Model
1	16 (2)	<p>Śākyaṃuni, Vipāśyin Buddha, Mahākāśyapa, Nikrodha (尼俱律陀), Bimbisāra (瓶沙王), Ajātaśatru (阿闍世王), Varṣākāra (雨舍), Śuddhodana, Māyā, Asita (阿私陀), Ālāra Kālāma, Udraka Rāmaputra (鬱陀伽), Ānanda (阿難), Upāli (優波離), Anuruddha, Gavampati (憍梵波提), Revati (梨婆提), Maitreya</p>
2	9 (4)	<p>Dīpaṅkara Tathāgata, Kauṇḍinya (憍陳如), Maudgalyāyana (目犍連), Mañjuśrī, Kulūpa (俱樓陀), Mahādāna (大施), Vajraputra (婆闍弗), Śaṇavāsika (商那和修), Upagupta, Madhyāntika (摩田提), Śāriputra, Śakra, Sāgara (娑伽龍王)</p>
3	14 (2)	<p>Gupta (毘多), Upagupta, Satya (薩遮), Vasudattā (婆須達), Aśva-Gupta (阿失波毘多), Nanda-Gupta (難陀毘多), Māra Pāpīyān, Aśoka, Desheng (德勝), Wusheng (無勝), Qili (耆梨), Yaśas (耶舍), Piṇḍola (賓頭盧), Sudhāṣṭa (宿駄吒), Kāśyapa Buddha, Bakula (薄拘羅)</p>

Table 32: Historic People Discovered in T 2058 with Named Entity Recognition

(continued)

Fascicle	Num. Correct (Incorrect)	Historical People Retrieved by the AI Model
4	13 (1)	<p>Jikaya (吉迦夜), Tanyao, Kunāla (拘那羅), Suvarṇamālā (真金鬘), Tisyarakṣā (帝失羅叉), Krakucchanda Buddha, Duanyan (端嚴), Sudatta (須達), Rātiguṇḍa (羅提鞞), Śikhāmātī (式摩提), Devagupta (天護), Aśarā (阿沙羅), Sudṛṣṭa (善見), Kālavāda (迦羅和)</p>
5	16 (0)	<p>Śāṇavāsa (商那和修), Dhītika (提多迦), Mīcaka (彌遮迦), Buddhānandī (佛陀難提), Buddhāmītra (佛陀蜜多), Nirgrantha (尼乾), Pārśva Bhikṣu (脇比丘), Puṇyaśa (富那奢), Aśvaghōṣa (馬鳴), King Kaniṣka (罽呢吒王), Dharmāmītra (達摩蜜多), Devadharmā (天法), Caraka (遮勒), Mātara (摩咄羅), Bīla (比羅), Nāgārjuna</p>

Table 32: Historic People Discovered in T 2058 with Named Entity Recognition  
(continued)

Fascicle	Num. Correct (Incorrect)	Historical People Retrieved by the AI Model
6	11 (0)	<p>Kāṇadeva (迦那提婆), Rāhula (羅睺羅), Saṅghanandi (僧伽難提), Saṅghayaśas (僧伽耶舍), Kumāralabdha (鳩摩羅駄), Jayata (闍夜多), Vasubandhu, Manoraha (摩奴羅), Hrakṣaṇa (鶴勒那), Siṃha Bhikṣu, Mihirakula (彌羅掘)</p>
<b>Total</b>	79 (9)	

In Table 32 correctly classified historic people are colored green and incorrectly classified ones are colored red. Duplicates mentioned in multiple fascicles are listed only once in the table. Examples of incorrectly classified entities, which are false positives, are Dīpaṅkara and the *nāga* king Sāgara, which were correctly identified as present in the text but mistakenly classified as historic people. There were no historical people listed in the text that were not retrieved.

The retrieval metrics are listed in Table 33.

Table 33: Metrics for Retrieval of Historical People

<b>Measure</b>	<b>Value</b>
Accuracy	0.90
Precision	0.90
Recall	1.00
False positive rate	0.10
F <sub>1</sub> score	0.95

The values in Table 33 show that the retrieval of historical people in the content analysis was very good.

## Chapter Eight: The Translators

This chapter introduces the biography, works, and findings for each translator with attributions in the *Chu san zang ji ji* spanning from the Emperor Huan of Han (146-168 C.E.) to the latest entry in Fascicle Two, Entry No. 440 *Teachings on the Bhikṣuṇī Ordination Ceremony* 教戒比丘尼法 in 504 C.E. A number of anecdotes and stories from the catalog, prefaces, and biographies that add context to the corpus analysis are discussed in this chapter. In addition, a number of database queries used in the corpus analysis that relate to specific translators and having notable results are discussed here.

Each translator made their own contribution to the evolution of Buddhist terminology in Chinese translation. The counts of terms of different translation types established by prominent early translators are shown in Table 34.

Table 34: Counts of Distinct Terms by Translation Type Established by Early Translators

Translation Type					
	An Shigao	Lokakṣema	Zhi Qian	Dharmarakṣa	Kumārajīva
Semantic	737	543	912	6,325	7,952
Mixed	25	271	120	948	1,827
Transliteration	25	163	40	152	569
Buddhist idiom	3	7	12	144	122
Buddhist saying	3	2	13	95	149
New meaning	57	2	1	3	1

In Table 34 the order of the translators is chronological left to right and the order of the rows top to bottom in by count of translation terms. Several noteworthy points can be seen in the table data. Firstly, An Shigao was unique in the large number of terms that he established by creating new meanings for existing words. Secondly, Lokakṣema was special in the large proportion of transliterations he established. Thirdly, both Dharmarakṣa and Kumārajīva were prolific in establishing a huge number of terms. Fourth, although the proportion of transliterated and mixed terms decreased with Dharmarakṣa, Kumārajīva had a renewed propensity to establish translations of these types. These points will be discussed further below.

### **An Shigao**

An Shigao 安世高 was the first translator of Buddhist texts into Chinese with credible attribution. According to his biography in Part One, Fascicle Thirteen of the *Chusan zang ji ji*,<sup>477</sup> he was originally from Parthia, travelled in the Western Regions, and arrived in China early in the reign of Emperor Huan of Han (146-168 C.E.). He was especially proficient in Abhidharma and meditation scriptures. The biography does not mention collaboration with others in his translations or sponsorship. It is not clear whether this is because he worked alone or because we lack knowledge of his translation process. A number of aspects of An Shigao's translations have already been discussed in the chapters above, so won't be repeated here.

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<sup>477</sup> T 2145, 55.0095a07.

An Shigao's texts were mostly foundational *Āgama* texts, such as Entry No. 17 *Sūtra on the Four Noble Truths* 四諦經 (T 32) and Entry No. 20 *Sūtra on the Eightfold Noble Path* 八正道經 (T 112), commentaries, such as Entry No. 33 *Discourse of the Explanation of the Twelve Nidanas* 阿含口解十二因緣經 (T 1508), and meditation texts, such as Entry No. 2 *Sūtra on the Mindfulness of Breathing* 安般守意經 (Kongō-ji manuscript).

Some lost texts by An Shigao, including the title listed by Sengyou as *Sūtra on the Mindfulness of Breathing* 安般守意經, were found again in the Kongō-ji manuscript collection.<sup>478</sup>

Nattier<sup>479</sup> and Teng<sup>480</sup> state that Entry No. 23 *Great Sūtra on the Mindfulness of Breathing* 大安般守意經 (T 602) is probably not the work of An Shigao but likely a commentary on Entry No. 2 *Sūtra on the Mindfulness of Breathing* 安般守意經. Dao'an's preface to *Sūtra on the Mindfulness of Breathing* 安般守意經 in Fascicle Six<sup>481</sup> states that Kang Seng Hui annotated it and Kang Seng Hui's own preface to 安般守意經 also mentions a commentary.<sup>482</sup>

From Table 7 above, it is clear that An Shigao was the most influential translator in the sense of establishing foundational terminology with wide adoption. This is apparent in the wide adoption of common examples, including Buddha 佛, *bhikṣu* 比丘, Tathāgata 如來, and *śramaṇa* 沙門.

One of the most striking points about An Shigao's translation style is that he established a particularly large number of terms through giving new meanings to existing

words. As noted above, An Shigao introduced nearly all the most widely used terms established from new meanings.

The greatest difference between the attributions of translations in this study and the *Chu san zang ji ji* is for An Shigao. This is perhaps due to the lack of written records in this very early stage of Chinese Buddhism. Sengyou attributes twenty-two works to An Shigao that can be related to entries in modern collections compared to fifteen works attributed to An Shigao in this study.

There is also a minor discrepancy in Sengyou's own totals. As mentioned above, Lian<sup>483</sup> discusses the history of manuscripts of the *Chu san zang ji ji* and versions of which might have been altered to account for the difference in totals. Lian proposes that the *Sūtra on the Nine Causes of Untimely Death* 九橫經 (T 150B) was the text that was added later. Nevertheless, this difference is minor compared with the differences in comparison to the texts attributed to An Shigao by Zürcher<sup>484</sup> and Nattier<sup>485</sup> based on differences in style and vocabulary, as discussed above.

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<sup>478</sup> Zacchetti, "An Shigao's Texts Preserved."

<sup>479</sup> Nattier, *Earliest Chinese Buddhist Translations*, 60-61.

<sup>480</sup> Teng, "A Study of Chinese Buddhist Contemplation of Ānāpāna in the Han, Wei and Jin Dynasty: Focusing on the 'An-Ban Shou-Yi Jing' 漢魏晉中國佛教安般禪觀—以《安般守意經》為中心."

<sup>481</sup> T 2145, 55.0043c05.

<sup>482</sup> T 2145, 55.0043a01.

<sup>483</sup> Haochen Lian, "Chu san zang ji ji Wenben Zhi Zengbu Yu Cuo zhi 《出三藏記集》文本之增補與錯置."

<sup>484</sup> Zürcher, "Earliest Chinese Buddhist Texts."

<sup>485</sup> Nattier, *Earliest Chinese Buddhist Translations*, 38-72.

An Shigao's use of the term 'empty' 空 was mentioned above as the most widely used term that repurposed the meaning of an existing Chinese word. Entry No. 3 *Sūtra on the Skandha, the Dhātu, and the Ayatana* 陰持入經 (T 603) translated by An Shigao was discussed in Chapter Four. An example use of the term 'empty' 空 is,<sup>486</sup>

These are the five aggregates and how they should be understood. What are they? Impermanent, sorrowful, empty, and without self.

名為五陰種，當知是。是從何知？為非常、苦、空、非身。

Here the term seems to have a generally similar sense to the *Mahāyāna* sense of 'without an independent self' but its exact meaning is not clear.

As discussed in Chapter Six, An Shigao's translation style was generally marked by the corpus style analysis as unrefined and literal.

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<sup>486</sup> T 603, 15.0173b21.

## Lokakṣema

Lokakṣema's 支識 short biography is included in Part Two, Fascicle Thirteen of the *Chu san zang ji ji*. Lokakṣema was a Yuezhi who came to Luoyang in the last three years of Emperor Huan of Han (146-168 C.E.). He is especially known for Entry No. 38 *Sūtra on the Practice of the Way* 道行般若經 (T 224), a translation of the *Aṣṭasāhasrikā Prajñāpāramitā*, and Entry No. 40 *Pratyutpanna-Samādhi Sūtra* 般舟三昧經 (T 418). As the first translator of *Mahāyāna* texts, Lokakṣema established foundational translations for many *Mahāyāna* terms. Lokakṣema was also the first translator of longer texts, such as the *Sūtra on the Practice of the Way* 道行般若經 (T 224) in ten fascicles.

The most widely adopted translations for terms established by Lokakṣema are listed in Table 35.

Table 35: Most Widely Adopted Translations Established by Lokakṣema Ranked by Document Frequency

Rank	Term	English Equivalent	Translation Type
1	世尊	World-Honored One	semantic
2	菩薩	bodhisattva	transliteration
3	聲聞	<i>śrāvaka</i>	semantic
4	眾生	sentient beings	semantic
5	三昧	samādhi	transliteration
6	智慧	wisdom; <i>prajñā</i>	semantic
7	功德	merit; <i>puṇya</i>	semantic
8	比丘尼	<i>bhikṣuṇī</i>	transliteration
9	正法	<i>saddharma</i>	semantic
10	出家	become a monk or nun	semantic

Table 35 includes the term World-Honored One 世尊, which was first used in either Entry No. 40 *Pratyutpanna-Samādhi Sūtra* 般舟三昧經 (T 418) or Entry No. 44 *King Ajātaśatru Sūtra* 阿闍世王經 (T 626), both translated by Lokakṣema. Lokakṣema virtually discontinued the style of An Shigao in establishing translations by creating new meanings from existing Chinese words. In contrast with the other translators discussed, Lokakṣema used a very high proportion of transliterations.

Lokakṣema's style shows a shift towards more spiritually powerful expressions, in contrast to the simpler expressions used by An Shigao. These terms are associated with but not exclusive to *Mahāyāna*. For example, 'sentient beings' 眾生 rather than 'people' 人, and *samādhi* 三昧 rather than 'meditation' 定.

Sengyou gives a total of thirteen works attribution to Lokakṣema but lists fourteen titles. Lian<sup>487</sup> proposes that the title later added is Entry No. 43 *Sūtra on the Samādhi of Radiance* 光明三昧經 (no corresponding *Taishō* entry).

As discussed in Chapter Six, Lokakṣema's translation style was generally marked by the corpus analysis as unrefined and literal.

### Yan Fotiao and An Xuan

Biographies of An Xuan 安玄 and Yan Fotiao 嚴佛調 are included in Part Three, Fascicle Thirteen of the *Chu san zang ji ji*.<sup>488</sup> Although Sengyou lists An Xuan and Yan Fotiao after Lokakṣema, Zürcher<sup>489</sup> associates these two figures closely with An Shigao and regards Lokakṣema as representative of a second generation of translators.

An Xuan was a lay practitioner from Parthia who came to Luoyang at the end of the reign of Emperor Ling of Han (168-189 C.E.). He worked in collaboration with the monk Yan Fotiao to jointly translate Entry No. 53 *Sūtra of the Dharma Mirror* 法鏡經 (T 322). An Xuan orally translated the Sanskrit and Yan Fotiao served as the scribe. Yan Fotiao was a native of Linhuai in present-day Jiangsu. This is their only extant text.

Yan Fotiao and An Xuan's translation style was generally marked by the corpus analysis as unrefined and literal.

There is no uniquely shared terminology between the *Sūtra of the Dharma Mirror* and any anonymously produced texts.

### **Kang Mengxiang**

Kang Mengxiang's 康孟詳 brief biography is included with An Xuan's in Part Three, Fascicle Thirteen of the *Chu san zang ji ji*.<sup>490</sup> His only extant translation is Entry No. 55 *Sūtra on the Life of Śākyamuni* 中本起經 (T 196).

Two anonymous texts contain uniquely shared terminology with the *Sūtra on the Life of Śākyamuni*. This is the term 'eight rules of respect' 八敬之法, which is present in

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<sup>487</sup> Haochen Lian, "Chu san zang ji ji Wenben Zhi Zengbu Yu Cuozi 《出三藏記集》文本之增補與錯置."

<sup>488</sup> T 2145, 55.0096a09.

<sup>489</sup> Zürcher, *Buddhist Conquest of China*, 34-35.

<sup>490</sup> T 2145, 55.0096a09.

Fascicle One of Entry No. 736 *Bhikṣuṇī Mahāprajāpatī Sūtra* 大愛道比丘尼經<sup>491</sup> and Fascicle Five of Entry No. 810 *Sūtra on the Great Skillful Means for Repaying Kindness* 大方便佛報恩經.<sup>492</sup> These two texts are treated as anonymously translated in both the *Chu san zang ji ji* and the *Taishō*. As mentioned above *Sūtra on the Great Skillful Means for Repaying Kindness* has been described as an East Asian indigenous composition,<sup>493</sup> so it may be that it borrows the term from the *Sūtra on the Life of Śākyamuni*.

### Vighna

Vighna's 維祇難 biography is also brief and included with An Xuan's in Part Three, Fascicle Thirteen of the *Chu san zang ji ji*. The translation of the highly influential text the *Dharmapada* 法句經 (T 210) is attributed to Vighna and Zhi Qian.

There is only a single uniquely shared term between the *Dharmapada* and anonymously produced texts.

### Zhi Qian

Zhi Qian's 支謙 biography, included in Part Six, Fascicle Thirteen of the *Chu san zang ji ji*,<sup>494</sup> states that Zhi Qian was a Yuezhi and began translating scriptures during the time of Emperor Ling of Han (168-189 C.E.). However, the catalog states that his

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<sup>491</sup> T 1478, 24.0946b21.

<sup>492</sup> T 156, 3.0153c23.

<sup>493</sup> Toru Funayama, *Making Sutras into Classics (Jingdian)*, 138-139.

<sup>494</sup> T 2145, 55.0097b14.

translations were produced from the beginning of the Huangwu era to the middle of the Jianxing era (222-253 C.E.). His teacher Zhi Liang 支亮 studied under Lokāṣema.

Zhi Qian was a prolific translator noted for his use of verse (Nattier 2008, 118-119). Besides the *Dharmapada*, other well-known texts translated by Zhi Qian include Entry No. 57 *Vimalakīrti Sūtra* 佛說維摩詰經 (T 474), Entry No. 58 *Mahāparinirvāṇa Sūtra* 般泥洹經 (T 6), and Entry No. 59 *Sūtra in Accordance with Good Omens* 太子瑞應本起經 (T 185).

The most widely adopted Buddhist terms established by Zhi Qian include *avidyā* or ‘ignorance’ 無明, ‘wheel turning king’ 轉輪聖王, *anasrava* or ‘untained’ 無漏, ‘wholesome dharma’ 善法, *śrāmaṇera* 沙彌, and ‘conditioned’ 有為.

Zhi Qian is notable for his creation of Buddhist idioms and for sparse use of transliteration. The most widely adopted idioms created by Zhi Qian include ‘innumerable kalpas’ 無央數劫<sup>495</sup> and ‘to prescribe medicine according to the sickness’ 應病與藥.<sup>496</sup> The Buddhist idiom ‘innumerable kalpas’ 無央數劫 was used by Zhi Qian in Entry No. 77 *Fo Shuo Bei Jing* 佛說孛經抄,<sup>497</sup>

I am a Bodhisattva, practicing good deeds in every life, diligently accumulating boundless merit over innumerable kalpas.

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<sup>495</sup> *FGDB*, s.v. “無央數劫”.

<sup>496</sup> *FGDB*, sv. “應病與藥”.

<sup>497</sup> T 790, 17.0736a20.

我為菩薩，世世行善，勤苦積德無央數劫。

The Buddhist idiom ‘To treat illness with medicine’ 應病與藥 was used by Zhi Qian in Fascicle One of the *Vimalakīrti Sūtra*,<sup>498</sup>

He was born in the five realms, becoming a great physician, using wisdom and goodness to cure the illnesses of all sentient beings, prescribing medicine according to the sickness, so that they may take and follow it.

其生五道，為大醫王，以慧以善，救眾生病，應病與藥，令得服行。

It was mentioned above that three texts attributed to Zhi Qian in the *Chu san zang ji ji* are considered problematic by scholars. The most significant of these is Entry No. 78 *Da ming du jing* 大明度經 (T 225), which is the second Chinese translation of the *Aṣṭasāhasrikā Prajñāpāramitā*. Lancaster (1969) discusses the style, vocabulary, and translation methods of this text in comparison with other texts more confidently attributed to Zhi Qian. Lancaster describes the text as an interlinear commentary being distinctive in resorting to complete use of semantic translation with no transliteration, giving examples Dīpaṃkara Buddha 定光佛, Arhat 應儀, ‘perfection of wisdom’ 智度無極, Śākyamuni 能儒, ‘supreme perfect enlightenment’ 最正覺, Akaniṣṭha 無結愛天, ‘set out on the Great Vehicle’ 昇於大乘, Subhūti 善業, bhikṣu 除饑, ‘meditation’ 定, *bodhisattva* 開士, *mahāsattva* 大士, and others.

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<sup>498</sup> T 474, 14.0519a09.

As discussed above, Zhi Qian did use transliteration more sparsely than the other early translators. For example, the semantic translation for Arhat 應儀 *yīngyí* was used by Zhi Qian in Entry No. 65 *Brahmāyus Sūtra* 梵摩渝經<sup>499</sup> in preference to the more common transliteration 阿羅漢 *āluóhàn*. However, his use of transliteration was not zero.

Also, the semantic translations Dīpaṃkara Buddha 定光佛,<sup>500</sup> ‘perfection of wisdom’ 智度無極,<sup>501</sup> bodhisattva 開士, mahāsattva 大士,<sup>502</sup> meditation 定,<sup>503</sup> Śākyamuni 能儒,<sup>504</sup> ‘supreme perfect enlightenment’ 最正覺,<sup>505</sup> and Akaniṣṭha 無結愛天<sup>506</sup> were also used by Zhi Qian in texts other than the *Da ming du jing*. The places in the corpus are given in parentheses. These terms cannot be argued to be foreign to Zhi Qian. The terms ‘set out on the Great Vehicle’ 昇於大乘, Subhūti 善業, and ‘monk’ 除饑 are unique to the *Da ming du jing* for Zhi Qian.

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<sup>499</sup> T 76, 1.0883b10.

<sup>500</sup> T 185, 3.0478c20.

<sup>501</sup> T 474, 14.0529c28.

<sup>502</sup> T 474, 14.0533a20.

<sup>503</sup> T 474, 14.0533a20.

<sup>504</sup> T 185, 3.0473a15.

<sup>505</sup> T 185, 3.0478b13.

<sup>506</sup> T 198, 4.0185b20.

Based on the analysis of terminology here, it seems that the arguments based on terminology for the *Da ming du jing* not being the work of Zhi Qian are not well supported. In addition, there are six terms that are uniquely shared between texts attributed to Zhi Qian and the *Da ming du jing*. These are listed in Appendix C. All of these uniquely shared terms are names of heavens.

Seven terms are uniquely shared between Entry No. 59 *Sūtra on the Life of the Prince in Accordance with Good Omens* 太子瑞應本起經 (T 185) attributed to Zhi Qian and the anonymously produced text Entry No. 580 *Cārya Nidāna* 修行本起經 (T 184, Fascicle Two). These are also listed in Appendix C. Saito<sup>507</sup> mentions that T 184 contains passages that are identical to T 185. This seems to be a case of copying from T 185 to T 184.

Five terms are uniquely shared between Entry No. 62 *Sūtra on Stories of the Former Karma of the Bodhisattva* 菩薩本業經 (T 281) translated by Zhi Qian and Fascicle Eight of the *Abhiṣeka Sūtra* 灌頂經 (T 1331) translated by an anonymously produced by Sengyou. These are all the names of heavens and adjacent to each other<sup>508</sup> indicated that the names may have been copied.

Five terms are uniquely shared between Entry No. 62 *Sūtra on Stories of the Former Karma of the Bodhisattva* 菩薩本業經 (T 281) translated by Zhi Qian and

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<sup>507</sup> Takanobu Saito, “The Gathas in the Chinese Buddhist Canon: Rhymed Verses in the Longshi Pusa Benqi-Jing Translated by Zhu Fahua 漢語仏典における偈の研究-- 竺法護訳『龍施菩薩本起經』の詩律をめぐって,” *Journal of Indian and Buddhist Studies* 52, no. 1 (2003): 217, <https://doi.org/10.4259/ibk.52.215>.

<sup>508</sup> T 1331, 21.0517c21.

Fascicle Two of Entry No. 820 *Sūtra on the Origin of the Bodhisattva's Jade Necklace* 菩薩瓔珞本業經 (T 1485) treated as anonymously produced in the *Chu san zang ji ji* and as translated by Zhi Qian in the *Taishō*. Again, these are all names of heavens and adjacent to each other, indicating copying. Buswell<sup>509</sup> states that T 1485 is a Chinese indigenous composition and the attribution of the translation to Zhu Fonian in the *Taishō* has its origin in the *Li dai san bao ji* and is incorrect. This is likely a case of copying because T 1485 also shares unique terminology with Dharmarakṣa. The details are in Appendix C.

### Kang Senghui

Kang Senghui's 康僧會 biography is included in Part Four, Fascicle Thirteen of the *Chu san zang ji ji*.<sup>510</sup> His ancestry was Sogdian and his father worked as a travelling merchant. Kang Senghui traveled to Jianye. Only a single text attributed to Kang Senghui is still extant: the *Sūtra of the Collection of the Six Perfections* 六度集經 (T 152), a collection of Jātaka stories, although more translations are mentioned in his biography.

Liang<sup>511</sup> notes that Kang Senghui preferred semantic translations to transliterations that were elsewhere more common. She gives the example of Kang Senghui's use of the semantic translation 'monk' 除讎 in preference to the more common transliteration *bhikṣu* 比丘.

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<sup>509</sup> Buswell, "Introduction," 8.

<sup>510</sup> T 2145, 55. 0096b01.

<sup>511</sup> Liang, *Fojiao yu Hanyu Cihui*, 141-142.

There are only three terms uniquely shared between texts with translation attributed to Kang Senghui and anonymously produced texts. These are listed in Appendix C.

### Boyan

The extremely brief biography of Boyan 白延 is included under An Xuan's in Part Three, Fascicle Thirteen of the *Chu san zang ji ji*.<sup>512</sup> Sengyou lists three texts by Boyan but none are found in the *Taishō*.

### Mokṣala

There is no biography for Mokṣala 無羅叉 in the *Chu san zang ji ji*. In the catalog, Sengyou attributes the *Radiant Light Sūtra* 放光經 (T 221) to Zhu Shixing rather than Mokṣala. However, there is a story about the *Radiant Light Prajñāpāramitā Sūtra* 放光般若經 (T 221) in the anonymous record<sup>513</sup> and a preface by Dao'an in Fascicle Seven of the *Chu san zang ji ji* that mention Mokṣala. The record describes the story of Zhu Shixing obtaining the Sanskrit manuscript in Khotan. The manuscript for the *sūtra* was sent to Luoyang via his disciple Furutan and later translated by Mokṣala at Shuinan Temple in Cangyuan (in present-day Henan). This is the only text attributed to Mokṣala in the *Chu san zang ji ji*.

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<sup>512</sup> T 2145, 55.0096a09

<sup>513</sup> T 2145, 55.0047c11.

There are three terms uniquely shared between texts with translations attributed to Mokṣala and anonymously produced texts. These are listed in Appendix C.

### **Dharmarakṣa**

Dharmarakṣa 竺法護 played a very significant role in the transmission of Buddhism to China in the late third century. Dharmarakṣa was the first prolific translator of Buddhist texts into Chinese. In Fascicle Two of the *Chu san zang ji ji* Sengyou notes<sup>514</sup> that Dharmarakṣa translated 154 works. He was the first to translate the *Lotus Sūtra*, which became one of the most popular Buddhist texts in China. He is also considered one of the first Buddhist translators for whom we have evidence at Dunhuang.<sup>515</sup>

Dharmarakṣa's biography is included in Part Seven, Fascicle Thirteen of the *Chu san zang ji ji*.<sup>516</sup> He was a Yuezhi native and previously lived in the Dunhuang commandery. He traveled to Chang'an, back to the Western Regions to obtain manuscripts, and returned to Chang'an. His biography notes that he was particularly devoted to *Mahāyāna*. Dharmarakṣa's activities in Dunhuang and Guanzhong are mentioned several times in his biography.

Some of Dharmarakṣa's most notable translations are Entry No. 99 *Sūtra in Praise of the Light* 光讚經 (T 222) in ten fascicles, Entry No. 101 *Lotus Sūtra* 正法華經

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<sup>514</sup> T 2145, 55.0009b27.

<sup>515</sup> Daniel Boucher, "Dharmarakṣa and the Transmission of Buddhism to China" *Asia Major* (2006): 13–37.

<sup>516</sup> T 2145, 55.0097c20.

(T 263) in ten fascicles, Entry No. 102 *Lalitavistara* 普曜經 (T 186) in eight fascicles, Entry No. 107 *Yogacārabhūmi* 修行道地經 (T 606) in seven fascicles, Entry No. 108 *Daśabhūmika Sūtra* 漸備一切智德經 (T 285) in five fascicles, and Entry No. 109 *Jātaka Stories* 生經 (T 154) in five fascicles.

The total number of new Buddhist terms was greatly expanded by Dharmarakṣa in comparison to previous translators. In terms of style, Dharmarakṣa uses transliteration far more sparingly than Lokakṣema. The most widely adopted translations for terms established by Dharmarakṣa are listed in Table 36.

Table 36: Most Widely Adopted Translations Established by Dharmarakṣa Ranked by Document Frequency

Rank	Term	English Equivalent	Translation Type
1	涅槃	<i>nirvāṇa</i>	transliteration
2	法界	dharma realm	semantic
3	般涅槃	<i>parinirvāṇa</i>	transliteration
4	阿修羅	<i>asura</i>	transliteration
5	菩提心	<i>bodhicitta</i>	mixed
6	果報	<i>vipāka</i>	semantic
7	十八不共法	eighteen distinctive characteristics	semantic
8	由旬	<i>yojana</i>	transliteration
9	正遍知	<i>truly all-knowing</i>	semantic
10	正受	right absorption	semantic

The list of terms in Table 36 shows that there was scope for Dharmarakṣa in completing the foundation of commonly used Buddhist terms. Some of the terms have a distinctive *Mahāyāna* flavor, such as *bodhicitta* 菩提心. Boucher<sup>517</sup> notes that

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<sup>517</sup> Boucher, “Buddhist Translation Procedures China,” 214-215.

Dharmarakṣa preferred semantic translations over transliterations, especially in his early texts. The table shows a mixture of both.

Dharmarakṣa was notable in his introduction of a large number of Buddhist sayings and idioms. His most widely adopted Buddhist sayings and idioms are ‘a human body is hard to obtain’ 人身難得<sup>518</sup>, followed by ‘the Eye of the Dharma arising for all phenomena’ 諸法法眼生, ‘tranquility is bliss’ 寂滅為樂,<sup>519</sup> ‘living without abiding 住無所住, and ‘all phenomena are empty’ 諸法皆空.<sup>520</sup> The saying ‘a human body is hard to obtain’ 人身難得 was established by Dharmarakṣa in Fascicle One of Entry No. 120 *Zhu fo yao ji jing* 諸佛要集經,<sup>521</sup>

A calamity is rare to encounter, and so is definitive meaning. A human body is hard to obtain, and the path of the *sūtras* is rare.

法難可遇，了義亦然，人身難得，經道希有

The saying ‘all phenomena are empty’ 諸法皆空 was used by Dharmarakṣa in Fascicle Three of Entry No. 103 *Dai ai jing* 大哀經,<sup>522</sup>

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<sup>518</sup> *FGDB*, s.v. “人身難得”.

<sup>519</sup> *FGDB*, s.v. “寂滅為樂”.

<sup>520</sup> *FGDB*, s.v. “諸法皆空”.

<sup>521</sup> T 810, 17.0756c18.

<sup>522</sup> T 398, 13.0423b05.

The term ‘empty’ means the Way is empty; the reason it is empty is that all phenomena are empty.

謂空者，道則為空；所以空者，諸法皆空。

Boucher<sup>523</sup> compares Dharmarakṣa’s translation of Entry No. 107 *Yogacārabhūmi* 修行道地經 (T 606) to An Shigao’s translation of Entry No. 107 *Sūtra on the Grounds of the Way* 道地經 (T 607), which are translations of similar Indic source texts.

Dharmarakṣa’s translation is considerably longer in seven fascicles whereas An Shigao’s is only one fascicle. Dharmarakṣa’s version has twenty-three additional chapters.

However, Boucher<sup>524</sup> notes that the first five chapters are similar and present a good opportunity to compare the vocabulary and style of the two translators.

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<sup>523</sup> Boucher, “Buddhist Translation Procedures,” 180-184.

<sup>524</sup> Boucher, 181-182.

The texts describe a path to enlightenment by detailing which practices are beneficial and which are detrimental. They emphasize the importance of abandoning worldly attachments and cultivating virtues, including mindfulness and compassion. Boucher<sup>525</sup> notes that the last three chapters of T 606 reflect *Mahāyāna* ideals. Boucher identifies a number of parallel passages comparing both the grammatical features and the use of Buddhist terminology. One example is the different expressions for the five aggregates. An Shigao:<sup>526</sup> 五種所成——色種、痛痒種、思想種、行種、識種. Dharmarakṣa:<sup>527</sup> 色、痛、想、行、識，是謂五陰也。English: “The five skandhas are form, sensations, perception, volition, and consciousness.” An Shigao and Dharmarakṣa use an overlapping list of translations for the five skandhas. An Shigao uses 五種 *wǔ zhǒng* for the ‘five skandhas’ whereas Dharmarakṣa uses 五陰 *wǔ yīn*. It is interesting that An Shigao uses 五陰 *wǔ yīn* elsewhere in T 607. The more common form in later texts is 五蘊 *wǔ yùn*, which was established after the period under consideration in this study.

An Shigao and Dharmarakṣa use the same translations for ‘form’ 色, ‘volition’ 行, and ‘consciousness’ 識 but An Shigao binds these into the compounds 色種 *sè zhǒng*, 行種 *xíng zhǒng*, and 識種 *shí zhǒng*. For ‘sensations’, An Shigao uses 痛痒 *tòngyǎng* whereas Dharmarakṣa uses 痛 *tòng*. For ‘perception’, An Shigao uses 思想 *sīxiǎng* whereas Dharmarakṣa uses 想 *xiǎng*. After examining other examples, Boucher<sup>528</sup> concludes that Dharmarakṣa did not refer to An Shigao’s translation. A Venn diagram of overlap in terminology between An Shigao (T 607) and Dharmarakṣa (Fascicle 1 of T 606) is shown in Figure 17.

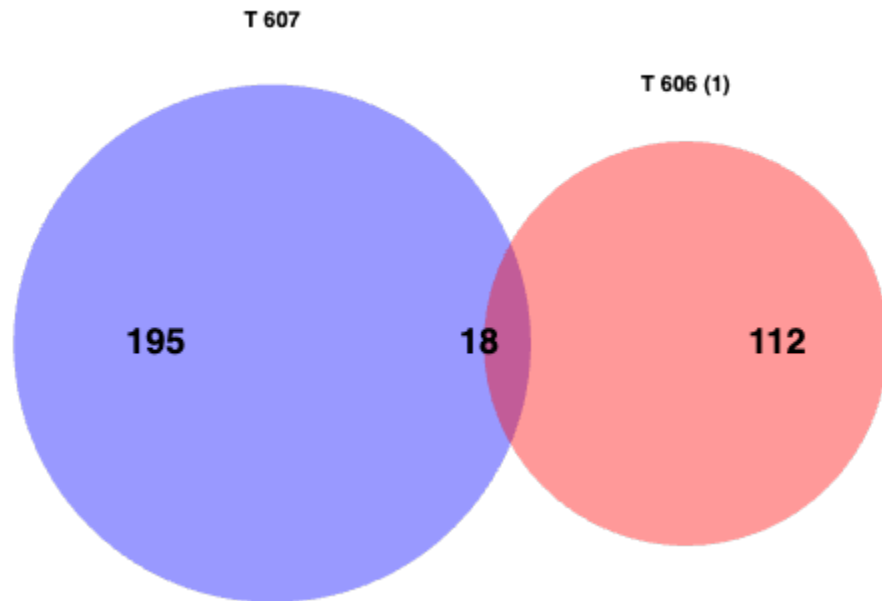


Figure 17: Intersection of Terminology in Translations of the Yogacārabhūmi by An Shigao (T 607) and Dharmarakṣa (Fascicle 1 of T 606)

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<sup>525</sup> Boucher, “Buddhist Translation Procedures,” 181.

<sup>526</sup> T 607, 15.0231b29.

<sup>527</sup> T 606, 15.0183a01.

<sup>528</sup> Boucher, “Buddhist Translation Procedures,” 186.

Figure 17 shows that the overlap in terminology (18) is only fourteen percent compared with the number of distinct terms in Dharmarakṣa's translation (130), which is consistent with Boucher's conclusion of little sharing.

There are over sixty uniquely shared terms between texts attributed to Dharmarakṣa and anonymously produced texts. These are listed in Appendix C.

Five of these terms are shared with Entry No. 183 *Sūtra on the Absence of Hope* 無希望經 (T 813), which is treated as anonymously produced in the *Chu san zang ji ji* but attributed to Dharmarakṣa in the *Taishō*. The analysis of uniquely shared terminology indicates that there is merit to the *Taishō* attribution.

Six of the uniquely shared terms are shared between Entry No. 2156 *Bao Rulai Sanmei Jing* 寶如來三昧經 (T 637), which is treated as a doubtful, anonymously produced text in the *Chu san zang ji ji* but attributed to Gītamitra in the *Taishō* and Entry No. 192 *Unbounded Treasure Samadi Sūtra* 無極寶三昧經 (T 636) translated by Dharmarakṣa. Sengyou notes that T 636 was “**composed** by a foreigner from Nanhai.”<sup>529</sup>

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<sup>529</sup> 南海胡作 (T 2145, 55.0038b08).

Jiyan<sup>530</sup> argues that the translation of T 637 has been misattributed to Gītāmītra in the *Taishō* based on wrong attributions in catalogs. In particular, the attribution to Gītāmītra, which first appears in the *Li dai san bao ji*, is problematic. Jiyan notes that T 637 appears to be an alternative translation of the same source text as T 636 since the content is largely the same. Given the finding in this study of uniquely shared terms, which is not mentioned by Jiyan, it appears that T 637 was either translated with reference to T 636 or passages were copied. Nine of terms are uniquely shared between Entry No. 1539 *Zi shi sanmei jing* 自誓三昧經 (T 622) treated as anonymously produced in the *Chu san zang ji ji* but attributed to An Shigao in the *Taishō* and Entry No. 188 *Sūtra on the Vow of Individual Enlightenment Samādhi* 如來獨證自誓三昧經 (T 623) translated by Dharmarakṣa. Sengyou adds the note, “is largely the same as with minor differences to the *Sūtra on the Vow of Individual Enlightenment Samādhi* presented by Dharmarakṣa.”

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<sup>530</sup> Jiyan, “Investigation into the Translations of the Bao Ru Lai Jing and Pusa Shi Zhu Jing 《寶如來經》和《菩薩十住經》譯者略考,” *Dharma Light Lyceum*, no. 1 (1997): 61–72.

Sakaino<sup>531</sup> states that this text attributed to An Shigao in the *Li dai san bao ji* was taken from a list of Dharmarakṣa's works in *Chu san zang ji ji*, resulting in the present attribution in the *Taishō* (T 622). T 622 does not have any uniquely shared terminology with texts translated by An Shigao. Based on this alone the *Taishō* attribution to An Shigao seems doubtful. Given the uniquely shared terminology with Dharmarakṣa's translation, it appears that T 622 was either retranslated with reference to T 623 or otherwise derived from it. Four of the uniquely shared terms occur between Entry No. 699 *Sūtra on Bodhisattva Practice* 菩薩修行經 (T 330) treated as anonymously produced in the *Chu san zang ji ji* but attributed to Bo Fazu in the *Taishō* and several different texts translated by Dharmarakṣa. In this *Mahāyāna* text the Buddha taught the importance of cultivating boundless compassion and how bodhisattvas should contemplate the body's impurity through forty-two contemplations to detach from worldly desires, ultimately achieving enlightenment and benefiting all beings.

Iwamatsu<sup>532</sup> notes that while the *Chu san zang ji ji* attributes only a single (now lost) translation to Bo Fazu, the *Li dai san bao ji* suddenly increases his output to twenty-three texts. The attribution of the translation of T 330 to Bo Fazu must be doubtful in that case. There is no simple explanation for this uniquely shared terminology.

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<sup>531</sup> Sakaino, *Shina bukkyō Seishi*.

<sup>532</sup> Asao Iwamatsu, "On the Translator of the Minor Mahāparinirvāna Sūtras 涅槃經小本の翻訳者," *Journal of Indian and Buddhist Studies* 25, no. 1 (1976): 244–47.

The corpus analysis shows that Dharmarakṣa's translation style is generally literary although the analysis of vernacular elements showed heavy use of the pronoun 'this' 這 *zhè* and the verb 道 *dào*. The corpus analysis also showed his style as literal rather than fluent, mostly plain rather than ornate, and verbose rather than terse. Although, he does not cover all of these aspects of translation style, Boucher<sup>533</sup> notes that Dharmarakṣa's translation style is more literary in comparison with his predecessors An Shigao and Lokāṣema. So, the corpus analysis seems mainly consistent with Boucher.

There are comments by Dao'an in the canonical literature about the accuracy and clarity of Dharmarakṣa's translations.<sup>534</sup> This point could not be confirmed by the corpus analysis.

### **Fa Ju and Fa Li**

There is a very brief mention of Fa Ju 法炬 in the biographies section of the *Chu san zang ji ji* under Dharmarakṣa's biography<sup>535</sup> where it states that his origins are unknown. One extant text is attributed to Fa Ju alone are two in collaboration with Fa Li 法立. There is an even briefer mention of Fa Li 's background nearby under

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<sup>533</sup> Boucher, "Buddhist Translation Procedures," 231.

<sup>534</sup> Xinzhang Luo, "Dao An (312/314-385 CE): The Two Translation Throw Light on Each Other," in *An Anthology of Chinese Discourse on Translation: From Earliest Times to the Buddhist Project*, ed. Martha P. Y. Cheung, trans. (London and New York: Taylor & Francis, 2014), 125, ebook.

<sup>535</sup> T 2154, 55.0097c20.

Dharmarakṣa's biography<sup>536</sup> which notes that Fa Li also acquired numerous foreign manuscripts, which were unfortunately lost.

There is no uniquely shared terminology between texts translated by Fa Ju and Fa Li and anonymously produced texts.

### Zhu Fonian

Zhu Fonian's 竺佛念 biography is included in Part Four, Fascicle Fifteen of the *Chu san zang ji ji*,<sup>537</sup> which mentions that he was a native of Liangzhou. Zhu Fonian was present in Chang'an during the Jianyuan era (365–385 C.E.) of Fu Jian (ruled 357-385 C.E.) of the Former Qin.

Fifteen translations are attributed to Zhu Fonian in the *Chu san zang ji ji*, twelve of which can be related to entries in the *Taishō*. Zhu Fonian collaborated with Saṃghabhūti on three of these translations, with Buddhapalita in one translation, and with Dharmanandi in one translation. The translation of Entry No. 289 *Story of How Prince Dharmagada Lost his Sight* 阿育王息壤目因緣經 (T 2045) is attributed to Zhu Fonian in the *Chu san zang ji ji* but to Dharmanandi in the *Taishō*. Sengyou's biography of Zhu Fonian explains that Dharmanandi provided the Indic manuscript while Zhu Fonian translated it.

The uniquely shared terminology between texts translated by Zhi Fonian and anonymously produced texts is given in Appendix C. Two terms are uniquely shared

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<sup>536</sup> T 2145, 55.0097c20.

<sup>537</sup> T 2145, 55.0111b08.

between Entry No. 813 *Treatise on Distinguished Merit* 分別功德論 (T 1507) treated as an anonymously produced text in both the *Chu san zang ji ji* and the *Taishō* and Entry No. 284 *Udānavarga* 出曜經 (T 212) attributed to Zhu Fonian. T 1507 is a commentary on the *Ekottara Āgama* 增壹阿含經. The *Taishō* gives the date of production of T 1507 as the Han dynasty. Palumbo<sup>538</sup> states that the dating of the text to the Han dynasty originated with the *Li dai san bao ji*. Fang and Gao<sup>539</sup> state that the attribution of the date to the Han dynasty in the *Taishō* is unlikely based on a linguistic analysis of the text. In particular, the texts use of the character 被 *bèi* is not elsewhere attested in Han dynasty literature.

### Samghabhūti

Samghabhūti's 僧伽跋澄 biography is included in Part Ten, Fascicle Thirteen of the *Chu san zang ji ji*,<sup>540</sup> which mentions that he was a native of Kashmir. He migrated to the Guanzhong region and then Chang'an. He was also an advocate of *Mahāyāna*. He completed the translation of Entry No. 276 *Abhidharmavibhāṣā* 鞞婆沙論 (T 1547) in 383 C.E.

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<sup>538</sup> Palumbo, *An Early Chinese Commentary on the Ekottarikaāgama: The Fenbie gongde lun 分別功德論 and the History of the Translation of the Zengyi Ahan Jing 增一阿含經*, 168.

<sup>539</sup> Yixin Fang and Lieguo Gao, "Translation of Fenbie gongde lun."

<sup>540</sup> T 2145, 55.0099a19.

There is no uniquely shared terminology between texts translated by Saṃghabhūti and anonymously produced texts.

### **Buddhapalita**

There is no biography of Buddhapalita 佛護 in the *Chu san zang ji ji*. The catalog attributes translation of Entry No. 279 *Digest of the Four Āgamas* 四阿含暮抄解 (T 1505) to Zhu Fonian and Buddhapalita.

There is no uniquely shared terminology between texts translated by Zhu Fonian and Buddhapalita and anonymously produced texts.

### **Dharmanandi**

Dharmanandi's 曇摩難提 biography is included in Part Eleven, Fascicle Thirteen of the *Chu san zang ji ji*,<sup>541</sup> which mentions that he was from Tukhara and migrated to Chang'an in 383 C.E. The *Chu san zang ji ji* attributes translation of Entry No. 282 *Ekottara Āgama* 增壹阿含經 (T 125) to Dharmanandi and Zhu Fonian.<sup>542</sup>

There is no uniquely shared terminology between texts translated by Dharmanandi and anonymously produced texts.

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<sup>541</sup> T 2145, 55.0099b11.

<sup>542</sup> T 2145, 55.0010b14.

## Saṅghadeva

Saṅghadeva's 僧伽提婆 biography is included in Part Twelve, Fascicle Thirteen of the *Chu san zang ji ji*<sup>543</sup> where it mentions that he was from Kashmir. He is known for translating Entry No. 290 *Madhyama Āgama* 中阿含經 (T 26) in sixty fascicles, Entry No. 291 *Abhidharma Jñāna Prasthāna Śāstra* 阿毘曇八犍度論 (T 1543) in thirty fascicles, and Entry No. 292 *Abhidharmahṛdaya* 阿毘曇心論 (T 1550) in four fascicles.

There is no uniquely shared terminology between texts translated by Saṅghadeva and anonymously produced texts.

## Kumārajīva

Kumārajīva's detailed biography is included in Part One, Fascicle Fourteen of the *Chu san zang ji ji*,<sup>544</sup> which mentioned that Kumārajīva had Indian ancestry. His father, Kumārayāna, traveled to Kucha in present-day Xinjiang, where he married the king's daughter who gave birth to Kumārajīva in Kucha. Kumārajīva was captured when the Former Qin commander Lu Guang 呂光 attacked Kucha circa 384 C.E. He was brought to Liangzhou where he remained for many years.

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<sup>543</sup> T 2145, 55.0099b29.

<sup>544</sup> T 2145, 55.0100a24.

Kumārajīva was invited to Chang'an by the emperor of the Later Qin dynasty, Yao Chang 姚萇, and arrived there in 401 C.E. In Chang'an Kumārajīva began his translation work under the sponsorship of Yao Chang's son and then emperor Yao Xing 姚興 and became National Preceptor 國師. Kumārajīva overlapped with Buddhayaśas in Kucha and Chang'an. He collaborated with Seng Zhao 僧肇, Seng Lue 僧晷, and Seng Miao 僧邈 in his translation work. His biography notes that he was dissatisfied that old translations were often erroneous. Kumārajīva was the most prolific translator listed in the *Chu san zang ji ji* in terms of total number of fascicles and in the amount of terminology established. Many of his translations were *Mahāyāna* scriptures in the *Prajñāpāramitā* tradition. Some of the texts that he is best known for include Entry No. 310 *Infinite Life Sūtra* 無量壽經 (T 366), Entry No. 313 *Diamond Sūtra* 金剛般若波羅蜜經 (T 235), Entry No. 322 *Treatise on the Great Perfection of Wisdom* 大智度論 (T 1509) in one hundred fascicles, Entry No. 325 *Fundamental Verses on the Middle Way* 中論 (T 1564), Entry No. 298 *Lotus Sūtra* 妙法蓮華經 (T 262), and Entry No. 328 *Ten Part Vinaya* 十誦律 (T 1435) in sixty-one fascicles.

One theme of Kumārajīva's work was refinement and retranslation. Martin<sup>545</sup> states that there was demand for a new translation of the *Lotus Sūtra* due to a desire for a more refined and literary version. In addition, there were Entry No. 297 *Xiaopin boreboluomi jing* 小品般若波羅蜜經 (T 227), a retranslation of the *Aṣṭasāhasrikā Prajñāpāramitā Sūtra* previously translated by Lokāṣema as Entry No. 38 *Sūtra on the Practice of the Way* 道行般若經 (T 224); Entry No. 301, a new translation of the *Vimalakīrti Sūtra* 維摩詰所說經 (T 475); Entry No. 302, a new translation of the *Śūraṅgama Sūtra* 佛說首楞嚴三昧經 (T 642), and; Entry No. 303, a new translation of the *Daśabhūmika Sūtra* 十住經 (T 286).

Kumārajīva worked with a number of different collaborators. He is especially known for his collaboration with Xiao Yaoyuan on Entry No. 296 *Perfection of Wisdom in 25,000 Lines* 摩訶般若波羅蜜經 (T 223) and with Buddhayaśas on Entry No. 303 *Daśabhūmika Sūtra* 十住經 (T 286).

The most widely adopted translations for terms established by Kumārajīva are listed in Table 37.

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<sup>545</sup> Martin, "Buddhism and Literature," 892.

Table 37: Most Widely Adopted Translations Established by Kumārajīva Ranked by  
Document Frequency

Rank	Term	English Equivalent	Translation Type
1	羯磨	<i>karma</i>	transliteration
2	突吉羅	<i>duṣkṛta</i> ; wrongdoing	transliteration
3	布薩	<i>upoṣadha</i>	transliteration
4	波羅夷	<i>pārājika</i>	transliteration
5	安居	<i>varsā</i>	semantic
6	五眾	five aggregates	semantic
7	六群比丘	group of six monastics	semantic
8	白二羯磨	proclamation and two karma procedure	semantic
9	偷蘭遮	<i>sthūlātyaya</i> ; great transgression	transliteration
10	式叉摩那	<i>śikṣamāṇā</i>	transliteration

The relatively high proportion of transliterations shown for Kumārajīva is one indication that he aimed to refine the work of previous translators. In particular, the number of transliterations established by Kumārajīva is more than twice the proportion by Dharmarakṣa. For example, the term karma 羯磨 is a retranslation of the term karma 業 established by An Shigao.

The *Aṣṭasāhasrikā Prajñāpāramitā Sūtra*, also known as the *Perfection of Wisdom in Eight Thousand Lines*, is the earliest *Mahāyāna* text and representative of the *Prajñāpāramitā* genre, which formed the initial core of development of the *Mahāyāna* tradition.<sup>546</sup> The *sūtra* is a dialog with the main speakers being Subhūti, Śariputra, and Ānanda. In the *sūtra*, Subhūti expounds the theory of *Prajñāpāramitā*, including emptiness, non-attachment, the mission of a bodhisattva, and skillful means.

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<sup>546</sup> Lancaster, “Oldest Mahāyāna Sūtra.”

There are four translations of the *Aṣṭasāhasrikā Prajñāpāramitā Sūtra* in the *Taishō Tripiṭaka* during the period under study: Entry No. 38 *Sūtra on the Practice of the Way* 道行般若經 (T 224) in ten fascicles by Lokāṣema, Entry No. 78 *Da ming du jing* 大明度經 (T 225) in six fascicles by Zhi Qian, Entry No. 275 *Condensed Version of the Aṣṭasāhasrikāprajñāpāramitā Sūtra* 摩訶般若鈔經 (T 226) in five fascicles by Dharmapriya and Zhu Fonian, and Entry No. 297 *Xiaopin boreboluomi jing* 小品般若波羅蜜經 (T 227) in ten fascicles by Kumārajīva. The four different versions provide an opportunity to study the development of the Chinese translation of Buddhist scriptures. This was done by Lancaster<sup>547</sup> using classic textual analysis. Conze<sup>548</sup> states that the Sanskrit text must have grown over the centuries, which may have been one reason that Chinese translators felt the need to re-translate it.

A Venn Diagram of the terminology of the translations by Lokāṣema (T 224), the *Da ming du jing* (T 225), and Kumārajīva (T 227) is shown in Figure 18.

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<sup>547</sup> Lancaster, “Aṣṭasāhasrikā Prajñāpāramitā-Sūtra,” 1-10.

<sup>548</sup> Edward Conze, *The Perfection of Wisdom in Eight Thousand Lines & Its Verse Summary* (Bollinas, California: Four Seasons Foundation, 1973), ix.

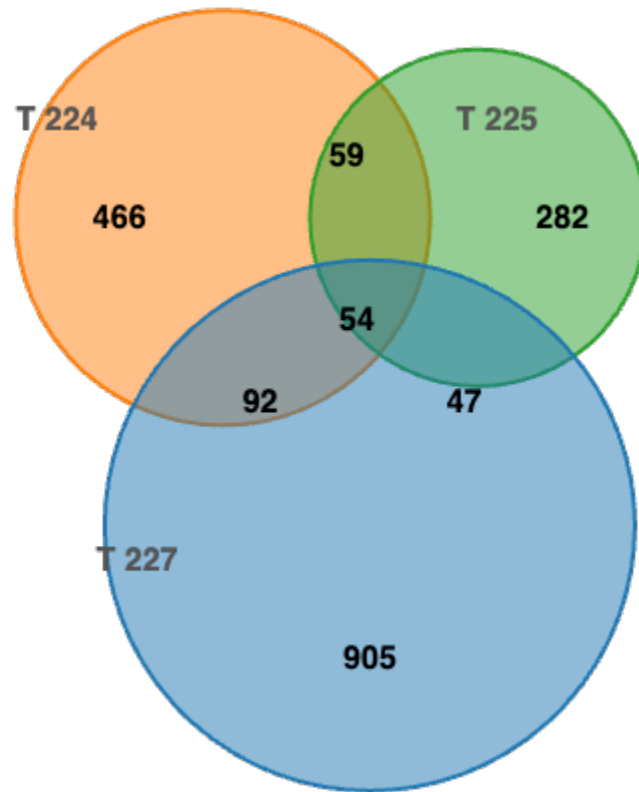


Figure 18: Venn Diagram for Overlap in Terminology Between Translations of the *Aṣṭasāhasrikāprajñāpāramitā*

Figure 18 shows the terminology from the *Sūtra on the Practice of the Way* 道行般若經 (T 224) attributed to Lokāṣema, *Da ming du jing* 大明度經 (T 225) attributed to Zhi Qian, and *Xiaopin boreboluomi jing* 小品般若波羅蜜經 (T 227) attributed to Kumārajīva. The figure shows that there are fifty-four terms in common with each translation. It suggests that each translator, or translation team, adopted a relatively small core of common terminology and established the remaining terms by themselves. Some of the shared terms include ‘five aggregates’ 五陰, ‘twelve *nidānas*’ 十二因緣, *Tathāgata* 如來, attachment 著, ‘not stand in any place’ 無所住, ‘illusion’ 幻, and ‘without an appearance’ 無相.

Some of the core set of terms are common to most scripts, for example, *Tathāgata* 如來. The terms ‘with no support’ 無所住 and ‘without an appearance’ 無相 are the most characteristic of *prajñāpāramitā* literature in this list, showing that Lokāṣema established a core set of *prajñāpāramitā* terminology that was adopted by Kumārajīva.

The *Lotus Sūtra*, also known as the *Saddharmapuṇḍarīka Sūtra*, is one of the most popular texts in Chinese Buddhism. It provides a narrative of early Buddhism from a *Mahāyāna* point of view and contains literary gems, including the seven parables of the *Lotus Sūtra*. It was translated into Chinese three times during the period under study: the *Zheng Fa Hua Jing* 正法華經 (T 263) by Dharmarakṣa in ten fascicles, the *Miao Fa Lianhua Jing* 妙法蓮華經 (T 262) by Kumārajīva in seven fascicles, and the *SatanFentuoli jing* 薩曇分陀利經 (T 265) by an anonymous translator in one fascicle.

A Venn diagram for the terminology in the translations of the *Lotus Sūtra* by Dharmarakṣa and Kumārajīva is shown in Figure 19.

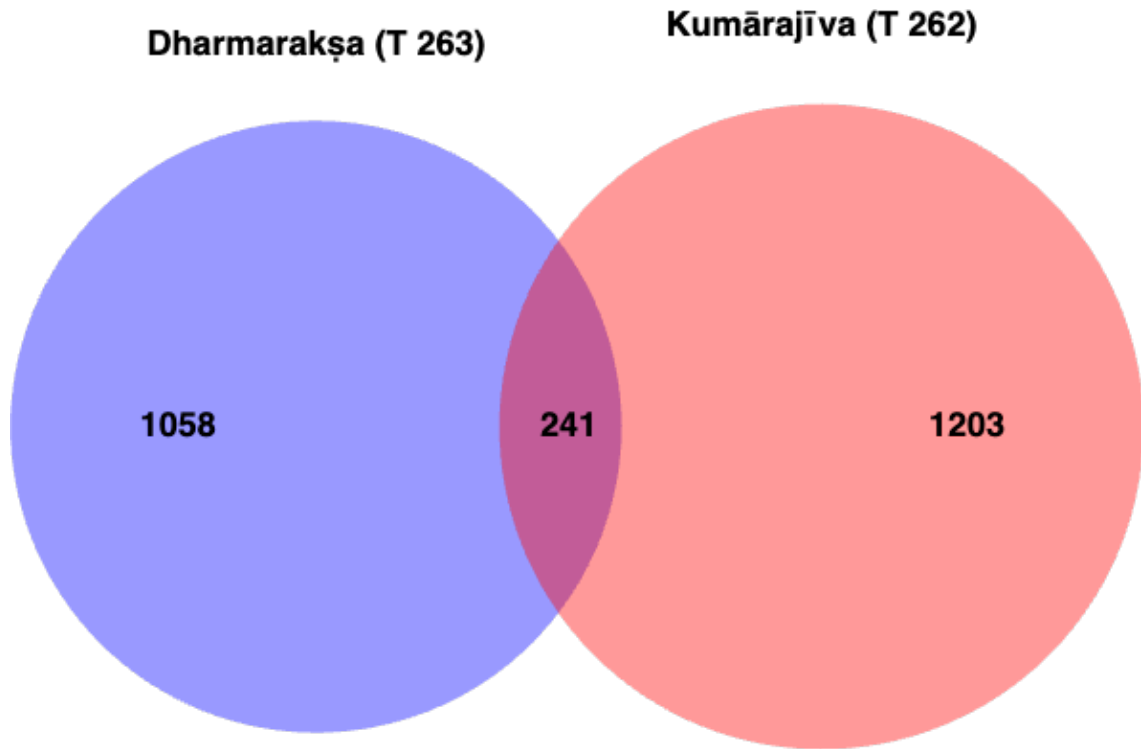


Figure 19: Venn Diagram for Overlap in Terminology Between Translations of the *Lotus Sūtra*

Figure 19 shows that only about seventeen percent of the terms used by Kumārajīva overlap with the terms in Dharmarakṣa's translation. Once again, the conclusion is that there is a core of foundational terminology adopted but that Kumārajīva mostly established his own terminology.

Kumārajīva is the translator marked most frequently as having a fluent style in the corpus analysis. Seng Zhao's description of the style that Kumārajīva aimed for gives a feeling of Kumārajīva's translation style. Seng Zhao was a member of Kumārajīva's translation team and wrote in the preface of Entry No. 327 *Hundred Treatise* 百論 (T 1569), collected in Fascicle Eleven of the *Chu san zang ji ji*<sup>549</sup> that Kumārajīva aimed for a style that was “unhewn without being coarse and concise without being obscure”.<sup>550</sup> There are over thirty uniquely shared terms between texts translated by Kumārajīva and anonymously produced texts. The list is given in Appendix C.

There are four uniquely shared terms between Entry No. 1681 *Abhidharmāmṛta Śāstra* 阿毘曇甘露味論 (T 1553), which is treated as anonymously produced in the *Chu san zang ji ji* and the *Taishō*, and texts translated by Kumārajīva. Three of the occurrences are in multiple fascicles of Entry No. 322 *Treatise on the Great Perfection of Wisdom* 大智度論 (T 1509) and one of the occurrences is in fascicles One and Two of Entry No. 320 *Sūtra on the Concentration of Sitting Meditation* 坐禪三昧經 (T 614). The *Taishō* also notes that T 1553 was produced in the Cao Wei dynasty (220-265 C.E.).

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<sup>549</sup> T 2145, 55.0077b11.

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<sup>550</sup> 使質而不野簡而必詣, Xinzhang Luo, “Seng Zhao (384-414 CE),” in *An Anthology of Chinese Discourse on Translation: From Earliest Times to the Buddhist Project*, ed. Martha P. Y. Cheung, trans. Jane Lai and Martha Chueng (Taylor & Francis, 2014): 166, ebook.

The composition of T 1553 is traditionally attributed to Ghoṣa. The text discusses moral conduct and the nature of suffering and describes practices for cultivating merit and wisdom, including generosity, precepts, and meditation. It emphasizes the importance of transcending attachment and ignorance to follow the path to enlightenment. Fascicle Twenty of the *Treatise on the Great Perfection of Wisdom* refers to the *Abhidharma* 阿毘曇 multiple times, but it is not clear which specific text. However, it also quotes two of the uniquely shared terms “exhaustion of wisdom-related conditions” 智緣盡 and “extinction of conditions not based on wisdom” 非智緣盡 both in close proximity<sup>551</sup> and also in other fascicles.

Chuang<sup>552</sup> states that the *Abhidharmāmṛta Śāstra* had an important influence on the *Treatise on the Great Perfection of Wisdom*. Chuang proposes that the *Treatise on the Great Perfection of Wisdom* refers to the *Abhidharma* via the *Abhidharmāmṛta Śāstra*. Kumārajīva or his translation team may have had knowledge of the Chinese version of the *Abhidharmāmṛta Śāstra*. This neatly explains the uniquely shared terminology as a quotation. Anonymous texts are often not considered important, but these quotations by Kumārajīva show that this text is very important.

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<sup>551</sup> T 1509, 25.0212b11.

<sup>552</sup> Kun Mu Chuang, “The Influence of the *Abhidharmamrtarasasastra* on the *Mahaprajñāparamitopadesa* and *Adhidharmakosabhasya* 大智度論と俱舍論に及ぼした甘露味論の影響.” *Journal of Indian and Buddhist Studies* 53, no. 1 (2004): 366–364.

There are three uniquely shared terms between Entry No. 877 *Scripture for Invocation of Avalokiteśvara and Dharani for Overcoming Evil* 請觀世音菩薩消伏毒害陀羅尼呪經 (T 1043), which is treated as anonymously produced in the *Chu san zang ji ji* and the *Taishō*, and Entry No. 300 *Kuśalamūlasamparigraha* 華手經 (T 657) translated by Kumārajīva. The terms are not in close proximity, ruling out direct copying. T 1043 tells a story of a crisis in the city of Vaiśālī where people are afflicted with terrible illnesses caused by malevolent spirits. The Buddha instructs the people to seek refuge in Avalokiteśvara, who teaches a *dhāraṇī* to eliminate harm, as well as avert future disasters. The nature of the connection between the two texts is not clear.

### **Buddhayaśas**

The biography of Buddhayaśas 佛陀耶舍 is included in Part Two, Fascicle Fourteen of the *Chu san zang ji ji* where it mentions that he was from Kashmir and spent time in Kucha where he overlapped with Kumārajīva. Buddhayaśas later followed Kumārajīva to Chang'an. He was in Kucha when Fu Jian 苻堅 (ruled 357-385 C.E.) of the Former Qin dynasty dispatched Lu Guang to attack Kucha.

Buddhayaśas is known for translating Entry No. 332 *Dharmaguptaka Vinaya* 四分律 (T 1428) in sixty fascicles and Entry No. 331 *Dīrgha Āgama* 長阿含經 (T 1) in twenty-two fascicles, which he translated together with Zhu Fonian.

There is only a single uniquely shared term between texts translated by Buddhayaśas and anonymously produced texts. Details are listed in Appendix C.

## Dharmakṣema

The biography of Dharmakṣema 曇無讖 is included in Part Three, Fascicle Fourteen of the *Chu san zang ji*.<sup>553</sup> He was from Central India and became a disciple of Buddhayaśas at an early age. Juqu Mengxun 沮渠蒙遜 (ruled 401-433 C.E.), king of the state of Northern Liang, invited Dharmakṣema for an audience.

Dharmakṣema is known for translating Entry No. 336 *Mahāparinirvāṇa Sūtra* 大般涅槃經 (T 374) in forty fascicles, Entry No. 337 *Mahāsaṃnipāta Sūtra* 大方等大集經 (T 397) in sixty fascicles, Entry No. 340 *Karuṇāpuṇḍarīka Sūtra* 悲華經 (T 157) in ten fascicles, and Entry No. 343 *Bodhisattvabhūmi Sūtra* 菩薩地持經 (T 1581) in ten fascicles. Dharmakṣema travelled to Khotan, where he obtained a manuscript of the *Mahāparinirvāṇa Sūtra*.

The uniquely shared terminology between texts translated by Dharmakṣema and anonymously produced texts is listed in Appendix C.

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<sup>553</sup> T 2145, 55.0102c21.

There are five uniquely shared terms between Entry No. 820 *Sūtra on the Origin of the Bodhisattva's Jade Necklace* 菩薩瓔珞本業經 (T 1485) in two fascicles, treated as anonymously produced in the *Chu san zang ji ji*, and texts translated by Dharmakṣema. The translation of T 1485 is attributed to Zhu Fonian in the *Taishō*. Four of these terms are shared with Entry No. 343 *Bodhisattvabhūmi Sūtra* 菩薩地持經 (T 1581) attributed to Dharmakṣema in ten fascicles. T 1485 narrates a story of a gathering where the Buddha expounds on the bodhisattva path, stages of practice, including the ten abodes, ten practices, ten dedications. It emphasizes the importance of the bodhisattva vows. Buswell<sup>554</sup> states that T 1485 is a Chinese indigenous composition and that the attribution of the translation to Zhu Fonian in the *Taishō* has its origin in the *Li dai san bao ji*, which is incorrect. Schlosser<sup>555</sup> notes that *Ben ye yingluo jing shu* 本業瓔珞經疏 (T 2798), not included in the corpus in this study, is a commentary and is considered apocryphal, composed making use of various Central Asian sources. The anonymously composed *Sūtra on the Origin of the Bodhisattva's Jade Necklace* may have been composed with reference to the *Bodhisattvabhūmi* translated by Dharmakṣema, which would explain the uniquely shared terminology.

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<sup>554</sup> Buswell, "Introduction," 8.

<sup>555</sup> Schlosser, "Bodhisattva Path in Gandhāra," 264.

There are four uniquely shared terms between Entry No. 724 *Vajrasamādhi Sūtra* 金剛三昧經 (T 273) treated as anonymously produced in the *Chu san zang ji ji* and in the *Taishō*, and texts translated by Dharmakṣema. Two of these terms are from fascicles Four and Five of Entry No. 343 *Bodhisattvabhūmi Sūtra* 菩薩地持經 (T 1581). T 273 narrates a discourse by the Buddha and various bodhisattvas concerning concepts such as emptiness, non-duality, the nature of mind, and the path to liberation. Buswell<sup>556</sup> argues that T 273 is a Korean native composition. The uniquely shared terminology may be explained by T 273 borrowing from Dharmakṣema's translation.

### **Daotai and Buddhavarman**

The biographies of Daotai and Buddhavarman are not included in the *Chu san zang ji ji*. They jointly translated Entry No. 348 *Abhidharmamahāvibhāṣa* 阿毘曇毘婆沙論 (T 1546) in sixty fascicles in the period 437-439 C.E. in Liangzhou. There is only a single uniquely shared term between texts translated by Daotai and Buddhavarman and anonymously produced texts.

### **Buddhabhadra**

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<sup>556</sup> Buswell, "Introduction," 3-4.

The biography of Buddhahadra 佛馱跋陀羅 is included in Part Four, Fascicle Fourteen of the *Chu san zang ji ji*<sup>557</sup> where it mentions that he was from Northern India and frequently travelled to Kashmir. The biography tells of his journey by sea to China and his interactions with Kumārajīva and Yaoxing, the ruler the Later Qin. He later travelled to Jingzhou 荊州 in 412 C.E. Buddhahadra is known for his translation of Entry No. 350 *Avatamsaka Sūtra* 大方廣佛華嚴經 (T 278) in sixty fascicles. His biography mentions that the manuscript for this was obtained from Khotan. The *Taishō* attributes the *Mahāsaṅghika Vinaya* 摩訶僧祇律 (T 1425) to Buddhahadra although the *Chu san zang ji ji* attributes it to Faxian in Entry No. 363.<sup>558</sup> Buddhahadra passed away in 429 C.E.

The uniquely shared terminology between texts translated by Buddhahadra and anonymously produced texts is presented in Appendix C. It includes three terms uniquely shared with Entry No. 1662 *Avaiartika Cakra Sūtra* 不退轉法輪經 (T 267) in four fascicles, treated as anonymously produced in the *Chu san zang ji ji* and the *Taishō*, and texts by Buddhahadra. Two of the terms are contained in T 278. The terms all come from different locations. T 267 narrates a discourse by the Buddha on the nature of reality and the path to enlightenment. The relationship between the texts is not clear.

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<sup>557</sup> T 2145, 55.0103b28.

<sup>558</sup> T 2145, 55.0012a09.

There are five uniquely shared terms with Entry No. 817 *Gaṇḍavyūha Sūtra* 羅摩伽經 (T 294), treated as anonymously produced in the *Chu san zang ji ji* and as translated by Shengjian in the *Taishō*, and texts by Buddhahadra. Four of the terms are contained in different locations of Entry No. 350 *Avataṃsaka Sūtra* 大方廣佛華嚴經 (T 278). T 294 describes a discourse by the Buddha who tells of his past practices as a bodhisattva, including his vows, virtues, and enlightenment practices. The relationship between the texts is not clear.

There are eight uniquely shared terms with the *Sūtra on the Origin of the Bodhisattva's Jade Necklace* 菩薩瓔珞本業經 (T 1485), treated as anonymously produced in the *Chu san zang ji ji* and as translated by Zhu Fonian in the *Taishō*, and the translation of the *Avataṃsaka Sūtra* 大方廣佛華嚴經 (T 278) by Buddhahadra. As mentioned above, Buswell<sup>559</sup> states that T 1485 is a Chinese indigenous composition and the attribution of the translation to Zhu Fonian in the *Taishō* has its origin in the *Li dai san bao ji* and is incorrect. The shared terms are clustered in fascicles Eight and Eleven of the *Avataṃsaka Sūtra*. Rather than overt copying of entire sentences, T 1485 has only borrowed names and short phrases.

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<sup>559</sup> Buswell, "Introduction," 8.

There are four uniquely shared terms with Entry No. 1429 *Jingang sanmei benxing qing jing bu huai bu mie jing* 金剛三昧本性清淨不壞不滅經 (T 644) in one fascicle, treated as anonymously produced in the *Chu san zang ji ji* and the *Taishō*, and texts translated by Buddhahadra. Three of these terms are contained in Entry No. 351 *Sūtra on the Samādhi of the Contemplation of the Buddha* 觀佛三昧海經 (T 643), translated by Buddhahadra in ten fascicles. All these terms are names of *samādhis*. Despite the different lengths of these two texts, there is clearly a close connection in content and terminology.

### Faxian

Faxian's 法顯 (c. 337–422 C.E.) biography is included in Part Six, Fascicle Fifteen of the *Chu san zang ji ji*.<sup>560</sup> The *Biographies of Eminent Monks* also includes a biography of Faxian,<sup>561</sup> which states that Faxian was a native of Pingyang in present-day Zhejiang province.

Faxian 法顯 lived during the Eastern Jin dynasty and was the earliest Chinese with documented travel to India, which is described in *The Journey of the Eminent Monk Faxian* 高僧法顯傳 (T 2085)<sup>562</sup>, commonly known as *A Record of Buddhist Kingdoms* 佛國記. Faxian left Chang'an in 399 C.E. and traveled from Chang'an to Dunhuang,

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<sup>560</sup> T 2145, 55.0111b27.

<sup>561</sup> Huijiao and Yang, *Biographies of Eminent Monks*, 96.

<sup>562</sup> Rongxi Li, “The Journey of the Eminent Monk Faxian: Translated from the Chinese of Faxian (Taishō Volume 51, Number 2085),” in *Lives of Great Monks and Nuns*, ed. Sengaku Mayeda (Berkeley, California: Numata Center for Buddhist Translation and Research, 2017), 157-214, ebook.

Shanshan, Khotan, Udyana in the Swat Valley, Gandhara near present day Peshawar, Taxila in Afghanistan, Mathura in the state of Uttar Pradesh in the north of India, and other locations in Central and South Asia. Faxian records the practice of both *Mahāyāna* and Mainstream Buddhism in Central Asia and India along the path that he traveled.

The *Chu san zang ji ji* credits Faxian with the translation of twelve works, five of which can be related to texts in the *Taishō*. The best known of these are Entry No. 363 *Mahāsaṅghika Vinaya* 摩訶僧祇律 (T 1425) in forty fascicles, which was translated in collaboration with Buddhahadra, and Entry No. 363 [*Mahāyāna*] *Nirvāṇa Sūtra* 大般泥洹經 (T 376) in six fascicles.

### Baoyun

The biography for Baoyun 寶雲 is included in Part Eight, Fascicle Fifteen of the *Chu san zang ji ji*.<sup>563</sup> The *Biographies of Eminent Monks*<sup>564</sup> states that Baoyun was a native of Liangzhou. Baoyun accompanied Faxian on his journey to India.

Sengyou attributes the translation of two texts to Baoyun individually. One of those, the *Buddhacarita*, is included in the *Taishō*. In addition, Sengyou lists Baoyun as collaborating with Saṅghavarman, Zhiyan, Guṇabhadra, Puti, and Fayong on a further seventeen texts. The *Taishō* gives Baoyun considerably less credit than Sengyou in these

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<sup>563</sup> T 2145, 55.0113a06.

<sup>564</sup> Huijiao and Yang, *Biographies of Eminent Monks*, 111.

collaborations. Lettere<sup>565</sup> discusses the missing attributions to Baoyun's and the discrepancies on this point in a number of catalogs.

There are two translations of the *Buddhacarita* in the *Taishō* with closely matching titles: the *Fo Ben Xing Jing* 佛本行經 (T 192), attributed to Dharmakṣema, and Entry No. 377 *Fo suo sing zan* 佛所行讚 (T 193), attributed to Baoyun. However, T 192 is not mentioned in the *Chu san zang ji ji*. Lettere<sup>566</sup> argues that Entry No. 377 *Fo suo sing zan* 佛所行讚 in the *Chu San Zang Ji* with translation attributed to Baoyun, should actually be related to T 192 due to an incorrect attribution in the *Taishō*, rather than T 193.

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<sup>565</sup> Laura Lettere, "The Missing Translator: A Study of the Biographies of the Monk Baoyun (376?-449)," *Rivista Degli Studi Orientali*: XCIII, 1/2, 2020, (2020): 259–74.

<sup>566</sup> Lettere, "Missing Translator," 35-36.

## Zhu Daosheng, Huiyan, and Buddhajīva

The biography of Zhu Daosheng 竺道生 is included in Part Four, Fascicle Fifteen and the biography of Huiyan 慧嚴 is included in Part Three Fascicle Fifteen of the *Chu san zang ji ji* and in the *Biographies of Eminent Monks*.<sup>567</sup> Zhu Daosheng was from a Xianbei family in present-day Hebei. Huiyan was from Yuzhou in present-day Henan.<sup>568</sup> Buddhajīva was from Kashmir.<sup>569</sup> Buddhajīva specialized in Vinaya and meditation texts.

The *Chu san zang ji ji* includes attribution of three texts to this team of translators<sup>570</sup> who worked from Longguang Temple in Jiankang at the time of Emperor Wen of Liu Song (424-453 C.E.). Two of these texts can be related to entries in the *Taishō*, although the attributions in the *Taishō* are slightly different. Those texts are Entry No. 379 *Mahīśāsaka Vinaya* 彌沙塞部和醯五分律 (T 1421) in thirty fascicles attributed to Buddhajīva and Zhu Daosheng and Entry No. 380 *Mahīśāsaka Five Part Vinaya Precept Manual for Monks* 彌沙塞五分戒本 (T 1422) in one fascicle attributed to Buddhajīva and others.

## Guṇavarman

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<sup>567</sup> Huijiao and Yang, *Biographies of Eminent Monks*, 284.

<sup>568</sup> Huijiao and Yang, 291.

<sup>569</sup> Huijiao and Yang, 105.

<sup>570</sup> T 2145, 55.0012b06.

The biography of Guṇavarman 求那跋摩 in Part Five, Fascicle Fourteen of the *Chu san zang ji ji*<sup>571</sup> states Guṇavarman was a native of Kashmir. He travelled by sea to Java and then to China, arriving in Jiankang [Nanjing] in 431 C.E. The *Chu San Zan Ji Ji* catalog attributes the translation of four texts to Guṇavarman,<sup>572</sup> all related to precepts and monastic rules. Two of these can be related to entries in the *Taishō*: Entry No. 383 *Sūtra on the Precepts of the Bodhisattvas* 菩薩善戒經 (T 1582) in nine fascicles and Entry No. 384 *A Brief Discussion on the Five Precepts for Lay People* 優婆塞五戒威儀經 (T 1503) in one fascicle.

### Samghavarman

The biography of Samghavarman 僧伽跋摩 in Part Six, Fascicle Fourteen of the *Chu san zang ji ji*<sup>573</sup> states that he was of Indian ancestry and travelled to Jiankang from the desert in 433 C.E.

The translations of five texts are attributed to Saṅghavarman in the *Chu san zang ji ji*, four of which can be related to texts in the *Taishō*. These are Entry No. 387 *Samyuktābhīdharmahṛdaya* 雜阿毘曇心論 (T 1552) in eleven fascicles translated together with Baoyun, Entry No. 388 *Mātrkā Sūtra* 薩婆多部毘尼摩得勒伽 (T 1441) in ten fascicles, Entry No. 389 *Summary of the Different Types of Karmic Retribution* 分別業報略經 (T 723) in one fascicle, and Entry No. 390 *Dharma Essentials Verses for the Exhortation of Kings* 勸發諸王要偈 (T 1673) in one fascicle.

### Dharmamitra

The biography of Dharmamitra 曇摩蜜多 is included in Part Seven, Fascicle Fourteen of the *Chu san zang ji ji*<sup>574</sup> where it states that he was from Kashmir, travelled to Kucha, and then to Sichuan in 424 C.E. and on to the Liu Song capital of Jianye.

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<sup>571</sup> T 2145, 55.0104b01.

<sup>572</sup> T 2145, 55.0012b18.

<sup>573</sup> T 2145, 55.0104c06.

<sup>574</sup> T 2145, 55.0105a01.

Sengyou attributes translation of Entry No. 392 *Samantabhadra Contemplation Practice Methods Sūtra* 佛說觀普賢菩薩行法經 (T 277) in one fascicle, Entry No. 393 *Sūtra on the Contemplation of Ākāśagarbha* 觀虛空藏菩薩經 (T 409) in one fascicle, Entry No. 394 *Secret Essential Methods of Chan* 禪祕要法經 (T 613) in three fascicles, and Entry No. 395 *Scripture on the Five Gates of Chan - Essential Methods* 五門禪經要用法 (T 619) to Dharmamitra. These attributions differ slightly from the *Taishō*, which attributes translation of T 613 to Kumārajīva.

### **Guṇabhadra**

The biography of Guṇabhadra 求那跋陀羅 is included in Part Eight, Fascicle Fourteen of the *Chu san zang ji ji*<sup>575</sup> where it states that he was from Central India. He travelled from India to China by ship, arriving in Guangzhou in 435 C.E.

Guṇabhadra participated in the translation of eight texts that can be found in the *Taishō*, totaling 67 fascicles. He is best known for his translation of Entry No. 402 *Samyukta Āgama* 雜阿含經 (T 99) in 50 fascicles, for which he collaborated with Baoyun, Puti, and Fayong.

### **Juqu Jingsheng**

Juqu Jingsheng's biography is included in Part Nine, Fascicle Fourteen of the *Chu san zang ji ji*<sup>576</sup> where he is known as Juqu Marquis of Anyang 沮渠安陽侯. He was from Tianshui, in present-day Gansu.

Juqu Jingsheng translated two texts that are included in the *Taishō*: Entry No. 415 *Sūtra on the Visualization of Maitreya Bodhisattva Ascending to be Born in Tusita Heaven* 佛說觀彌勒菩薩上生兜率天經 (T 452) and Entry No. 417 *Sūtra on Essential Chan Methods for Curing Sickness* 治禪病祕要法 (T 620).

### **Guṇavṛddhi**

The biography of Guṇavṛddhi 求那毘地 is included in Part Ten, Fascicle Fourteen of the *Chu san zang ji*<sup>577</sup> where it states that he was from Central India and arrived at Jianye at the beginning of the Jianyuan era (479-482 C.E.).

The only text translated by Guṇavṛddhi related to the *Taishō* is Entry No. 438 *Sūtra of One Hundred Parables* 百喻經 (T 209) in four fascicles.

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<sup>575</sup> T 2145, 55.0105b18.

<sup>576</sup> T 2145, 55.0106b23.

<sup>577</sup> T 2145, 55.0106c21.

## Chapter 9: Conclusion

This study presented the compilation and analysis of a corpus of early Chinese texts related to the catalog of the *Chu san zang ji ji*. The analysis addressed goals connected with the three themes: firstly, describing the people, places, and texts related to the written and oral transmission of Buddhist teachings to China; secondly, how the translation of Indic texts to Chinese was performed, and; thirdly, distinguishing of translations of Indic sources from texts composed natively in East Asia. The novel methodology formulated was used to provide both a holistic description and was also used in a predictive mode in support of each goal. The major challenges to this were: firstly, that the titles of the texts have changed over time; secondly, that the majority of the texts in the corpus were anonymously produced, and; thirdly, that the attributions in modern catalogs are not reliable.

The corpus compiled consisted of 602 texts and the corpus metadata included data drawn both from the *Chu san zang ji ji* and secondary literature. The compilation of the metadata assembled data relating to the people, places, and texts that played an important role in the transmission of Buddhism during the period of the corpus, from the Later Han dynasty to completion of the *Chu san zang ji ji* circa 515 CE. The novel corpus analysis methodology used an AI model, classical machine learning, and custom software to perform terminology analysis, linguistic analysis, style analysis, and content analysis of the corpus.

The terminology analysis provided an overview of the early evolution of the Buddhist terminology in Chinese translation. It provided a detailed answer to the

question, who established what terminology and who adopted them? The study also provided a detailed answer to the question, what were the dominant styles of establishment of Buddhist terminology in Chinese translation?

An Shigao established foundational terminology. This is apparent in the data with high document frequency for many of the terms he established, demonstrating very wide adoption. An Shigao's style included establishing many terms through creating new meanings for existing Chinese words. Following An Shigao, Lokakṣema introduced a more powerful style with a large influx of transliterations with intensified spiritual meaning, laying a foundation for translation of *Mahāyāna* texts. Following Lokakṣema, Dharmarakṣa drove the first major period of expansion by translating more and longer texts. Following Dharmarakṣa, Kumārajīva drove the second period of expansion with notable retranslation marked by refinement of terminology.

Database queries were formulated to discover uniquely shared terminology between anonymously produced texts. These queries identified connections suggesting authorship, copying of content, and referencing.

The discovery of uniquely shared vocabulary contradicted the findings of scholars on the translations of some texts attributed to An Shigao and Zhi Qian in the *Chu san zang ji ji* and the *Taishō*. Although scholars had disputed the attributions, nevertheless, this study found uniquely shared vocabulary, indicating that the attributions in the *Chu san zang ji ji* and the *Taishō* have merit. The translations in question are Entry No. 634 *Sūtra on Distinguishing the Consequences of Wholesome and Unwholesome Actions* 佛說分別善惡所起經 (T 729) and Entry No. 19 *Sūtra on the Nine Causes of Untimely*

*Death* 九橫經 (T 150B), by An Shigao, and Entry No. 78 *Da ming du jing* 大明度經 (T 225), by Zhi Qian.

The linguistic analysis provided an indication that many anonymously produced texts were produced as early as the second or third century CE. However, linguistic analysis provided only a weak correlation with translator attribution and period of production. The difficulty was that changes in the written language were driven by spoken language but there were varying levels of influence from vernacular Chinese with different translators. In addition, the timespan of the corpus is short.

Style analysis showed that the impression of vernacular style had much to do with the unrefined style of early translators An Shigao and Lokāṣema than with written vernacular Chinese. There are some elements of written vernacular Chinese in the Han dynasty texts but they are sparse and more commonly used starting from the time of Dharmarakṣa.

In addition, style analysis showed that the presence of interpolations and the use of indigenous Chinese philosophical concepts to explain Buddhist teachings were strongly correlated with the classification of texts as East Asian indigenous compositions in the secondary literature. The analysis of function words associated with the literal translation of Indic grammatical structures in East Asian indigenous compositions was consistent with them being patchworks from different Indic sources assembled in China rather than being obvious forgeries.

Content analysis showed that *Taishō* genres are broad and hard to correlate with content. Named entity recognition was used to find the earliest reference to Kanīṣka in the Chinese Buddhist canon.

Validation of results from the AI model was an important focus of the study through a combination of manual validation, self-validation, and comparison with n-gram analysis. The three main problems observed with the results of the terminology analysis were hallucinations, misclassification, and missed occurrences. However, these were in limited amounts that did not invalidate the results. A limitation of the methodology apparent in the style analysis was data leakage where it was observed that the AI model responses on questions of translation style included prior knowledge of a particular individual's training style rather than analysis of the text supplied to it.

The corpus analysis performed produced such a wealth of information that it was impossible to discuss it all in this dissertation. There is great scope in future studies for additional interpretation and discussion of the findings.

The methodology described in this dissertation could be applied to any corpus of Chinese Buddhist texts. It would be desirable to apply the methodology to a larger set of texts from a later and more comprehensive catalog, such as the *Kaiyuan lu*. This would require recompilation and expansion of the metadata to integrate the *Chu san zang ji ji* and the *Kaiyuan lu*, which would be a non-trivial effort. It would be an important undertaking because many important texts are not included in the *Chu san zang ji ji*, with the likelihood of new findings based on additional content and new genres.

With the continuous and rapid improvement of AI models and the ecosystems surrounding them, the analysis performed in this dissertation should be considered as a temporal baseline. Re-running the analysis with a more capable AI model would be important to validate the results of this dissertation, and new findings could emerge. In addition, new ways of interacting with AI models are emerging, such as agentic systems

and skills extensions that may be superior to the basic prompting approach used in this study.

Another direction for future research is deeper corpus analysis, including a deeper analysis of vernacular elements and development of a treebank and use of an AI model to annotate the corpus for style and content. This may provide answers to some aspects of this dissertation that were inconclusive.

Chapter Three indicated a methodology for synonym analysis using word embeddings. However, only an example was provided. Synonym analysis could be performed on the entire collection of terminology to understand better which terms replaced previous terms. This would help to identify extinct terminology that could potentially be used to provide date ranges for anonymously produced texts.

## **Use of Artificial Intelligence in the Preparation of this Dissertation**

Artificial intelligence (AI) was used in the following ways in the preparation of this dissertation. All generated content was validated by and is the responsibility of the author.

### **Corpus Analysis**

Custom software in the “Silk Road Corpus Repository”<sup>578</sup> uses the Gemini API.<sup>579</sup> Software for the corpus analysis was written with the assistance of Gemini Code Assist<sup>580</sup> for some of the Python and Structured Query Language scripts

### **Data Visualization**

Data visualization was prepared using the Vega Visualization Grammar<sup>581</sup> with the assistance of the Gemini web app<sup>582</sup> for generation of JavaScript Object Notation (JSON) code of some of the charts.

### **Model and Prompt Evaluation and Tuning**

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<sup>578</sup> Amies, “Silk Road Corpus Repository.”

<sup>579</sup> Google, “Gemini API: Generating Content,” V. v1beta. Google, released 2025, <https://ai.google.dev/api/generate-content>.

<sup>580</sup> Google, “Gemini Code Assist,” Google, 2025, <https://codeassist.google/>.

<sup>581</sup> Vega Project Contributors, “Vega – A Visualization Grammar,” released 2025, <https://vega.github.io/vega/>.

<sup>582</sup> Google, “Gemini,” Google, 2025, <https://gemini.google.com>.

Vertex AI Studio<sup>583</sup> and ChatGPT (OpenAI 2025)<sup>584</sup> were used for model evaluation and for prompt evaluation and tuning.

### **Translation of Canonical Text**

Canonical text was translated with the assistance of: 1. Dharmamitra,<sup>585</sup> 2. the Fo Guang AI web app (Fo Guang Shan 2025),<sup>586</sup> and 3. the Gemini web app.<sup>587</sup> The author was part of the Fo Guang AI web app development team.

### **Secondary Literature Query and Translation**

The Silk Road Corpus web app,<sup>588</sup> described in the methodology section, was used in querying secondary literature. NotebookLM<sup>589</sup> was used for summarizing, and the Gemini web app<sup>590</sup> was used for assistance in translating secondary literature in Chinese and Japanese.

### **Summarizing Canonical Text Content**

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<sup>583</sup> Google, “Vertex AI Studio,” released 2025, <https://cloud.google.com/generative-ai-studio>.

<sup>584</sup> Open AI “ChatGPT,” released 2025, <https://chatgpt.com>.

<sup>585</sup> Sebastian Nehrdich, Kurt Keutzer, David Zorg Allport, Hubert Dworczyński, and Aminah Borg-Luck, “Dharmamitra,” released 2025, <https://dharmamitra.org/>.

<sup>586</sup> Fo Guang Shan, “Fo Guang AI,” released 2025, <https://foguangai.web.app>.

<sup>587</sup> Google, “Gemini.”

<sup>588</sup> Amies, “Silk Road Corpus.”

<sup>589</sup> Google, “NotebookLM,” released 2025, <https://notebooklm.google.com>.

<sup>590</sup> Google, “Gemini.”

AI models were used for summarizing canonical text content.

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## Appendix A: Validation Methodology

This appendix describes the more technical aspects of methodology for validation of results from AI model use in the corpus analysis.

**Accuracy** can be defined as the fraction of classifications that are correct (Manning, Raghavan, and Schütze 2008, 143; Knox 2018, 245). Accuracy is a good measure for validation provided there is not too much inherent bias in the data. For example, when labelling the genre of a text with one of ‘sūtra’, ‘jātaka’ ‘commentary’, ‘Vinaya’, or ‘history’ accuracy would be an appropriate metric. However, when looking for a matching alternative title for a text among many that do not match, then there would be an inherent bias towards a no match result, signaled by an empty result. So, accuracy would be a poor metric to use for searching for alternative titles because a model that always returns an empty result would have a high accuracy.

**Precision** can be defined as the proportion of relevant retrieved instances divided by all retrieved instances (Manning, Raghavan, and Schütze 2008, 143; Knox 2018, 245)). This measure is also most useful in information retrieval problems when there is not too much inherent bias in the data. An alternative definition of precision for problems outside of information retrieval is the fineness of distinction between categories (Neuendorf 2016, 141). In this study, that will be described as **granularity**.

**Recall** is defined as the fraction of relevant instances that are retrieved (Manning, Raghavan, and Schütze 2008, 143). This measure is also most useful in information retrieval problems and is not sensitive to inherent bias in the data. For example, if a

Buddhist term has 100 occurrences in the corpus but the AI model only discovered 80 of them, then the recall would be 80%.

**A false positive** is an instance that is identified incorrectly (Knox 2018, 245). For example, if the AI model identifies a string as Buddhist terminology but it is just a secular word or a hallucination, then that is a false positive. Identifying false positives is an important reason for validation when working with AI models.

**F1 score** is a quality measure that combines precision and recall. This measure is also most useful in information retrieval problems. It is calculated as  $F_1 = 2PR / (P + R)$ , where P is the precision, and R is the recall (Manning, Raghavan, and Schütze 2008, 144).

**Repeatability**, also known as reliability, is the ability of a procedure to produce the same results on repeated trials (Neuendorf 2016, 141). For example, if a prompt is sent to an AI model multiple times, the result returned should be the same. Repeatability is an issue in generative AI because of both randomness injected into AI models to make text read more naturally and because of non-determinism in AI models.

**Validity** can be defined as how well a measuring procedure represents the intended concept (Neuendorf 2016, 141). This encompasses the ideas above. Accuracy, precision, and reliability should be sufficient, and the measurement should measure what it is intended to measure.

It may seem strange to ask an AI model to validate itself. Indeed, manual validation is the gold standard. However, the non-determinism inherent in AI models means that they will not generally give identical answers when asked the same question twice (Atil, et. al. 2024). However, the substance of the answers should be similar. Thus, non-determinism can be useful for validation. The temperature, topP, and topK settings (Google 2025b) of the AI model that influence determinism were not changed from the default in this study. In addition to non-determinism, it should be expected that the same question asked in different ways will not necessarily give exactly the same answer.

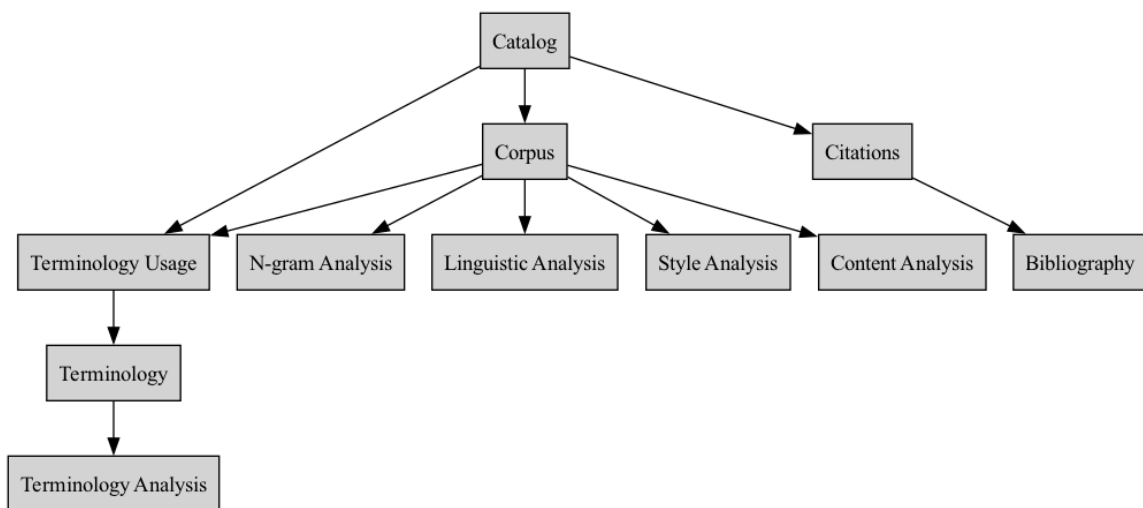
Many prompts lead to a quantitative result where some checks can be done with deterministic computations. For example, terminology related prompts are checked with n-gram analysis to make sure that a term identified by the AI model actually appears in the source text.

## Appendix B: Database Structure and Literature Search

### Application

#### Corpus Analysis Results Database Structure

Once the structured data has been loaded into the database, queries can be formulated to gain insights and answer the questions in the study. Structured Query Language is used to write the queries, which have been saved to the associated GitHub repository.<sup>591</sup> The structure of the database is shown in Figure B.1.



**Figure B.1: Database Structure**

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<sup>591</sup> [https://github.com/Silk-Road-Corpus/silk\\_road\\_corpus/blob/main/bibliography.md](https://github.com/Silk-Road-Corpus/silk_road_corpus/blob/main/bibliography.md)

Each rectangle in the figure represents a different table in the database. The arrows between the rectangles represent joins between the tables with a common field, most often the title of catalog entry. The difference between the Catalog and the Corpus tables is that the catalog contains metadata, such as entry title, translator, and date produced, whereas the corpus table contains references to the files that contain the entry text content. The Terminology Usage table contains references to texts using particular terms, whereas the Terminology table contains a dictionary of unique terms.

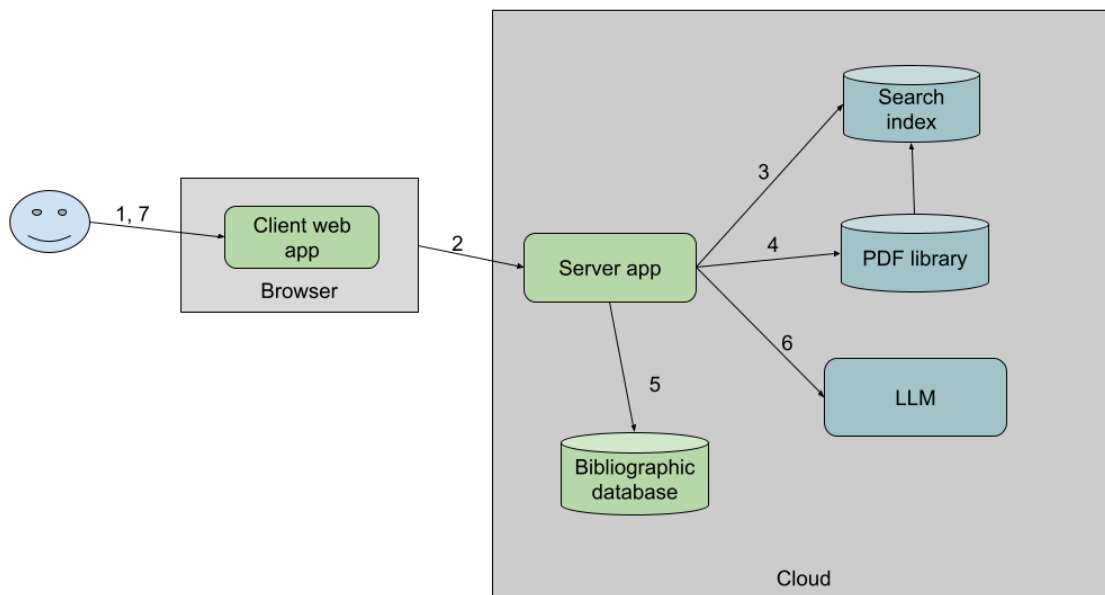
## **Retrieval Augmented Generative AI Application for Secondary Literature Database and Search**

Due to the size of the corpus and scope of the analysis done a large amount of secondary literature was consulted. A database was created for this and an experimental software application developed to search it.

Retrieval Augmented Generative AI (RAG) combines content retrieved from a database with an large language model (LLM). The Silk Road Corpus app<sup>592</sup> combines full semantic search of academic references with a bibliographical database and an LLM. A schematic diagram of the architecture for this system is shown in Figure B.2.

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<sup>592</sup> <https://silk-road-corpus.web.app/>



**Figure B.2: Schematic Diagram of Silk Road Corpus App**

The sequence of steps is:

1. User asks question of web app
2. Web app sends request to server app
3. Server app queries full text search index
4. Results from index is matched against bibliographic database
5. PDF file of top result is retrieved from the PDF library
6. The server app constructs a question based on the question entered by the user, the PDF file, and bibliographic details matching the file and sends the result to the LLM

7. Web app presents result to the user

This results in a template incorporating the user's question like: “Based only on the text in this {article | book} by {authors}, answer this question: {q}.” Answers will be derived only from information in the corpus, and Chicago style references will be included to indicate the source.

## Appendix C: Uniquely Shared Terminology

This appendix lists terminology uniquely shared between texts attributed to a known translator and anonymous texts.

**Table A1: Uniquely Shared Terminology between the *Sūtra on the Life of Śākyamuni* by Kang Mengxiang and Anonymous Texts**

Anonymous Text	Kang Mengxiang Text	Term
大愛道受誠經 (T 1478, Fascicle 1)	中本起經 (T 196)	‘eight rules of respect’ 八敬之法
大方便報恩經 (T 156, Fascicle 5)	中本起經 (T 196)	‘eight rules of respect’ 八敬之法

**Table A2: Uniquely Shared Terminology between Texts Attributed to Zhi Qian and Anonymous Texts**

Anonymous Text	Zhi Qian Text	Term
修行本起經 (T 184)	太子瑞應本起經 (T 185, fascicle 2)	dhyāna, liberation, samādhi, and conduct 禪解定行
修行本起經 (T 184)	太子瑞應本起經 (T 185, fascicle 1)	observing precepts and realizing the unconditioned 守戒無為

Anonymous Text	Zhi Qian Text	Term
修行本起經 (T 184)	太子瑞應本起經 (T 185, fascicles 1 and 2)	accumulate virtue and practice vows 積德行願
修行本起經 (T 184)	太子瑞應本起經 (T 185, fascicle 1)	untainted by sensual pleasures 聲色不能污
修行本起經 (T 184)	太子瑞應本起經 (T 185, fascicle 1)	the cessation of perceptions of wrath and fear 怒畏想盡
修行本起經 (T 184)	太子瑞應本起經 (T 185, fascicle 2)	spirit-consciousness 魂識
修行本起經 (T 184)	太子瑞應本起經 (T 185, fascicle 1)	sever the six passions 斷絕六情
摩達國王經 (T 519)	義足經 (T 198, fascicle 2)	teacher of the three realms 三界師
大明度經 (T 225, Fascicle 2)	佛說菩薩本業經 (T 281)	Heaven of Proximate Bounds 近際天
大明度經 (T 225, Fascicle 2)	佛說菩薩本業經 (T 281)	Heaven of Water Sound 水音天
大明度經 (T 225, Fascicle 2)	佛說菩薩本業經 (T 281)	Heaven of Subtle Guarding 守妙天
大明度經 (T 225, Fascicle 2)	佛說菩薩本業經 (T 281)	Heaven of Water Traveling 水行天

<b>Anonymous Text</b>	<b>Zhi Qian Text</b>	<b>Term</b>
大明度經 (T 225, Fascicle 2)	佛說菩薩本業經 (T 281)	Heaven of Pure Brightness 淨明天
大明度經 (T 225, Fascicle 2)	佛說菩薩本業經 (T 281)	Heaven of Wonderful Waters 水微天
灌頂經 (T 1331, Fascicle 8)	菩薩本業經 (T 281)	Heaven of Pure Brightness 淨明天
灌頂經 (T 1331, Fascicle 8)	菩薩本業經 (T 281)	Heaven of Overcoming Desire 愛勝天
灌頂經 (T 1331, Fascicle 8)	菩薩本業經 (T 281)	Vast and Wonderful Heaven 廣妙天
灌頂經 (T 1331, Fascicle 8)	菩薩本業經 (T 281)	Heaven of Proximate Bounds 近際天
灌頂經 (T 1331, Fascicle 8)	菩薩本業經 (T 281)	Heaven of Subtle Guarding 守妙天
獬狗經 (T 214)	梵摩渝經 (T 76)	Buddha's bright teaching 佛明教
聞城譬經 (T 713)	瑞應本起經 (T 185, fascicle 2)	name and appearance 名像
自誓三昧經 (T 623)	孛抄經 (T 790)	to tread the path 踐道迹
舊雜譬喻經 (T 206)	釋摩男本四子經 (T 54)	Nirgrantha sect 尼捷種

<b>Anonymous Text</b>	<b>Zhi Qian Text</b>	<b>Term</b>
菩薩瓔珞本業經 (T 1485, Fascicle 1)	菩薩本業經 (T 281)	Heaven of Immeasurable Water 水無量天
菩薩瓔珞本業經 (T 1485, Fascicle 1)	菩薩本業經 (T 281)	Heaven of Water Traveling 水行天
菩薩瓔珞本業經 (T 1485, Fascicle 1)	菩薩本業經 (T 281)	Heaven of Water Sound 水音天
菩薩瓔珞本業經 (T 1485, Fascicle 1)	菩薩本業經 (T 281)	Heaven of Subtle Guarding 守妙天
菩薩瓔珞本業經 (T 1485, Fascicle 1)	菩薩本業經 (T 281)	Heaven of Wonderful Waters 水微天
賢首夫人經 (T 570)	佛說菩薩本業經 (T 281)	Brahmic exertion 梵精進
阿難問事佛吉凶經 (T 492A)	義足經 (T 198, fascicle 2)	ship of wisdom 慧船

**Table A3: Uniquely Shared Terminology between Texts Attributed to Kang Senghui and Anonymous Texts**

<b>Anonymous Text</b>	<b>Kang Senghui Text</b>	<b>Term</b>
佛母般泥洹經 (T 145)	六度集經 (T 152, #3)	cross over the seeds of knowledge and views 度知見種

Anonymous Text	Kang Senghui Text	Term
四輩經 (T 769)	六度集經 (T 152, #3)	Śariputra 鷲鷲子
大愛道般泥洹經 (T 144)	六度集經 (T 152, #3)	cross over the seeds of knowledge and views 度知見種

**Table A4: Uniquely Shared Terminology between Texts Attributed to Mokṣala and Anonymous Texts**

Anonymous Text	Mokṣala Text	Term
弟子學有三輩經 (T 767)	放光般若經 (T 221, fascicles 3, 13, and 14)	Mahāyāna wisdom 摩訶衍慧
金剛清淨經 (T 644)	放光般若經 (T 221, fascicles 17)	Wisdom of the single characteristic 一合相智
阿難陀目佉尼呵離陀經 (T 1013)	放光般若經 (T 221, fascicles 4)	<i>dhāraṇī-mukha</i> 陀隣尼目佉

**Table A5: Uniquely Shared Terminology between Texts Attributed to Dharmarakṣa and Anonymous Texts**

Anonymous Text	Dharmarakṣa Text	Term
儒首菩薩無上清淨分衛經 (T 234)	大哀經 (T 398, fascicle 6)	unrivalled in the ten directions 獨步十方

Anonymous Text	Dharmarakṣa Text	Term
分別功德經 (T 1507)	大哀經 (T 398, fascicle 5)	thousand-spoked wheel sign 千輻相文
十二死經 (T 753)	阿差末經 (T 403, fascicles 3 and 5)	eight classes of persons 八等人
受十善戒經 (T 1486)	度世品經 (T 292, fascicle 5)	karma of greedy desire 貪欲業
大方便報恩經 (T 156)	普曜經 (T 186, fascicle 1)	Valiant Lion Bodhisattva 師子英菩薩
寶如來三昧經 (T 637, fascicle 1)	無極寶三昧經 (T 636, fascicle 1)	Sanmi Pusa 三彌菩薩
寶如來三昧經 (T 637, fascicle 1)	無極寶三昧經 (T 636, fascicle 1)	Matina Bodhisattva 摩提那菩薩
寶如來三昧經 (T 637, fascicle 2)	無極寶三昧經 (T 636, fascicle 2)	Kauśika's Heaven 拘屬提天
寶如來三昧經 (T 637, fascicle 2)	無極寶三昧經 (T 636, fascicle 2)	Alou Pusa 阿樓菩薩
寶如來三昧經 (T 637, fascicle 1)	無極寶三昧經 (T 636, fascicle 1)	blue lotus 文陀般華
寶如來三昧經 (T 637, fascicle 2)	無極寶三昧經 (T 636, fascicle 2)	Asura Heaven 阿須夷天

Anonymous Text	Dharmarakṣa Text	Term
持句神呪 (T 1351)	修行道地經 (T 606, fascicle 5)	jiu heng 鳩桓
新歲經 (T 62)	獨證自誓三昧經 (T 623)	<i>pravāraṇā</i> 鉢和蘭
新歲經 (T 62)	度世品經 (T 292 fascicles 2 and 3 and others)	inconceivable 無思議
大明度經 (T 225, fascicles 3, 4, 5, and 6)	大善權經 T 345 (fascicle 1)	<i>mahāsattva</i> 闍士
大明度經 (T 225, fascicles 3 and 4)	阿耨達經 (T 635, fascicle 1)	Supreme Perfect Enlightenment of Equanimity 平等最正覺
沙彌尼戒 (T 1474)	正法華經 (T 263, fascicle 3)	echoes from deep mountains 深山之響
淨度三昧經 (X 15)	光讚經 (T 222, fascicle 1)	Samādhi of the Sphere of Nothingness 空無三昧
淨度三昧經 (X 15)	象出經 (T 813)	Universal Light Samādhi 普光三昧
演道俗經 (T 820)	大哀經 (T 398, fascicle 6)	Realm of hungry ghosts 餓鬼之界
演道俗經 (T 820)	維摩詰經 (T 477)	profound scripture 深典

Anonymous Text	Dharmarakṣa Text	Term
無垢施菩薩分別應辯經 (T 310 #33)	大哀經 (T 398, fascicle 1)	Bodhisattva Adorned with Eloquence 辯嚴菩薩
聽施比丘經 (T 504)	阿耨達經 (T 635, fascicle 3)	unconditioned virtue 無為德
自誓三昧經 (T 622)	如來獨證自誓三昧經 (T 623)	ocean of six desires 六欲海
自誓三昧經 (T 622)	如來獨證自誓三昧經 (T 623)	Verification of precepts 戒證
自誓三昧經 (T 622)	如來獨證自誓三昧經 (T 623)	<i>Prāvāraṇa</i> 鉢和蘭
自誓三昧經 (T 622)	如來獨證自誓三昧經 (T 623)	defilements of suffering 苦垢
自誓三昧經 (T 622)	如來獨證自誓三昧經 (T 623)	Aspiration for Unsurpassed True Enlightenment 無上正真道心
自誓三昧經 (T 622)	如來獨證自誓三昧經 (T 623)	non-attachment root 無著根
自誓三昧經 (T 622)	如來獨證自誓三昧經 (T 623)	four swift streams 四駛流

Anonymous Text	Dharmarakṣa Text	Term
自誓三昧經 (T 622)	如來獨證自誓三昧經 (T 623)	stage of pristine purity 童真位
自誓三昧經 (T 622)	正法華經 (T 263, fascicle 1)	Splendor of the World's Sounds 光世音
自誓三昧經 (T 622)	如來獨證自誓三昧經 (T 623)	the stage where one realizes the cessation of birth and death 了生位
興起行經 (T 197)	大善權經 (T 345, fascicle 2)	shaven-headed śramaṇa 髡頭沙門
菩薩受齋經 (T 1502)	光讚經 (T 222, fascicle 1)	sentient being 薩怛薩
菩薩瓔珞本業經 (T 1485)	普耀經 (T 186, fascicle 5)	tripiṭaka 三寶藏
薩羅王經 (T 520)	須摩經 (T 334)	Earth-holding god 持地神
迦葉責阿難雙度羅漢喻經 (T 2027)	等目菩薩經 (T 288, fascicle 3)	wheel of birth and death 生死之輪
長壽王經 (T 161)	普耀經 (T 186, fascicle 8)	to pull out the twelve roots 拔斷十二根
菩薩修行經 (T 330)	普超經 (T 627, fascicle 1), T 810 (1), T 342 (2)	a plan for permanence 有常之計

<b>Anonymous Text</b>	<b>Dharmarakṣa Text</b>	<b>Term</b>
菩薩修行經 (T 330)	阿耨達經 (T 635, fascicle 1), T 288 (3)	acceptance of the Dharma-joy of non-arising 無所從生法樂之忍
菩薩修行經 (T 330)	大哀經 (T 398, fascicle 3), T 342 (1)	attachment to one's body and life 貪身壽命
菩薩修行經 (T 330)	正法華經 (T 263, fascicle 1 and 3), T 635 (2), T 585 (1), T 401 (2), T 635 (3)	Conditioned One Enlightenment Vehicle 緣一覺乘
長者法志妻經 (T 572)	阿差末經 (T 403, fascicle 5)	three bodhimaṇḍas 三道場

**Table A6: Uniquely Shared Terminology between Texts Attributed to Zhu Fonian and Anonymous Texts**

<b>Anonymous Text</b>	<b>Zhu Fonian Text</b>	<b>Term</b>
分別功德論 (T 1507)	出曜經 (T 212, fascicles 5, 6, 13, 20, 23, 27)	impure defilements 穢漏
分別功德論 (T 1507)	出曜經 (T 212, fascicle 30)	Comprehensive retention and excellent memory 總持強記

Anonymous Text	Zhu Fonian Text	Term
摩訶乘寶嚴經 (T 351)	十住斷結經 (T 309, fascicles 1 and 9)	dharma of illusory transformation 幻化之法
大明度經 (T 225, fascicle 2)	十住斷結經 (T 309, fascicle 1)	To transcend the self of knowledge and views 度知見身
阿難陀目佉尼呵離陀經 (T 1013)	出曜經 (T 212, fascicle 17)	fetters and defilements 疑結使
頻毘婆王詣佛供養經 (T 133)	十住斷結經 (T 309, fascicles 3, 4, and 5)	mind of the great vow 弘誓意

**Table A6: Uniquely Shared Terminology between Texts Attributed to Kumārajīva  
and Anonymous Texts**

Anonymous Text	Zhu Fonian Text	Term
不退轉輪經 (T 267)	大智度論 (T 1509, fascicles 1, 2, 6, 15, 30, 54)	cessation of the sphere of mental activity 心行處滅
不退轉輪經 (T 267)	新維摩詰經 (T 475, fascicle 2)	bodhi has no fixed abode 菩提無住處
仁王護國般若波羅蜜經 (T 245)	大智度論 (T 1509, fascicle 50)	unconditioned great compassion 無緣大悲

Anonymous Text	Zhu Fonian Text	Term
分別功德經 (T 1507)	大智度論 (T 1509, fascicle 4)	monk of patience 羸提比丘
十二頭陀經 (T 783)	十誦律 (T 1435, fascicles 4 and 36)	practice of sitting in the open 露地坐法
受十善戒經 (T 1486)	大智度論 (T 1509, fascicle 12, 19, 42)	perverted and false views 顛倒妄見
大方便報恩經 (T 156)	妙法蓮華經 (T 262, fascicle 4)	birth from a lotus flower 蓮華化生
大方便報恩經 (T 156)	十住論 (T 1521, fascicle 16)	bodhisattva precepts 菩薩尸羅
大沙門羯磨 (T 1438)	十誦律 (T 1435, fascicle 23, 31, 41, and 56)	not to perform the act of expulsion 不作擯羯磨
如來智印經 (T 633)	大智度論 (T 1509, fascicles 1 and 100)	Mahākoṭhila 摩訶俱絺羅
恒水戒經 (T 33)	無量壽經 (T 366)	Mahāmaudgalyāyana 摩訶目乾連
惟日雜難經 (T 760)	大智度論 (T 1509, fascicles 7, 10 and 70)	ninety-eight fetters 九十八結

<b>Anonymous Text</b>	<b>Zhu Fonian Text</b>	<b>Term</b>
慈仁問八十種好經 (T 2867)	大智度論 (T 1509, fascicles 21, 31, and 39)	Buddha's Tripiṭaka 佛三藏
摩訶摩耶經 (T 383)	大智度論 (T 1509, fascicles 2 and 32)	King Aśoka 阿輸迦王
明度經 (T 225, fascicle 2)	大智度論 (T 1509, fascicle 11)	place of no desire 無欲處
決定毘尼經 (T 325)	思益義經 (T 586, fascicles 2 and 3)	Net-Bright Bodhisattva 網明菩薩
淨行經 (T 579)	成實論 (T 1646, fascicle 16)	knowledge of appellations 名字智
灌頂伏魔封印大神呪經 (T 1331, fascicle 7)	大智度論 (T 1509, fascicle 54)	Dhṛtarāṣṭra 提多羅吒
阿毘曇甘露味論 (T 1553, fascicle 1)	大智度論 (T 1509, fascicles 20, 22, 23, 31, and 55)	exhaustion of wisdom-related conditions 智緣盡
阿毘曇甘露味論 (T 1553, fascicle 1)	大智度論 (T 1509, fascicles 20, 31, and 55)	extinction of conditions not based on wisdom 非智緣盡

<b>Anonymous Text</b>	<b>Zhu Fonian Text</b>	<b>Term</b>
阿毘曇甘露味論 (T 1553, fascicle 2)	禪經 (T 614, fascicles 1 and 2)	four foundations of mindfulness 四念止
阿毘曇甘露味論 (T 1553, fascicle 1)	大智度論 (T 1509, fascicles 23)	nine undefiled roots 無漏九根
罪業報應教化地獄經 (T 724)	妙法蓮華經 (T 262, fascicle 2)	repaying the Buddha's kindness 報佛之恩
羅摩伽經 (T 294)	大智度論 (T 1509, fascicles 27, 29, and many others)	body born of Dharma-nature 法性生身
菩薩瓔珞本業經 (T 1485)	大智度論 (T 1509, fascicles 50)	unconditioned great compassion 無緣大悲
觀無量壽經 (T 365)	大智度論 (T 1509, fascicle 38)	Bhikkhu Dharmakara 法藏比丘
觀藥王藥上二菩薩經 (T 1161)	無量壽經 (T 366)	Sumeru-form Buddha 須彌相佛
請觀世音菩薩消伏毒害陀羅尼呪經 (T 1043)	佛說華手經 (T 657, fascicles 1 and 3)	Bhadrapāla Bodhisattva 跋陀婆羅菩薩
請觀世音菩薩消伏毒害陀羅尼呪經 (T 1043)	佛說華手經 (T 657, fascicle 9)	born from a lotus flower 蓮華化生

<b>Anonymous Text</b>	<b>Zhu Fonian Text</b>	<b>Term</b>
請觀世音菩薩消伏毒害陀羅尼呪經 (T 1043)	佛說華手經 (T 657, fascicle 4)	giver of fearlessness 施無畏者
金剛清淨經 (T 644)	維摩詰所說經 (T 475, fascicle 1)	White Fragrant Elephant Bodhisattva 白香象菩薩
阿彌陀佛偈 (T 1978)	思益義經 (T 586, fascicle 1)	Land of Peace and Happiness 安樂土
阿彌陀經 (T 362, fascicle 1)	妙法蓮華經 (T 262, fascicle 4)	born from a lotus flower 蓮華化生
阿彌陀經 (T 362, fascicle 1)	大智度論 (T 1509, fascicles 33 and 46)	六波羅蜜經

**Table A6: Uniquely Shared Terminology between Texts Attributed to  
Dharmakṣema and Anonymous Texts**

<b>Anonymous Text</b>	<b>Zhu Fonian Text</b>	<b>Term</b>
七佛神呪 (T 1333)	大般涅槃經 (T 374, fascicle 40)	Vipaśyin Buddha 毘舍浮佛
仁王護國般若波羅蜜經 (T 245)	方等大集經 (fascicles 13 and 43)	neither self nor other 無自無他

Anonymous Text	Zhu Fonian Text	Term
仁王護國般若波羅蜜經 (T 245)	方等大集經 (fascicle 22)	patience of non-aspiration 無願忍
分別功德經 (T 1507)	菩薩地持經 (T 1581, fascicle 6)	manifestation of supernormal powers 神足變現
分別功德經 (T 1507)	方等大集經 (fascicle 27)	giving terror 恐怖施
加丁比丘經 (T 2028)	優婆塞戒 (T 1488, fascicles 2, 3, 6)	items of the Triple Gem 三寶物
大方便佛報恩經 (T 156)	金光明經 (T 663, fascicle 1)	Supreme Buddha Sun 無上佛日
大方便佛報恩經 (T 156)	方等大集經 (fascicles 1 and 9)	Lightning Bodhisattva 電光菩薩
大方便佛報恩經 (T 156)	金光明經 (T 663, fascicle 1)	Shore of Great Wisdom 大智岸
摩訶乘寶嚴經 (T 351)	菩薩地持經 (T 1581, fascicle 1)	pure dharma 白淨之法
摩訶摩耶經 (T 383)	金光明經 (T 663, fascicle 3)	Angulimāla 央掘摩羅

Anonymous Text	Zhu Fonian Text	Term
摩訶摩耶經 (T 383)	優婆塞戒 (T 1488, fascicle 2)	Ocean of suffering in saṃsāra 生死苦海
摩訶摩耶經 (T 383)	優婆塞戒 (T 1488, fascicles 2, 3, 6)	items of the Triple Gem 三寶物
淨度三昧經 (X 15)	悲華經 (T 157, fascicles 7 and 8)	Dharma Rain Samādhi 法雨三昧
淨行經 (T 579)	大般涅槃經 (T 374, fascicle 15)	right-side reclining on a bed 右脇臥床
佛說灌頂呪宮宅神王守鎮左右經 (T 1331, fascicle 5)	大般涅槃經 (T 374, fascicle 3)	defiled and evil world 濁惡之世
稱揚諸佛功德經 (T 434)	菩薩地持經 (T 1581, fascicle 1)	pure dharma 白淨之法
罪業報應教化地獄經 (T 724)	金光明經 (T 663, fascicles 1, 2, 3, and 4)	Bodhisattva Śraddhādāra 信相菩薩
菩薩瓔珞本業經 (T 1485)	菩薩地持經 (T 1581, fascicles 4 and 5)	precepts of wholesome dharmas 攝善法戒
菩薩瓔珞本業經 (T 1485)	菩薩地持經 (T 1581, fascicles 4 and 5)	precepts for benefiting sentient beings 攝眾生戒

Anonymous Text	Zhu Fonian Text	Term
菩薩瓔珞本業經 (T 1485)	方等大集經 (T 397, fascicle 13)	bonds of the three realms 三界繫縛
菩薩瓔珞本業經 (T 1485)	菩薩地持經 (T 1581, fascicle 1)	gotra-nature 性種性
菩薩瓔珞本業經 (T 1485)	菩薩地持經 (T 1581, fascicle 1)	nature of practiced seeds 習種性
觀無量壽經 (T 365)	方等大集經 (T 397, fascicles 10, 33, and 51)	unconditional loving-kindness 無緣慈
觀藥王藥上二菩薩經 (T 1161)	大般涅槃經 (T 374, fascicles 16 and 18)	four grave offenses 四重禁罪
金剛三昧經 (T 273)	優婆塞戒 (T 1488, fascicle 2)	Ocean of suffering in saṃsāra 生死苦海
金剛三昧經 (T 273)	菩薩地持經 (T 1581, fascicles 4 and 5)	precepts for benefiting sentient beings 攝眾生戒
金剛三昧經 (T 273)	悲華經 (T 157, fascicle 8)	mind of nirvana 寂滅之心
金剛三昧經 (T 273)	菩薩地持經 (T 1581, fascicles 4 and 5)	precepts of wholesome dharmas 攝善法戒

**Table A7: Uniquely Shared Terminology between Texts Attributed to  
Buddhabhadra and Anonymous Texts**

<b>Anonymous Text</b>	<b>Buddhabhadra Text</b>	<b>Term</b>
不退轉法輪經 (T 267)	大方廣佛華嚴經 (T 278, fascicle 36)	Inconceivable Vehicle 不思議乘
不退轉法輪經 (T 267)	大方廣佛華嚴經 (T 278, fascicle 4)	Realm of King Yama 閻羅王界
不退轉法輪經 (T 267)	觀佛三昧經 (T 643, fascicle 2)	Aspiration for supreme enlightenment 無上菩提道意
仁王護國般若波羅蜜經 (T 245)	大方廣佛華嚴經 (T 278, fascicles 8, 13, 18, 47)	Consecrating Bodhisattva 灌頂菩薩
前世三轉經 (T 178)	大方廣佛華嚴經 (T 278, fascicle 44)	pure wisdom eye 清淨智眼
受十善戒經 (T 1486)	觀佛三昧經 (T 643, fascicle 5)	Iron Net Hell 鐵網地獄
大方便報恩經 (T 156)	大方廣佛華嚴經 (T 278, fascicles 3, 8, and others)	Vairocana Tathāgata 盧舍那如來

Anonymous Text	Buddhabhadra Text	Term
摩訶摩耶經 (T 383)	觀佛三昧經 (T 643, fascicle 2)	Māra, King of the Six Desires 六欲魔王
決定毘尼經 (T 325)	觀佛三昧經 (T 643, fascicle 6)	Samādhi of Great Compassion 大悲三昧
生死變化經 (T 796)	大方廣佛華嚴經 (T 278, fascicle 58)	three pure eyes 三淨眼
羅摩伽經 (T 294)	大方廣佛華嚴經 (T 278, fascicle 52)	Dharma-gate of Universal Light and Joyful Banner 普光喜幢法門
羅摩伽經 (T 294)	觀佛三昧經 (T 643, fascicle 4)	Formless precepts 無相戒
羅摩伽經 (T 294)	大方廣佛華嚴經 (T 278, fascicles 13, and others)	Jewel treasury 摩尼寶藏
羅摩伽經 (T 294)	大方廣佛華嚴經 (T 278, fascicles 1, 4, and others)	Nirvana Bodhimaṇḍa 寂滅道場
羅摩伽經 (T 294)	大方廣佛華嚴經 (T 278, fascicle 48)	City of Omniscience 薩婆若城

<b>Anonymous Text</b>	<b>Buddhabhadra Text</b>	<b>Term</b>
菩薩瓔珞本業經 (T 1485, fascicles 1 and 2)	大方廣佛華嚴經 (T 278, fascicle 11)	conduct free from delusion and confusion 離癡亂行
菩薩瓔珞本業經 (T 1485, fascicles 1 and 2)	大方廣佛華嚴經 (T 278, fascicles 14 and 20)	Dedication of thusness 如相迴向
菩薩瓔珞本業經 (T 1485, fascicle 2)	大方廣佛華嚴經 (T 278, fascicle 8)	birth, noble, dwelling 生貴住 (partial term)
菩薩瓔珞本業經 (T 1485, fascicle 2)	大方廣佛華嚴經 (T 278, fascicle 8)	Abiding in the correct mind 正心住
菩薩瓔珞本業經 (T 1485, fascicles 1 and 2)	大方廣佛華嚴經 (T 278, fascicle 11)	respectful practice 尊重行
菩薩瓔珞本業經 (T 1485, fascicles 1 and 2)	大方廣佛華嚴經 (T 278, fascicle 8)	govern the land and abide 治地住
菩薩瓔珞本業經 (T 1485, fascicles 1 and 2)	大方廣佛華嚴經 (T 278, fascicle 8)	Abode of purity 童真住
觀無量壽經 (T 365)	大方廣佛華嚴經 (T 278, fascicles 10, 12, and 13)	Yama Heaven Palace 夜摩天宮

Anonymous Text	Buddhabhadra Text	Term
觀藥王藥上二菩薩經 (T 1161)	觀佛三昧經 (T 643, fascicles 3 and others)	Ocean-like Samādhi of Buddha Contemplation 觀佛三昧海
金剛三昧本性清淨不壞不滅經 (T 644)	大方廣佛華嚴經 (T 278, fascicle 6)	Avataṃsaka Samādhi 華嚴三昧
金剛三昧本性清淨不壞不滅經 (T 644)	觀佛三昧海經 (T 643, fascicles 1 and 2)	Samādhi of the Cessation of Thought 滅意三昧
金剛三昧本性清淨不壞不滅經 (T 644)	觀佛三昧海經 (T 643, fascicle 2)	Lion's Roar King of Power Samādhi 師子吼力王三昧
金剛三昧本性清淨不壞不滅經 (T 644)	觀佛三昧海經 (T 643, fascicles 4 and 6)	Samādhi of the mark of liberation 解脫相三昧
阿彌陀佛偈 (T 1978)	大方廣佛華嚴經 (T 278, fascicles 14 and others)	pure physical body 清淨色身

## Appendix D: Words Adopted from the Corpus into Modern Chinese

**Table D.1: Words Adopted from the Corpus into Modern Chinese**

Term	First Buddhist Use	Notes
‘Hell’ 地獄 <i>dìyù</i>	Fascicle Two of the <i>Sūtra on the Law of Ten Rewards in the Dīrghāgama</i> 長阿含十報法經 (T 13, 1. 0240a11) by An Shigao (146-168 CE)	<i>Book of Later Han</i> 卷五十三 周黃徐姜申屠列傳 Fascicle 53 (Xiang 2023a, p. 77) <i>Ciyuan</i> (1979-1984, v1, 590) gives the Buddhist origin but not the earliest use. <i>Ciyuan</i> quotes the <i>Fayuan zhulin</i> 法苑珠林 (T 2122) compiled in the Tang.
‘Vexation’ 煩惱 <i>fánnǎo</i> .	Fascicle Seven of the <i>Lotus Sūtra</i> 正法華經 (T 263, 9.0109a04) by Dharmarakṣa (286 CE)	<i>Wenxuan</i> 文選 — 卷五十九 Fascicle 59 (Xiang 2023a, p. 78). <i>Ciyuan</i> (1979-1984, v3, 1940) gives the Buddhist origin but not the earliest use. <i>Ciyuan</i> quotes the <i>Cheng Weishi</i>

Term	First Buddhist Use	Notes
		<i>Lun</i> 成唯識論 (T 1585) translated in the Tang.
‘Skillful means’ 方便 <i>fāngbiàn</i>	<i>Sūtra on the Grounds of the Way</i> 大道地經 (T 607, 15.0231a18) by An Shigao (146-168 CE)	‘Convenient’ (Xiang 2023a, p. 79).  Ciyuan (1979-1984, v2, 1383) gives the Buddhist origin but not the earliest use. <i>Ciyuan</i> quotes the <i>Jingde Records of the Transmission of the Lamp</i> 景德傳燈錄 (T 2076), compiled in the Song.
‘Equal’ 平等 <i>píngděng</i> .	Fascicle 1 of <i>Vimalakīrti Sūtra</i> 維摩詰經 (T 474, 14.0537b25) by Zhi Qian (222-253 CE)	<i>Wenxuan</i> 文選 — 卷五十九 Scroll 59 (Xiang 2023a, p. 86; Liang 2001, 403-404).  Ciyuan (1979-1984, v2, 994) quotes the <i>Nirvāṇa Sūtra</i> 涅槃經 (T 375) compiled in the Liu Song.
‘Present’ 現在 <i>xiànzài</i>	Fascicle 1 of <i>Vimalakīrti Sūtra</i> 維摩詰經 (T474, 14.0542a28) by Zhi Qian	(Xiang 2023a, p. 123; Liang 2001, 391-396) Not found in <i>Ciyuan</i> .

Term	First Buddhist Use	Notes
‘Past’ 過去  <i>guòqù</i>	Fascicle 1 of <i>Vimalakīrti Sūtra</i> 維摩詰經 (T474, 14.0542a28) by Zhi Qian	(Xiang 2023a, p. 123; Liang 2001, 391-396) Not found in <i>Ciyuan</i> , only mentioned in entry for 過 (Ciyuan 1979-1984, v4, 3078) and Buddhist origin is not mentioned.
‘Future’ 未來  <i>wèilái, Sanskrit: anāgata</i>	Fascicle 7 of <i>Abhidharmamahāvibhāṣa</i> 雜阿毘曇毘婆沙 (T 1547, 28.0464b227) by Saṃghabhūti and Zhu Fonian (383 CE)	(Xiang 2023a, p. 123; Liang 2001, 391-396) Ciyuan (1979-1984, v2, 1498) gives the Buddhist origin but not the earliest use. <i>Ciyuan</i> quotes the <i>Book of [Northern] Wei</i> .
‘Inconceivable’ 不可思議 <i>bù kě sī yì</i>	Fascicle 2 of <i>Sūtra on the Life of Śākyamuni</i> 中本起經 (T 196, 4.0163a03) by Kang Mengxiang (189-220 CE)	(Xiang 2023a, p. 257)
‘World’ 世界	Fascicle 2 of <i>Lotus Sūtra</i> 正法華經 (T 263,	(Xiang 2023a, p. 88)

Term	First Buddhist Use	Notes
	9.0109b25) by Dharmarakṣa (286 CE)	<i>Ciyuan</i> (1979-1984, v2, 1498) quotes the <i>Śūraṅgama Sūtra</i> 楞嚴經.
‘digest’ 消化	<i>Udānavarga</i> 出曜經 (T 212, fascicle 8) by Zhu Fonian.	Liang (2001, 161) <i>Ciyuan</i> (1979-1984, v3, 1794) does give the Buddhist origin, gives example from the later Tang dynasty work <i>Fa Yuan Zhu Lin</i> 法苑珠林.
‘Majestic’ 莊嚴 <i>zhuāngyán</i>	Fascicle 2 of <i>Akṣobhya Buddha-Field Sūtra</i> 阿閼佛國經 (T 313, 11.0761a17) by Lokakṣema (146-189 CE)	Fascicle 25 of <i>Book of the Later Han</i> 後漢書·卷二五·劉寬傳
‘manifesting by itself’ 自然 <i>zìrán</i> , Sanskrit: <i>svayambhū</i>	Fascicle 1 <i>Vimalakīrti Sūtra</i> 佛說維摩詰經 (T 474, 14. 0519b20) by Zhi Qian	In modern Chinese means ‘natural’ (Moedict, s.v. “自然”)
‘reality’ 實際, Sanskrit: <i>bhūtakoṭi</i>	Fascicle 1 of <i>Perfection of Wisdom in 25,000 Lines</i> 摩訶般若波羅蜜經 (T	Liang (2001, 404-405)

Term	First Buddhist Use	Notes
	223, 8.0219c14) by Kumārajīva (403-404 CE)	
‘tolerance’ 忍辱 <i>rěnrǔ</i> , Sanskrit: <i>kṣānti</i>	Fascicle 1 of <i>Sutra on the Law of Ten Rewards in the Dīrghāgama</i> 長阿含十報法經 (T 13, 1.0234b11) by An Shigao (146-168)	<i>Book of Later Han</i> 後漢書·卷五三·申屠蟠傳 (Moedict, s.v. “忍辱”)
‘pessimistic’ 悲觀 in modern Chinese, ‘contemplation on loving- kindness’ in Buddhism	Fascicle 7 of the <i>Lotus Sūtra</i> 妙法蓮華經 (T 262, 9.0058b03) by Kumārajīva (406 CE)	Liang (2001, 405-406)
‘malaria’ 冷熱風病 <i>lěng rè fēng bìng</i>	Fascicle 17 of <i>Perfection of Wisdom in 25,000 Lines</i> 摩訶般若波羅蜜經 (T 223, 8.0349a14) by	A synonym of 瘧疾 (Moedict, s.v. “冷熱病”)

Term	First Buddhist Use	Notes
	Kumārajīva and Xiao Yaoyuan with variant 冷熱風病	

## **Appendix E: Validation of AI Model Results for Linguistic Analysis**

Validation of results presented in Chapter Five is given in this appendix.

### **Repeatability**

Multiple runs were conducted to compare the results from the AI model for the first twenty texts in the corpus. The results returned by the AI model for eleven of these texts were identical. The remaining nine texts had differences between one and three of the eight parameters obtained from the AI model.<sup>593</sup>

### **Manual Validation**

The *Sūtra of Forty-Two Sections* 四十二章經 (T 784) all the counts were zero, except the final particle 耶 *yé*, which had one occurrence. There is also just a single occurrence of the character 耶 *yé* in the text. The same results were obtained in two runs against the AI model. The result from the AI model can be confirmed from the single occurrence in the sentence (T 784, 17. 0724a06)

其實在行，近而 不行，何益萬分耶！

Truly practicing but not doing so when close at hand. What is that good in countless ways?

The Later Han date given in the *Chu san zang ji ji* for this text is not accepted since, as discussed above, the secondary literature generally disagrees with the attribution to Kasyapa-Matanga as translator. The linguistic evidence for the period of this text is inconclusive. There is just a single final particle 耶 *yé*, although generally used less frequent after the Han, it does not rule out being composed in the Later Han.

The *Sūtra on the Skandha, the Dhātu, and the Ayatana* 陰持入經 (T 603) is attributed to An Shigao in the *Chu san zang ji ji* and the secondary literature reviewed does not contradict this. The results of the linguistic analysis are listed in Table E.1 below.

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<sup>593</sup> The files in the GitHub repository files are `data/linguistic_analysis1.csv` and `data/linguistic_analysis2.csv`.

Table E.1: Linguistic Analysis for Manual Validated Results

Parameter	Count			
	T 784	T 603	T 602	
Final particle 哉 <i>zāi</i>	0	0	1	
Final particle 耶 <i>yé</i>	1	0	1	
Final particle 耳 <i>ěr</i>	0	0	4	
Final particle 也 <i>yě</i>	0	0	287	
謂 <i>wèi</i>	0	2	177	
Passive 被 <i>bèi</i>	0	0	0	
Interrogative pronoun 何者 <i>hézhě</i>	0	0	0	
Interrogative pronoun 何等人 <i>héděng rén</i>	0	0	0	

Village 村 <i>cūn</i>	0	0	0	
To add 添 <i>tiān</i>	0	0	0	
Eat 吃 <i>chī</i>	0	0	0	
Yearn for; think 思想 <i>sīxiǎng</i>	0	0	0	
Certainly 的 <i>dì</i>	0	0	0	
Misfortune 事故 <i>shìgù</i>	0	0	0	
All 一切 <i>yīqiè</i>	0	0	0	

There are ten occurrences of the character 耳 *ěr* in T 603 but they all used in the sense of ‘ear’, not as a final particle. There are two occurrences of the character 謂 *wèi*, both as a cupola. There are three occurrences of the character 被 *bèi*, all in the sense of ‘bedding’ and not as a passive marker. From a linguistic perspective, the results are consistent with a Late Han composition.

The results for the *Great Sūtra on the Mindfulness of Breathing* 大安般守意經 (T 602). This text is attributed to An Shigao as a Late Han scripture but the secondary literature reviewed, as discussed above, disputes the accuracy of this. The text makes very strong use of the final particle 也 *yě* and some less frequent use of the final particles 耶 *yé* and 耳 *ěr*. These were validated manually. The frequent use of final particles is strongly suggestive that the text is later than the Han dynasty.

The use of final particles at the end of yes or no questions or in declarative sentences is more complex than simply scanning the text content. As an initial check on capability of AI models, the following prompt was used with Gemini 2.5 Flash with the text of the *Sūtra on the Law of Ten Rewards in the Dīrgha Āgama* 長阿含十報法經 *Chang Chan Shi Bao Fa Jing* (T 13):

Is the character “耳” used as a final particle at the end of declarative sentences in the given text [text uploaded]?

The model response was

Based on a thorough review of the provided text, the character "耳" is not used as a final particle at the end of declarative sentences. In all instances where "耳" appears, it functions as a noun referring to the ear (part of the sense organs) . . .

This is the correct response. There are four occurrences of 耳 *ěr* in the text and they all refer to ‘ear’. The Gemini ‘Thoughts’ outline shows that it ‘understands’ the question and performs appropriate parsing and grammatical analysis of the text. The prompt above was embedded in a Python script to execute for all related *Taishō* texts in the *Chu san zang ji ji* catalog sections of anonymous texts. The results of the analysis were not perfect. The AI model occasionally got confused by the *Taishō* punctuation. For example, in the *Prince Moonlight Sūtra* 月光童子經 *Yueguang Tongzi Jing* (T 534), on one run the model output the following result:

After carefully reviewing the text and analyzing each instance of the character "也", I have found the following: [0816a27] 刀劍矛刃亦不能動佛一毛也， In this case, "也" is followed by a comma (，), indicating that the sentence continues. Therefore, it is not at the *end* of a sentence.

However, this is a case where the *Taishō* punctuation is misleading and 也 *yě* should be considered a final particle. On subsequent runs the AI model returned the correct result. There were a number of other errors, most of them relating to returning output in a format different from that requested. The analysis failed repeatedly with some of the longer multi-fascicle texts, such as the *Sūtra on the Great Skillful Means of the Buddha for Repaying Kindness* 大方便報恩經 *Da Fangbian Bao'en Jing* (T 156), but for those texts the analysis had already detected frequent use of modal particles, so the outcome was not affected. A log of the errors captured is included in the Github repository. There are 108 texts that use 聞如是 *wen rushi* and use no final particles as described above, other than 善哉善哉 *shànzāi shànzāi*. This indicates that there may be many early texts amongst the set. An example of a text in this group is *Aniruddha Eight Thoughts Sūtra* 阿那律八念經 *Analu Ba Nian Jing* (T 46), listed as *Eight Thoughts Sūtra* 八念經 *Ba Nian Jing* in the *Chu san zang ji ji*. Nattier (2023) mentions that this is among a group of texts that could have been produced in the South in the 3rd century, based on their use of rare vocabulary and the absence of later vocabulary. This text is in Fascicle 3, Section 2, “A Recompilation of Dao'an’s List of Anonymously Produced Sūtras.” An AI generated summary of this text is given below.

The text recounts the Buddha's teachings to Anaruddha, emphasizing the importance of eight great thoughts for spiritual progress. These thoughts include desiring little, knowing contentment, seeking solitude, practicing diligence, controlling the mind, fixing the mind, cultivating wisdom, and renouncing worldly life. The Buddha elaborates on these principles and the practice of the four meditations (dhyanas) as essential for achieving liberation from suffering, detailing the path to enlightenment through mindful living and detachment from desires. Anaruddha, upon understanding and practicing these teachings, attains enlightenment and expresses his liberation in a verse.

There is currently no English translation of *Aniruddha Eight Thoughts Sūtra* but it is parallel to *Aṅguttara Nikāya* VIII.30 (Thanissaro Bhikkhu, accessed 13 July 2025), to which the summary is comparable.

## Appendix F: Texts in the *Chu san zang ji ji* Composed Natively in East Asia

**Table F.1: Texts in the *Chu san zang ji ji* Composed Natively in East Asia**

CSZJJ Entry No.	Title	Canonical Reference
1	<i>Sūtra of Forty-Two Sections</i> 四十二章經 <sup>594</sup>	T 784
23	<i>Great Sūtra on the Mindfulness of Breathing</i> 大安般守意經 <sup>595</sup>	T 602
285	<i>Sūtra on the Bodhisattva's Jade Necklace</i> 菩薩瓔珞經 <sup>596</sup>	T 656
286	<i>Sūtra on Cutting Ties in the Ten Dwellings</i> 最勝問菩薩十住除垢斷結經 <sup>597</sup>	T 309
585	<i>Shenri Jing</i> 佛說申日經 <sup>598</sup>	T 535
586	<i>Yueguang Tongzi Jing</i> 佛說月光童子經 <sup>599</sup>	T 534

<sup>594</sup> Funayama, Toru 船山徹, *Making Sutras into Classics (Jingdian): How Buddhist Scriptures Were Translated into Chinese* 仏典はどう漢訳されたのか: スートラが経典になるとき, 22-24.

<sup>595</sup> Nattier, *A Guide to the Earliest Chinese Buddhist Translations*, 60-61.

<sup>596</sup> Radich, "On the Ekottarikāgama T 125 as a Work of Zhu Fonian."

<sup>597</sup> Qian Lin and Michael Radich, "A Computer-Assisted Analysis of Zhu Fonian's Original Mahayana Sutras," *Buddhist Studies Review* 38, no. 2 (2021): 145–68; Jan Nattier, "Re-Evaluating Zhu Fonian's Shizhu duanjie jing (T309): Translation or Forgery?" *Annual Report of the International Research Institute for Advanced Buddhology at Soka University* 13 (2010): 231–58.

<sup>598</sup> Buswell, "Introduction: Prolegomenon to the Study of Buddhist Apocryphal Scriptures," 10; Zhanghui, "Research on the Status and Title of the Shen Yue Jing (Srigupta Sutra) 《申日經》 經本定位與經題考," *Chung-Hwa Buddhist Studies* (2004): 51–110; Erik Zürcher, "'Prince Moonlight': Messianism and Eschatology in Early Medieval Chinese Buddhism," *T'oung Pao* 68, no. Livr. 1/3 (1982): 24-25.

<sup>599</sup> Buswell, "Introduction: Prolegomenon to the Study of Buddhist Apocryphal Scriptures," 10.

CSZJJ Entry No.	Title	Canonical Reference
667	<i>Sūtra on the Inner and Outer Six Pāramitās</i> 佛說菩薩內習六波羅蜜經 <sup>600</sup>	T 778
684	<i>Sūtra on the Girl Inside the Womb</i> 佛說腹中女聽經 <sup>601</sup>	T 563
724	<i>Vajrasamādhi Sūtra</i> 金剛三昧經 <sup>602</sup>	T 273
810	<i>Sūtra on the Great Skillful Means for Repaying Kindness</i> 大方便佛報恩經 <sup>603</sup>	T 156
820	<i>Sūtra on the Origin of the Bodhisattva's Jade Necklace</i> 菩薩瓔珞本業經 <sup>604</sup>	T 1485
825	<i>Samādhi-Sūtra on Liberation through Purification</i> 佛說淨度三昧經 <sup>605</sup>	X 15
1382	<i>Yulan Jing</i> 佛說孟蘭盆經 <sup>606</sup>	T 685

<sup>600</sup> Greene, "Doctrinal Dispute in the Earliest Phase of Chinese Buddhism," 99-100; Jan Nattier, "Indian Antecedents of Huayan Thought: New Light from Chinese Sources," in *Reflecting Mirrors: Perspectives on Huayan Buddhism*, ed. Imre Hamar (Weisbaden: Harrassowitz Verlag, 2007), 136; Nattier, "The 'Missing Majority': Dao'an's Anonymous Scriptures Revisited," 97.

<sup>601</sup> Stephanie Balkwill, "The Sūtra on Transforming the Female Form: Unpacking an Early Medieval Chinese Buddhist Text," *Journal of Chinese Religions* 44, no. 2 (2016): 134.

<sup>602</sup> Buswell, *The Formation of Ch'an Ideology in China and Korea*.

<sup>603</sup> Yixin Fang, "《大方便佛報恩經》語匯研究," *Journal of Zhejiang University (Humanities and Social Sciences)*, no. 5 (2001): 50-56; Fang and Lu, "A Review and Prospects of the Achievements in the Study of Suspicious Buddhist Scriptures from the Perspective of Language in the Past Decade," 11.

<sup>604</sup> Buswell, "Introduction: Prolegomenon to the Study of Buddhist Apocryphal Scriptures," 8.

<sup>605</sup> Ziegler, *The Collection for the Propagation and Clarification of Buddhism*, xii.

<sup>606</sup> Fang and Lu, "A Review and Prospects of the Achievements in the Study of Suspicious Buddhist Scriptures from the Perspective of Language in the Past Decade;" Xiong, "An Etymological and Semantic Investigation into "Ullambana Sutra."

CSZJJ Entry No.	Title	Canonical Reference
1398	<i>Sūtra on the Total Destruction of the Dharma</i> 佛說法滅盡經 <sup>607</sup>	T 396
1427	<i>Jiu Hu Shen Ming Jing</i> 救護身命經 <sup>608</sup>	Dunhuang manuscript
1428	<i>Sūtra of Pure Dharma Practice</i> 清淨法行經 <sup>609</sup>	Nanatsudera Temple manuscript
1468	<i>Sūtra on the Difficulty of Repaying the Kindness of Parents</i> 佛說父母恩難報經 <sup>610</sup>	T 684
1593 to 1602	<i>Abhiṣeka Sūtra</i> 佛說灌頂經 <sup>611</sup>	T 1331
1649	<i>Mantra for a Safe Home</i> 佛說安宅神呪經 <sup>612</sup>	T 1394
1892	<i>Sūtra of Trapuṣa</i> 提謂波利經 <sup>613</sup>	Dunhuang manuscript

<sup>607</sup> Heng, “Slandered by Demons: A Translation of The Buddha Speaks the Ultimate Extinction of the Dharma Sutra;” Zürcher, “Eschatology and Messianism in Early Chinese Buddhism,” 178-180.

<sup>608</sup> Xiao Yan Zhang, “A Study on the Collation of Fragments from Six Types of Dunhuang Apocryphal Sutras 敦煌疑偽經六種殘卷綴合研究,” 文獻, no. 01 (2017): 17-35.

<sup>609</sup> Liang, *Fojiao yu hanyu shi yanjiu*, 36-39.

<sup>610</sup> Fang and Lu, “A Review and Prospects of the Achievements in the Study of Suspicious Buddhist Scriptures from the Perspective of Language in the Past Decade;” Guang Xing, “Popularization of Stories and Parables on Filial Piety in China,” *Journal of Buddhist Studies* 8 (2010): 129-37.

<sup>611</sup> Strickmann, “The Consecration Sutra: A Buddhist Book of Spells.”

<sup>612</sup> Fang and Lu, “A Review and Prospects of the Achievements in the Study of Suspicious Buddhist Scriptures from the Perspective of Language in the Past Decade,” 11; Hureau, “Translations, Apocrypha, and the Emergence of the Buddhist Canon,” 770.

<sup>613</sup> Shinden Yū, “On the Relationship Between Various Manuscripts of the Dunhuang Version of the Trapuṣa and Bhallika Sutra: With Appendices List of Citations and Comparison Between the Text of the

CSZJJ Entry No.	Title	Canonical Reference
1915	<i>King Yama Sūtra</i> 佛說預修十王生七經 <sup>614</sup>	X 21
1484	<i>Prajñāpāramitā Sūtra on Humane Kings and Protection of the State</i> 佛說仁王般若波羅蜜經 <sup>615</sup>	T 245
1529	<i>Sūtra on the Twelve Ascetic Practices</i> 十二頭陀經 <sup>616</sup>	T 783
1092	<i>Sūtra on King Ajātaśatru's Reception of his Prediction</i> 阿闍世王受決經 <sup>617</sup>	T 509

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Trapusa and Bhallika Sutra and Its Citations,” *Sengokuyama Journal of Buddhist Studies*, no. 8 (2016): 37–127; Zürcher, *The Buddhist Conquest of China*.

<sup>614</sup> Stephen F. Teiser, *The Scripture on the Ten Kings and the Making of Purgatory in Medieval Chinese Buddhism* (Honolulu: University of Hawaii Press, 2003).

<sup>615</sup> Paul L. Swanson, “Apocryphal Texts in Chinese Buddhism T’ien-T’ai Chih-I’s Use of Apocryphal Scriptures,” in *Canonization and Decanonization*, ed. A. Van Der Kooij and K. Van Der Toorn (Leiden, Boston: Brill, 1998), 250-251.

<sup>616</sup> Silk, “Assembled in China: A Study of the Shi’er Toutuo Jing 十二頭陀經,” 124.

<sup>617</sup> Wu, “From Perdition to Awakening,” 38.

## Appendix G: References to Historic Figures Discovered in Content Analysis

References to Aśvaghōṣa Bodhisattva 馬鳴菩薩:

1. Entry No. 323 Treatise of Establishing Reality 成實論 (T 1646, Fascicle 16), translated by Kumārajīva
2. Entry No. 429 Storehouse of Sundry Valuables 雜寶藏經 (T 203, Fascicle 7), translated by Kiṅkara and Tanyao
3. Entry No. 430 History of the Transmission of the Dharma Treasury 付法藏因緣經 (T 2058, Fascicle 5), translated by Kiṅkara and Tanyao

References to Nāgārjuna 龍樹:

1. Entry No. 322 Treatise on the Great Perfection of Wisdom 大智度論 (T 1509, many references) translated by Kumārajīva
2. Entry No. 324 Commentary on the Ten Abodes 十住毘婆沙論 (T 1521, many references) translated by Kumārajīva
3. Entry No. 325 Fundamental Verses on the Middle Way 中論 (T 1564, fascicles 1, 2, 3, 4) translated by Kumārajīva
4. Entry No. 310 Infinite Life Sūtra 阿彌陀經 (T 366) translated by Kumārajīva
5. Entry No. 1915 King Yama Sūtra 佛說預修十王生七經 (X 21)
6. Entry No. 430 History of the Transmission of the Dharma Treasury 付法藏因緣傳 (T 2058, fascicles 5, 6) translated by Kiṅkara and Tanyao
7. Entry No. 828 Queen Maya Sutra 摩訶摩耶經 (T 383)
8. Entry No. 390 Dharma Essentials Verses for the Exhortation of Kings 勸發諸王要偈 (T 1673) translated by Saṅghavarman
9. Entry No. 326 Twelve Gate Treatise 十二門論 (T 1568) translated by Kumārajīva
10. Entry No. 1584 Amitābha Buddha Verses 讚阿彌陀佛偈 (T 1978)

References to Āryadeva Bodhisattva 提婆菩薩:

1. Entry No. 327 Hundred Treatise 百論 (T 1569, fascicle 1, 2) translated by Kumārajīva

2. Entry No. 430 History of the Transmission of the Dharma Treasury 付法藏因緣傳 (T 2058, fascicle 6), translated by Kinkara and Tanyao

## Appendix H: Corpus of Early Chinese Buddhist Texts: Key Variables

This appendix lists the key variables of the texts in the *Chu san zang ji ji* catalog that are related to entries in modern collections.

**Table G.1: Key Variables of the Corpus**

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
1	四十二章經	Sūtra of Forty-Two Sections	T 784			Chinese indigenous
3	陰持入經	Sūtra on the Skandha, the Dhātu, and the Ayatana	T 603	An Shigao		Indic
7	大道地經	Greater Sūtra on the Grounds of the Way	T 607	An Shigao		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
8	人本欲生經	Sūtra on the Conditions for Desire and Rebirth	T 14	An Shigao	D.15 Mahānidānasutta	Indic
10	阿毘曇五法經	Scripture on the Five Dharmas of the Abhidharma	T 1557			Indic
13	十報經	Sūtra on the Ten Rewards	T 13	An Shigao	D.34 Dasuttarasutta	Indic
14	普法義經	Sūtra on the Universal Meaning of the Dharma	T 98	An Shigao		Indic
16	漏分布經	Sūtra on the Explanation of Āsrava	T 57	An Shigao	A.VI.63 Nibbedhika	Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
17	四諦經	Sūtra on the Four Noble Truths	T 32	An Shigao	M.141 Saccavibhaṅgasutta	Indic
18	七處三觀經	Sūtra on Seven Places and Three Subjects for Contemplation	T 150A	An Shigao	A.III.105 Kūṭā	Indic
19	九橫經	Sūtra on the Nine Causes of Untimely Death	T 150B			Indic
20	八正道經	Sūtra on the Eightfold Noble Path	T 112	An Shigao	S.45.21 Michatta	Indic
22	五十校計經	Sūtra on Fifty Countings	T 397 (13)			Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
23	大安般經	Great Sūtra on the Mindfulness of Breathing	T 602			Chinese indigenous
26	五陰喻經	Sūtra on Similes for the Five Aggregates	T 105		Samyutta Nikāya 22.95 Phena Sutta	Indic
27	轉法輪經	Sūtra on Setting in Motion the Wheel of the Dharma	T 109			Indic
28	流攝經	Sūtra on Taints	T 31	An Shigao	M.2 Sabbāsavasutta	Indic
29	是法非法經	Sūtra on True Dharmas and False Dharmas	T 48	An Shigao	M.113 Sappurisasutta	Indic
30	法受塵經	Sūtra on Suffering from Defilements	T 792	An Shigao		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
32	本相猗致經	Sūtra on the Causes of Forms of Existence	T 36	An Shigao		Indic
33	阿鎗口解	Discourse of the Explanation	T 1508	An Shigao		Indic
35	禪行法想經	Sūtra on the Perception of Dharmas in Meditation Practice	T 605	An Shigao		Indic
38	般若道行品經	Sūtra on the Prajñāpāramitā Practice of the Way	T 224	Lokakṣema	asta	Indic
40	般舟般三昧經	Pratyutpanna-Samādhi Sūtra	T 418	Lokakṣema	bhadrapala	Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
41	侘真陀羅經	Druma-Kimnara Sūtra	T 624			Indic
42	方等部古品曰遺日說般若經	Fangdeng Bu Gu Pin Yue Yi Ri Bore Jing	T 350	Lokakṣema	kasyapaparivarta	Indic
44	阿闍世王經	King Ajātaśatru Sūtra	T 626	Lokakṣema	ajatasatru	Indic
46	問署經	Questions on the Division	T 458	Lokakṣema		Indic
48	兜沙經	Tuṣāra Sūtra	T 280	Lokakṣema		Indic
49	阿闍佛國經	Akṣobhya Buddha Sūtra	T 313	Lokakṣema	aksobha	Indic
51	內藏百品經	Sūtra on the Hundred Precious	T 807	Lokakṣema		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
		Items in the Inner Store				
52	成具光明經	Sūtra on the Attainment of the Radiance	T 630	Zhi Yao		Indic
53	法鏡經	Sūtra of the Dharma Mirror	T 322	Yan Fotiao and An Xuan		Indic
55	中本起經	Sūtra on the Life of Śākyamuni	T 196	Kang Mengxiang		Indic
56	法句經	Dharmapada	T 210	Vighna and Zhi Qian	dharmapada	Indic
57	維摩詰經	Vimalakirti Sūtra	T 474	Zhi Qian	vimalakirti	Indic
58	大般泥洹經	Mahāparinirvāṇa Sūtra	T 6	Zhi Qian		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
59	瑞應本起經	Sūtra in Accordance with Good Omens	T 185	Zhi Qian		Indic
61	慧印經	Wisdom Mudrā Sūtra	T 632	Zhi Qian		Indic
62	本業經	Stories of Former Karma	T 281	Zhi Qian		Indic
65	梵摩渝經	Brahmāyus Sūtra	T 76	Zhi Qian	A.VIII.11 Verañja	Indic
66	私阿末經	Si A Mo Jing	T 532	Zhi Qian		Indic
67	微密持經	Sūtra of the Sublime Grasp	T 1011	Zhi Qian	ananta	Indic
68	阿彌陀經	Amitābha Sūtra	T 362			Indic
69	月明童子經	Candraprabha Kumāra Sūtra	T 169	Zhi Qian		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
70	義足經	Sūtra on the Fullness of Meaning	T 198	Zhi Qian	arthavargiya	Indic
71	阿難四事經	Sūtra Spoken to Ānanda on Four Matters	T 493	Zhi Qian		Indic
72	差摩竭經	Cha Mo Jie Jing	T 533	Zhi Qian		Indic
74	七女經	Sūtra on Seven Daughters	T 556	Zhi Qian		Indic
75	八師經	Sūtra on Eight Teachers	T 581	Zhi Qian		Indic
76	釋摩男經	Mahānāma Sūtra	T 54	Zhi Qian		Indic
77	忝抄經	Bei Chao Scripture	T 790	Zhi Qian		Indic
78	明度經	Ming Du Jing	T 225		asta	Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
79	老女人經	Sūtra Spoken at the Request of an Old Woman	T 559			Indic
80	齋經	Sūtra on Fasting	T 87	Zhi Qian		Indic
81	四願經	Sūtra on Four Wishes	T 735			Indic
82	悔過經	Sūtra on Repentance	T 1492			Indic
85	了本生死經	Sūtra on Understanding the Origin of Birth and Death	T 708			Indic
88	龍施女經	Sūtra on the Girl Nagādattā	T 557	Zhi Qian		Indic
92	賴吒和羅經	Raṭṭhapāla Sūtra	T 68	Zhi Qian	rastra	Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
93	六度集經	Sūtra of the Collection of the Six Perfections	T 152	Kang Senghui		Indic
98	放光經	Radiant Light Sūtra	T 221	Mokṣala		Indic
99	光讚經	Sūtra in Praise of the Light	T 222	Dharmarakṣa		Indic
100	賢劫經	Bhadrakalpa Sūtra	T 425	Dharmarakṣa	bhadrakalpika	Indic
101	正法華經	Lotus Sūtra	T 263	Dharmarakṣa	lotus_sutra	Indic
102	普耀經	Lalitavistara	T 186	Dharmarakṣa	lalitavistara	Indic
103	大哀經	Tathāgatamahāka ruṇānirdeśa	T 398	Dharmarakṣa		Indic
104	度世品經	Sūtra on the Chapter of Going Across the World	T 292	Dharmarakṣa		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
105	密迹經	Tathāgataguhyasūtra	T 310 (3)	Dharmarakṣa		Indic
106	持心經	Brahmaviśeṣacintīpariṛcchā	T 585	Dharmarakṣa		Indic
107	修行經	Yogacārabhūmi	T 606	Dharmarakṣa	yogacarabhumi	Indic
108	漸備一切智經	Daśabhūmikasūtra	T 285	Dharmarakṣa	dasabhumika	Indic
109	生經	Jātaka Stories	T 154	Dharmarakṣa	jataka	Indic
110	海龍王經	Sāgaranāgarājaparīṛcchā	T 598	Dharmarakṣa		Indic
111	普超經	Ajātaśatrukaukṛtyavinodana	T 627	Dharmarakṣa	ajatasatru	Indic
112	維摩詰經	Vimalakīrti Sūtra	T 477	Dharmarakṣa	vimalakirti	Indic
113	阿惟越致遮經	Avaivartikacakra Sūtra	T 266	Dharmarakṣa		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
114	嚴淨佛土經	Sūtra on the Majestic Buddha Land	T 318	Dharmarakṣa		Indic
115	阿耨達經	Anavatapta Sūtra	T 635	Dharmarakṣa		Indic
118	寶藏經	Bao Zang Jing	T 461	Dharmarakṣa		Indic
120	要集經	Ya Ji Jing	T 810	Dharmarakṣa		Indic
122	等集眾德三昧經	Sarvapuṇyasamucayasamādhī Sūtra	T 381	Dharmarakṣa	sarvapunya	Indic
124	離垢施女經	Vimaladattāparipṛcchā Sūtra	T 338	Dharmarakṣa		Indic
125	郁迦長者經	Sūtra on the Elder Ugra	T 323	Dharmarakṣa	ugradattaparipṛccha	Indic
126	大淨法門經	Da Jing Famen Jing	T 817	Dharmarakṣa		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
127	須真天子經	Sūtra on the Questions of the Deva Suvikrāntacintā	T 588	Dharmarakṣa		Indic
128	幻士仁賢經	Sūtra on the Magician Bhadra	T 324	Dharmarakṣa		Indic
129	魔逆經	Mo Ni Jing	T 589	Dharmarakṣa		Indic
130	濟諸方等經	Ji Zhu Fangdeng Jing	T 274	Dharmarakṣa		Indic
131	德光太子經	Sūtra on Prince Punyarasmi	T 170	Dharmarakṣa	rastra	Indic
132	文殊師利淨律經	Mañjuśrī Teaches Rules of Pure Conduct	T 460	Dharmarakṣa		Indic
133	決總持經	Jue Zong Chi Jing	T 811	Dharmarakṣa		Indic
134	寶女經	Bao Nu Jing	T 399	Dharmarakṣa		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
135	如來興顯經	Tathāgatotpattisa mbhavanirdeśa Sūtra	T 291	Dharmarakṣa		Indic
137	首意女經	Śrīmatībrāmaṇīpa riṣcchā Sūtra	T 567	Dharmarakṣa		Indic
139	月明童子經	Candraprabha Kumāra Sūtra	T 534	Dharmarakṣa		Indic
140	五十緣身行	Wushi Yuan Shen Xing Jing	T 812	Dharmarakṣa		Indic
141	六十二見經	Sūtra of Sixty Two Views	T 1 (21)	Dharmarakṣa		Indic
142	四自侵經	Sūtra on the Four Articles of Self- Injury	T 736	Dharmarakṣa		Indic
143	須摩經	Sumatī Sūtra	T 334	Dharmarakṣa		Indic
145	方等泥洹經	Vaipulya Nirvāṇa Sūtra	T 378	Dharmarakṣa		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
146	大善權經	Sūtra on the Means for Great Good	T 345	Dharmarakṣa		Indic
147	無言童子經	Sūtra on the Mute Boy	T 401	Dharmarakṣa		Indic
149	頂王經	Ding Wang Jing	T 477	Dharmarakṣa		Indic
150	聖法印經	Sūtra on the Sacred Seal of the Dharma	T 103	Dharmarakṣa		Indic
151	移山經	Sūtra on trying to Move a Mountain	T 135	Dharmarakṣa		Indic
152	文殊師利五體悔過經	Mañjuśrī Five Body Repentance Sūtra	T 459	Dharmarakṣa		Indic
153	持人菩薩經	Lokadharaparipṛcchā Sūtra	T 481	Dharmarakṣa		Indic
154	滅十方冥經	Sūtra Spoken by the Buddha on Destroying the Darkness of the Four Quarters	T 435	Dharmarakṣa		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
157	彌勒成佛經	The Sūtra on the Enlightenment of Maitreya	T 453	Dharmarakṣa		Indic
159	琉璃王經	Liuli Wang Jing	T 513	Dharmarakṣa		Indic
162	寶罔童子經	Ratnajālīparipṛcchā Sūtra	T 433	Dharmarakṣa		Indic
163	順權方便經	Sirīvivartavyākaraṇa	T 565	Dharmarakṣa		Indic
164	五百弟子本起經	Story about the Five Hundred Disciples	T 199	Dharmarakṣa		Indic
166	普門經	Universal Gate Sūtra	T 315	Dharmarakṣa		Indic
167	如幻三昧經	Sūtra on Samādhi Like a Dream	T 342	Dharmarakṣa		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
168	彌勒本願經	Sūtra on the Vows of Maitreya	T 349	Dharmarakṣa		Indic
170	胞胎經	Garbhāvakrāntini rdeśa	T 317	Dharmarakṣa		Indic
171	十地經	Sūtra on the Ten Grounds	T 283	Dharmarakṣa	dasabhumika	Indic
173	太子慕魄經	Prince Mūka Sūtra	T 168	Dharmarakṣa		Indic
174	四不可得經	Sūtra on the Four Unattainable Things	T 770	Dharmarakṣa		Indic
176	當來變經	Dang Lai Bian Jing	T 395	Dharmarakṣa		Indic
177	乳光經	Vatsasūtra	T 809	Dharmarakṣa		Indic
178	心明女梵志婦飯汁施經	Xin Ming Nu Fan Zhi Fu Fan Zhi Shi Shi Jing	T 569	Dharmarakṣa		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
180	鶡掘摩經	Aṅgulimāliya Sūtra	T 118	Dharmarakṣa		Indic
182	摩調王經	Mo Tiao Wang Jing	T 152 (87)			Indic
183	象出經	Hastikakṣyā	T 813	Dharmarakṣa		Indic
185	所欲致患經	Sūtra on the Desires that Lead to Suffering	T 737	Dharmarakṣa		Indic
188	獨證自誓三昧經	Sūtra on the Vow of Individual Enlightenment Samādhi	T 623	Dharmarakṣa		Indic
189	過去佛分衛經	Sūtra on the Buddha's Past Story of Collecting Alms	T 180	Dharmarakṣa		Indic
191	阿差末經	Akṣayamati Nirdeśa Sūtra	T 403	Dharmarakṣa		Indic
192	無極寶經	Unbounded Treasure Sūtra	T 636	Dharmarakṣa		Indic
193	阿述達經	Asuddharta Sūtra	T 337	Dharmarakṣa		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
194	等目菩薩經	Samacakṣus Bodhisattva Sūtra	T 288	Dharmarakṣa		Indic
207	迦葉本經	Sūtra Addressed to Kāśyapa	T 496	Dharmarakṣa		Indic
222	龍施經	Nāgadattā Sūtra	T 558	Dharmarakṣa		Indic
226	鹿母經	Sūtra on the Deer Mother	T 182	Dharmarakṣa		Indic
258	超日明經	Sūtra on Surpassing the Brightness of the Sun	T 638	Dharmarakṣa and Nie Chengyuan		Indic
263	樓炭經	Sūtra on the Creation and Destruction of the World	T 23	Fa Ju		Indic
265	法句本末經	Fa Ju Ben Mo Jing	T 211	Fa Ju and Fa Li		Indic
266	福田經	Fu Tian Jing	T 683	Fa Ju and Fa Li		Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
275	摩訶鉢羅 若波羅蜜 經抄	Condensed Version of the Aṣṭasāhasrikāpraj ñāpāramitā Sūtra	T 226	Zhu Fonian	asta	Indic
276	雜阿毘曇 毘婆沙	Abhidharmamahā vibhāṣa	T 1547	Samghabhūti and Zhu Fonian		Indic
277	婆須蜜	Vasumitra	T 1549	Samghabhūti and Zhu Fonian		Indic
278	僧伽羅刹 集經	Scriptures Compiled by Saṃgharakṣa	T 194	Samghabhūti and Zhu Fonian		Indic
279	四阿含暮 抄經	Digest of the Four Āgamas	T 1505	Zhu Fonian and Buddhapalita		Indic

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282	增一阿鎗經	Ekottara Āgama	T 125	Dharmanandi and Zhu Fonian	ekottarikagama	Indic
284	出曜經	Udānavarga	T 212	Zhu Fonian	udanavarga	Indic
285	菩薩瓔珞經	Sūtra on the Bodhisattva's Jade Necklace	T 656	Zhu Fonian		Chinese indigenous
286	十住斷結經	Sūtra on Cutting Ties in the Ten Dwellings	T 309	Zhu Fonian		Chinese indigenous
287	菩薩處胎經	Sūtra of the Incarnation of the Bodhisattva	T 384	Zhu Fonian		Indic
288	中陰經	Antarābhava	T 385	Zhu Fonian		Indic
289	王子法益壞目因緣經	Story of How Prince Dharmagada Lost his Sight	T 2045	Zhu Fonian		Indic

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290	中阿鎗經	Madhyama Āgama	T 26	Samṅhadeva	madhyama	Indic
291	阿毘曇八 捷度	Abhidharma Jñāna Prasthāna Śāstra	T 1543	Samṅhadeva		Indic
292	阿毘曇心	Abhidharmahṛdaya	T 1550	Samṅhadeva		Indic
295	三法度	Treatise on the Three Laws	T 1506	Samṅhadeva		Indic
296	新小品經	New Perfection of Wisdom Sutra	T 223	Kumārajīva and Xiao Yaoyuan		Indic
297	新小品經	Xin Xiao Pin Jing	T 227	Kumārajīva	asta	Indic
298	新法華經	New Lotus Sūtra	T 262	Kumārajīva	lotus_sutra	Indic
300	華首經	Hua shou jing	T 657	Kumārajīva		Indic
301	新維摩詰 經	New Vimalakīrti Sūtra	T 475	Kumārajīva	vimalakirti	Indic

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302	新首楞嚴經	New Śūraṅgama Sūtra	T 642	Kumārajīva	surangamasamadhi	Indic
303	十住經	Daśabhūmika Sūtra	T 286	Kumārajīva	dasabhumika	Indic
304	思益義經	Viśeṣacintabrahma-paripṛcchā Sūtra	T 586	Kumārajīva		Indic
305	持世經	Lokadharapariṛcchā	T 482	Kumārajīva		Indic
307	佛藏經	Buddhapīṭakaduḥ śīlanirgraha	T 653	Kumārajīva		Indic
308	菩薩藏	Pusa Zang Jing	T 310(17)	Kumārajīva		Indic
310	無量壽經	The Infinite Life Sūtra	T 366	Kumārajīva	sukhavati	Indic
311	彌勒下生經	The Sūtra on the Descent of Maitreya	T 454	Kumārajīva	maitreyavyakaran a	Indic
312	彌勒成佛經	The Sūtra on the Enlightenment of Maitreya	T 456	Kumārajīva		Indic

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313	金剛般若經	The Prajñāpāramitā Diamond Sūtra	T 235	Kumārajīva	diamond_sutra	Indic
314	諸法無行經	Sarvadharmapavṛttinirdeśa	T 650	Kumārajīva	sarvadharmapavṛttinirdeśa	Indic
315	菩提經	Sūtra on Enlightenment	T 464	Kumārajīva		Indic
316	遺教經	Sūtra of Bequeathed Teachings	T 389	Kumārajīva		Indic
318	菩薩呵色欲	Sūtra of the Bodhisattva's Rule Condemning Sexual Desires	T 615	Kumārajīva		Indic
319	禪法要解	The Essential Explanation of The Method of Dhyāna	T 616	Kumārajīva		Indic
320	禪經	Meditation Sūtra	T 614	Kumārajīva		Indic
321	雜譬喻經	Sundry Similes Sūtra	T 207	Kumārajīva and Dao		Indic

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322	大智論	Treatise on the Great Perfection of Wisdom	T 1509	Kumārajīva		Indic
323	成實論	Treatise of Establishing Reality	T 1646	Kumārajīva		Indic
324	十住論	Commentary on the Ten Abodes	T 1521	Kumārajīva		Indic
325	中論	Fundamental Verses on the Middle Way	T 1564	Kumārajīva		Indic
326	十二門論	Twelve Gate Treatise	T 1568	Kumārajīva		Indic
327	百論	Hundred Treatise	T 1569	Kumārajīva		Indic
328	十誦律	The Ten Part Vinaya	T 1435	Kumārajīva	sarvastivadavinaya a	Indic
329	十誦比丘戒本	Ten Part Prātimokṣa	T 1436	Kumārajīva		Indic
331	長阿鎗經	Dīrghāgama	T 1	Buddhayaśas and Zhu Fonian	dirghagama	Indic

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332	曇無德律	The Dharmaguptaka Vinaya	T 1428	Buddhayaśas	dharmaguputakav inaya	Indic
333	虛空藏經	Ākāśagarbha Sūtra	T 405	Buddhayaśas		Indic
334	曇無德戒本	Dharmaguptaka Prātimokṣa	T 1430	Buddhayaśas	pratimoksa	Indic
336	大般涅槃經	Mahāparinirvāṇa Sūtra	T 374	Dharmakṣema		Indic
337	方等大集經	Great Collection Sūtra	T 397	Dharmakṣema	mahasamnipata	Indic
339	方等大雲經	Mahāmegha Sūtra	T 387	Dharmakṣema	mahameghasutra	Indic
340	悲華經	Karuṇāpuṇḍarīka sūtra	T 157	Dharmakṣema	karunapundarika	Indic

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341	金光明經	Golden Light Sūtra	T 663	Dharmakṣema	suva	Indic
343	菩薩地持經	Bodhisattvabhūmi Sūtra	T 1581	Dharmakṣema	bodhisattvabhūmi	Indic
344	菩薩戒本	Bodhisattva Precepts	T 1500	Dharmakṣema	bodhisattvapratimokṣa	Indic
345	優婆塞戒	Upasaka Precepts	T 1488	Dharmakṣema		Indic
348	阿毘曇毘婆沙	Abhidharmamahāvibhāṣa	T 1546	Daotai and Buddhavarman		Indic
349	寶梁經	Ratnarāṣi	T 310(44)			Indic
350	大方廣佛華嚴經	Avataṃsakasūtra	T 278	Buddhabhadra		Indic

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351	觀佛三昧經	Sūtra on the Samādhi of the Contemplation of the Buddha	T 643	Buddhabhadra		Indic
353	禪經修行方便	Dharmatrāta-Dhyāna Sūtra	T 618	Buddhabhadra		Indic
354	大方等如來藏經	Tathāgatagarbha Sūtra	T 666	Buddhabhadra		Indic
356	出生無量門持經	Anantamukhasādhakadhāraṇī	T 1012	Buddhabhadra		Indic
360	文殊師利發願經	Bhadracaryapraṇidhāna	T 296	Buddhabhadra		Indic
361	大般泥洹	Great Parinirvāṇa	T 7	Faxian	mahaparinirvana	Indic
362	方等泥洹經	Vaipulya Nirvāṇa Sūtra	T 376	Faxian		Indic

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363	摩訶僧祇律	Mahāsaṅghikavīnaya	T 1425	Faxian	mahasāṅghikavīnaya	Indic
364	僧祇比丘戒本	Seng Zhi Biqu Jie Ben	T 1426	Faxian		Indic
366	雜藏經	Collection of Miscellaneous Stories	T 745	Faxian		Indic
373	方等檀特陀羅尼經	Fangdeng Tan Te Tuoluoni Jing	T 1339	Fazhong		Indic
375	決定毘尼經	Sūtra on Judging Monastic Discipline	T 325		upalipariprccha	Indic
377	佛所行讚	Buddhacarita	T 193	Baoyun	buddhacarita	Indic
378	觀世音授記經	Sūtra on Avalokiteśvara's Prediction	T 371	Dharmodgata		Indic
379	彌沙塞律	Mahīśāsaka Vinaya	T 1421	Zhu Daosheng,	mahasāṅghikavīnaya	Indic

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				Shi Huiyan, and Buddhajīva		
380	彌沙塞比丘戒本	Mahīśāsaka Five Part Vinaya Precept Manual for Monks	T 1422A and T 1422B	Zhu Daosheng, Shi Huiyan, and Buddhajīva		Indic
383	菩薩善戒	Sūtra on the Virtuous Precepts of the Bodhisattvas	T 1582	Guṇavarman	bodhisattvabhūmi	Indic
384	優婆塞五戒略論	A Brief Discussion on the Five Precepts for Lay People	T 1503	Guṇavarman		Indic
387	雜阿毘曇心	Saṃyuktābhidharmaḥdaya	T 1552	Saṅghavarman and Baoyun		Indic
388	摩得勒伽經	Māṭṛkā Sūtra	T 1441	Saṅghavarma an		Indic

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389	分別業報略	Summary of the Different Types of Karmic Retribution	T 723	Saṅghavarm an		Indic
390	勸發諸王要偈	Dharma Essentials Verses for the Exhortation of Kings	T 1673	Saṅghavarm an	suhrlekha	Indic
392	觀普賢菩薩行法經	The Samantabhadra Contemplation Practice Methods Sūtra	T 277	Dharmamitra		Indic
393	虛空藏觀經	Sūtra on the Contemplation of Ākāśagarbha	T 409	Dharmamitra		Indic
394	禪祕要	Secret Essential Methods of Chan	T 613	Dharmamitra		Indic
395	五門禪經要用法	Scripture on the The Five Gates of Chan - Essential Methods	T 619	Dharmamitra		Indic
397	四天王經	Sūtra on the Four Heavenly Kings	T 590	Zhiyan and Baoyun		Indic

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398	廣博嚴淨經	Vairocana Sūtra	T 268	Zhiyan and Baoyun		Indic
401	賢愚經	Sūtra on the Wise and Foolish	T 202	Shi Tanxue and Weide		Indic
402	新阿鎗經	Samyuktāgama	T 99	Guṇabhadra, Baoyun, Puti, and Fayong	samyuktagama	Indic
403	大法鼓經	Sutra of the Great Dharma Drum	T 270	Guṇabhadra, Baoyun, Puti, and Fayong		Indic
404	勝鬘經	Śrīmālā Sūtra	T 353	Guṇabhadra, Baoyun, Puti, and Fayong	srimala	Indic

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405	八吉祥經	Sūtra on the Eight Lucky Mantras	T 430	Guṇabhadra, Baoyun, Puti, and Fayong		Indic
406	楞伽阿跋多羅寶經	Laṅkāvatāra Sūtra	T 670	Guṇabhadra, Baoyun, Puti, and Fayong	lankavatara	Indic
407	央掘魔羅經	Aṅgulimāliya Sūtra	T 120	Guṇabhadra, Baoyun, Puti, and Fayong		Indic
408	過去現在因果經	Sūtra on Past and Present Causes and Effects	T 189	Guṇabhadra, Baoyun, Puti, and Fayong		Indic
409	相續解脫經	Sūtra on Liberation from the Continuity of Causal Connections	T 678	Guṇabhadra, Baoyun, Puti, and Fayong	saṃdhi-nirmocana	Indic

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415	觀彌勒菩薩生兜率天經	Sūtra on the Visualization of Maitreya Bodhisattva Ascending to be Born in Tusita Heaven	T 452	Juqu		Indic
417	禪要祕密治病經	Sūtra on Essential Chan Methods for Curing Sickness	T 620	Juqu		Indic
419	念佛三昧經	Sūtra on the Samadi of Reciting the Name of the Buddha	T 414	Guṇabharman and Shi Xuanqing		Indic
420	破魔陀羅尼經	Dhāraṇī Sūtra for Vanquishing Mara	T 1014	Guṇabharman and Shi Xuanqing		Indic
421	十誦羯磨	Shi Song Jiemo	T 1439	Sengqu		Indic
422	十誦比丘尼戒本	Ten Part Prātimokṣa for Bhikṣuṇī	T 1437	Faying		Indic

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429	雜寶藏經	The Storehouse of Sundry Valuables	T 203	Kiṅkara and Tanyao	avadana_anthology	Indic
430	付法藏因緣經	The History of the Transmission of the Dharma Treasury	T 2058	Kiṅkara and Tanyao		Chinese indigenous
431	方便心論	Upāyahṛdaya	T 1632	Kiṅkara and Tanyao		Indic
432	無量義經	Sūtra of Immeasurable Principles	T 276	Dharmāgatayāśas		Indic
435	善見毘婆沙律	Samantapāsādikā	T 1462	Sanḥabhadra	Samantapāsādikā	Indic
438	百句譬喻經	Sūtra of One Hundred Parables	T 209	Gunavaddhi		Indic
488	道地經中要語章	Sūtra on the Grounds of the Way, Zhong Yao Yu chapter	T 608	sutra		Indic

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490	梵志頗波 羅延問尊 種經	Fanzhi Poboluo Yan Wen Zun Zhong Jing	T 71	sutra	Assalāyanasutta	Indic
492	毘披陀菩 薩經	Bhadrapāla Bodhisattva Sūtra	T 419	sutra		Indic
499	魔王入目 犍蘭腹經	Sūtra on Māra Entering Maudgalyāyana's Stomach	T 66	sutra	Māratajjanīyasutt a (MN 50)	Indic
522	佛本行經	Buddhacarita	T 193		buddhacarita	Indic
523	河中大聚 沫經	Sūtra on Foam Floating in a River	T 106		Samyutta Nikāya 22.95 Phena Sutta	Indic
524	聞城譬經	Wen Cheng Pi Jing	T 713			Indic
526	自守亦不 自守經	Sūtra on Heedfulness and Heedlessness	T 107		Samyutta Nikāya 35.97	Indic

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					Pamadaviharin Sutta	
529	聽施比丘經	Ting Shi Biqu Jing	T 504			Indic
530	善馬有三相經	Sūtra on the Three Attributes of a Good Horse	T 114		Anguttaranikaya AN 3-94 Ajaniya Sutta	Indic
531	馬有八弊惡態經	Sūtra on Horses with Eight Faults	T 115		Anguttaranikaya AN 8:14 Khaḷunka Sutta	Indic
570	彌連經	Mi Lian Jing	T 152(39)			Indic
571	阿鳩留經	Aguru Sūtra	T 529			Indic
576	梅檀樹經	Sandalwood Tree Sūtra	T 805			Indic

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580	修行本起經	Cārya Nidāna	T 184			Indic
581	菩薩道樹經	Bodhi Tree Sūtra	T 532			Indic
582	八念經	Eight Thoughts Sūtra	T 46		Anguttara Nikaya 8.30 Anuruddha Sutta	Indic
583	禪行三十 七品經	Sūtra of the Thirty-Seven Chapters on Meditation	T 604			Indic
584	諸法本經	Sūtra on the The Roots of All Phenomena	T 59		Anguttara Nikāya 8.83 and 10.58 Mūla Sutta	Indic
585	申日經	Shenri Jing	T 535			Chinese indigenous

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586	月光童子經	Yueguang Tongzi Jing	T 534			Chinese indigenous
587	梵志孫陀耶致經	Sūtra on the Brahmin Sundarika	T 582		MN 7 Vatthūpama Sutta	Indic
588	枯樹經	Dead Tree Sūtra	T 806			Indic
591	法律三昧經	Scripture on the Rules of Meditation	T 631			Indic
594	三十二相經	Thirty Two Marks of Excellence Sūtra	T 26 (59)		DN 30 Lakkhaṇa Sutta	Indic
596	演道俗經	Sūtra Expounding the Monastic and Secular Lives	T 820			Indic
597	黑氏梵志經	Sūtra on the Brahmin Kāla	T 583			Indic

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598	大愛道般 泥洹經	Sūtra on the Parinirvāṇa of Mahāprajāpatī	T 144			Indic
599	頗多和多 耆經	Po Duo He Duo Qi Jing	T 740			Indic
601	五母子經	Sūtra on the Child with Five Mothers	T 555			Indic
602	無垢賢經	Sūtra of the Unstained Worthy	T 562			Indic
603	八關齋經	Sūtra on the Eight Purification Precepts	T 89			Indic
604	逝經	Sūtra on Shi	T 528			Indic
605	生死變化 經	Sūtra on the Transformations of Life and Death	T 796			Indic
607	文陀竭王 經	King Māndhātṛ Sūtra	T 40			Indic
608	耶祇經	Yezhi Jing	T 542			Indic

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609	五福德經	Sūtra on the Five Merits	T 777			Indic
610	末羅王經	Sūtra on the King of Malla	T 517			Indic
612	長者音悅經	Sūtra on the Elder Yinyue	T 531			Indic
614	梵皇經	Fan Huang Jing	T 152 (91)			Indic
616	僧大經	Seng Da Jing	T 541			Indic
617	法常住經	The Dharma Exists Eternally	T 819			Indic
618	大小諫王經	Admonishing a King on Great and Small Matters	T 514			Indic
619	波耶匿王經	King Prasenajit Sūtra	T 122		S.3.3.2 Ayyakā	Indic

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621	旃陀越國王經	King of Candravatī Sūtra	T 518			Indic
622	迦葉戒經	Kāśyapa Precepts Sūtra	T 1469			Indic
623	摩達王經	Moda Wang Jing	T 519			Indic
624	五恐怖世經	Sūtra of the Five Fears	T 1481			Indic
625	進學經	Sūtra on Acquiring Knowledge	T 798			Indic
626	四飯法經	Si Fan Fa Jing	T 521			Indic
629	十二死經	Twelve Kinds of Death	T 753			Indic
630	五無反復經	Wu Wu Fan Fu Jing	T 751a			Indic
632	治身經	Sūtra on Mastering Oneself	T 795			Indic

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633	治意經	Sūtra on Maintaining Focus	T 96			Indic
634	十善十惡經	Sūtra on the Ten Wholesome and Ten Unwholesome Actions	T 729			Indic
636	兜調經	Śukasūtra	T 78			Indic
641	十夢經	Dream with Ten Omens Sūtra	T 147			Indic
642	長者辯意經	Elder Prātibhāna Sūtra	T 544			Indic
643	長者須達經	Elder Sudatta Sūtra	T 73		A.IX.20 Velāma	Indic
644	孝子報恩經	Sūtra on the Gratitude of the Filial Son	T 687			Indic
645	孝子睽經	Xiao Zi Shan Jing	T 174			Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
646	自愛不自 愛經	Sūtra on Loving Oneself and Not Loving Oneself	T 742			Indic
647	長壽王經	Chang Shou Wang Jing	T 161			Indic
648	薩和檀王 經	Shahetan Wang Jing	T 152 (13)			Indic
649	未生怨經	Ajātaśatru Sūtra	T 507			Indic
650	須摩提女 經	Sumāgadha Avadāna Sūtra	T 128a		Mano.p.517-18; Dhp.A. III p. 465; Div. p. 402	Indic
651	賢首夫人 經	Sage Chief's Wife Sūtra	T 570			Indic
653	玉耶女經	Sūtra on the Teachings to Sudatta's Daughter-in-Law	T 142A			Indic
654	新歲經	Pravāraṇa Sūtra	T 62			Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
655	阿難八夢經	Ānanda's Seven Dreams Sūtra	T 494			Indic
657	九色鹿經	Sūtra of the Nine-Colored Deer	T 181a			Indic
658	五苦章句經	Suffering in the Five Realms	T 741			Indic
659	佛滅度後棺斂葬送經	Sūtra on Burial Rites After the Buddha's Nirvāṇa	T 392			Indic
660	婦遇對經	Sūtra on a Woman's Misfortunes	T 571			Indic
661	羅芸忍辱經	Sūtra on Rāhula's Forbearance	T 500			Indic
663	蜜蜂王經	Story of the Honeybee King	T 152 (64)			Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
664	呵調阿那 含經	He Tiao A Na Han Jing	T 538			Indic
665	戒德香經	Sūtra on the Fragrances of Upholding Precepts and Living with Virtue	T 116		A.III.79 Gandha	Indic
666	鬼子母經	Hārītī Sūtra	T 1262		hariti	Indic
667	內外六波 羅蜜經	Sūtra on the Inner and Outer Six Pāramitās	T 778			Chinese indigenous
669	弗迦沙王 經	King Bimbisāra Sūtra	T 511		MN 140, Dhātuvibhaṅga- sutta	Indic
672	七車經	Relay Chariots Sūtra	T 26 (9)		Rathavinīta Sutta (MN 24)	Indic
674	阿拔經	Āmraṣṭha Sūtra	T 20		D.3 Ambaṭṭhasutta	Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
678	堅心經	Sūtra on Firm Resolve	T 733			Indic
679	太子和休經	Prince Sīmha Sūtra	T 344			Indic
680	分陀利經	Puṇḍarīka Sūtra	T 265			Indic
684	胎中女經	Sūtra on the Girl Inside the Womb	T 563			Chinese indigenous
686	普達王經	Pu Da Wang Jing	T 522			Indic
699	長者威勢經	Zhangzhe Weishi Jing	T 330			Indic
700	鹹水喻經	Salt Water Parable Sūtra	T 29		A.VII.15 Udakūpamā	Indic
703	彌勒當來生經	Sūtra on Maitreya Future Rebirth	T 457			Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
707	放鉢經	Sūtra on the Sacred Alms Bowl	T 629			Indic
712	法海經	Dharma Sea Sūtra	T 34			Indic
715	以身施餓 虎經	Sūtra on the Self Sacrifice to Save a Starving Tigress	T 172			Indic
723	淨行經	Sūtra on Purification through Cultivation	T 579			Indic
724	金剛三昧 經	Vajrasamādhi Sūtra	T 273			Chinese indigenous
736	大愛道受 誠經	Mahāprajāpatī takes the Precepts	T 1478			Indic
743	長者法志 妻經	Zhangzhe Fa Zhi Qi Jing	T 572			Indic
746	七智經	Sūtra on the Seven Kinds of Knowledge	T 27		A.VII 64 Dhammaññusutta	Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
751	難龍王經	Sūtra on the Dragon King Nandopananda	T 597			Indic
764	三慧經	Sūtra on the Three Kinds of Wisdom	T 768			Indic
781	阿難為蠱道呪經	Ānanda is Cursed	T 551		sardulakarnavada na	Indic
784	菩薩本行經	Jātaka Stories of the Bodhisattva	T 188			Indic
798	太子辟羅經	Taizi Piluo Jing	T 596			Indic
799	沙彌羅經	Shami Luo Jing	T 750			Indic
800	八德經	Sūtra on the Eight Good Qualities	T 35			Indic
810	大方便報恩經	Sūtra on the Great Skillful Means for Repaying Kindness	T 156			Chinese indigenous

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813	分別功德經	Sūtra on Distinguished Merit	T 1507			Chinese indigenous
816	道神足無極變化經	Sūtra of the Divine and Limitless Transformations of the Way	T 816			Indic
817	羅摩伽經	Gaṇḍavyūha Sūtra	T 294			Indic
819	儒首菩薩無上清淨分衛經	Questions of Nāgaśrī	T 234			Indic
820	菩薩瓔珞本業經	Sūtra on the Origin of the Bodhisattva's Jade Necklace	T 1485			Chinese indigenous
823	興起行經	Sūtra on the Causes and Conditions of Conduct	T 197			Indic
825	淨度三昧經	Samādhi-Sūtra on Liberation through Purification	X 15			Chinese indigenous

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
826	未曾有因經	Mo Ceng You Yuan Jing	T 688			Indic
828	摩訶摩耶經	Queen Maya Sutra	T 383			Indic
831	那先經	Nāgasena Sūtra	T 1670A		Milindapañha	Indic
832	舊譬喻經	Old Sūtra of Parables	T 206			Indic
834	大比丘威儀經	The Great Collection of Department Rules for Bhikṣus	T 1470			Indic
836	觀無量壽經	Sutra on the Visualization of Immeasurable Life	T 365			Indic
844	採華違王上佛授記妙華經	The King's Flower Pickers Receive a Prediction from the Buddha	T 510			Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
852	佛心總持經	Buddha Heart Dhāraṇī Sūtra	T 154 (19)			Extract
853	佛以三事笑經	The Buddha Laughs about Three Things	T 152 (65)			Extract
857	作佛形像經	The Scripture on the Production of Buddha Images	T 692			Indic
860	千佛因緣經	Sahasra-Buddha-Nidāna-Sūtra	T 426			Indic
861	稱揚諸佛功德經	Sūtra on the Praise on the Good Qualities of the Buddhas	T 434			Extract
865	八部佛名經	Sūtra on the Names of the Eight Buddhas of the Eastern Quadrant	T 429			Indic
867	賢劫千佛名經	Sūtra on the Names of a Thousand Buddhas from the Present Kalpa	T 447			Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
876	觀藥王藥 上二菩薩 經	Sūtra on the Contemplation of the Two Bodhisattvas Medicine King and Superior Medicine	T 1161			Indic
877	請觀世音 經	Invocation of Avalokiteśvara Sūtra	T 1043			Indic
879	文殊師利 般涅槃經	Mañjuśrī Parinirvāṇa Sūtra	T 463			Indic
895	無垢施菩 薩分別應 辯經	Vimaladattāparipṛ cchā	T 310 (33)			Indic
899	無言菩薩 經	Sūtra on the Silent Bodhisattva	T 397(6)			Extract
901	異出菩薩 本起經	Another Story about a Previous Life of the Bodhisattva	T 188			Indic

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905	大方廣菩薩十地經	Sūtra on the Extensive Explanation of the Ten Bodhisattva Grounds	T 308			Indic
910	菩薩生地經	Sūtra of the Lands Where Bodhisattvas are Born	T 533			Indic
919	菩薩求佛本業經	Sūtra on the Bodhisattva's Quest for Enlightenment	T 282			Indic
931	菩薩受齋經	Bodhisattva Fasting Sūtra	T 1502			Indic
933	菩薩以明離鬼妻經	Pusa Yi Ming Li Gui Qi Jing	T 152 (85)			Indic
939	六菩薩名經	Sūtra on the Names of the Six Bodhisattvas	T 491			Indic
940	迦葉赴佛泥洹經	Sūtra on Kāśyapa Attending the Buddha at his Nirvāṇa	T 393			Indic

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941	迦葉責阿 難雙度羅 漢喻經	Jiaye Ze Annan Shuang Du Luohan Yu Jing	T 2027			Indic
943	摩訶迦葉 度貧母經	Sūtra on Mahākāśyapa Crossing Over a Poor Woman	T 497			Indic
948	舍利弗般 泥洹經	Sūtra on Śāriputra's Nirvāṇa	T 154 (14)			Indic
951	阿難同學 經	Sūtra on Ānanda's Childhood Companion	T 149			Extract
954	阿難問事 佛吉凶經	Sūtra on Ānanda's Questions to the Buddha about Good and Bad Destinies	T 492a			Indic
957	迦旃延無 常經	Kātyāyana Impermanence Sūtra	T 154 (17)			Indic

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961	請賓頭盧法	Ritual for Inviting Pindola	T 1689			Indic
962	尊者薄拘羅經	Elder Bakkula Sūtra	T 26 (34)			Extract
964	尊者瞿低迦獨一思惟經	Zunzhe Judijia Du Yi Siwei Jing	T 99 (1091)			Extract
965	優陀夷坐樹下寂靜調伏經	Sūtra on Udāyin Meditating Under a Tree and Subduing Evil	T 99 (253)			Extract
972	鴛掘髻經	Aṅgulimālīya Sūtra	T 119			Indic
975	浮彌經	Fu Mi Jing	T 26 (173)			Extract
978	難提釋經	Nandappravrajyā Sūtra	T 113		A.XI.14 Naudiya	Indic

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981	調達教人為惡經	Sūtra on Devadatta Teaching Others Evil	T 152 (69)			Extract
985	瞻婆比丘經	Zhanpo Biqu Jing	T 64		A.VIII.20 plus A.VIII.10 Kāraṇḍavasutta	Extract
991	沙曷比丘功德	Shahe Biqu Gongde	T 501			Indic
994	分衛比丘經	Fenwei Biqu Jing	T 154 (2)			Indic
995	比丘各言志經	Biqu Ge Yan Zhi Jing	T 154 (16)			Indic
996	比丘疾病經	Sūtra on a Sick Bhikṣu	T 154 (26)			Indic

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1000	比丘避女 惡名欲自 殺經	A Bhikṣu Wants to Commit Suicide after being Accused of Relations with a Woman	T 503			Extract
1007	佛為年少 比丘說正 事經	Sūtra on the Buddha Speaking to Young Bhikṣus on Proper Practice	T 502			Extract
1012	長者子六 過出家經	Zhangzhe Zi Liu Guo Chujia Jing	T 134			Extract
1016	出家緣經	Sūtra on the Conditions for Becoming a Monastic	T 791			Indic
1022	瞿曇彌經	Gautamī Sūtra	T 26 (116)			Extract
1023	瞿曇彌記 果經	Qutanmi Ji Guo Jing	T 60			Extract

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1024	佛母般泥 洹經	Sūtra on the Nirvāṇa of the Buddha's Mother	T 145			Indic
1025	比丘尼現 變經	Sūtra on the Bhikṣuṇī who Appeared in a Different Form	T 154 (43)			Extract
1027	旃闍摩暴 志謗佛經	Zhanshemobaozh i Bang Fo Jing	T 154 (9)			Indic
1028	優波離問 佛經	Sūtra on the Questions of Upāli	T 1466			Indic
1031	沙彌威儀	Shami Weiyi	T 1472			Indic
1032	沙彌尼戒	Śrāmaṇerikā Precepts	T 1474			Indic
1034	受十善戒 經	Sūtra of Accepting the Ten Good Karmas as Precepts	T 1486			Indic

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1036	清信士阿 夷扇持經	Qing Xin Shi Ayi Shan Chi Jing	T 154 (53)			Indic
1044	弟子學有 三輩經	Sūtra on the Three Grades of Disciples	T 767			Indic
1045	弟子死復 生經	Sūtra on the Disciple who Died and Returned to Life	T 826			Indic
1088	頂生王故 事經	Sūtra on the Story of King Mūrdhaga	T 39			Indic
1089	頻毘婆王 詣佛供養 經	Sūtra on King Bimbisāra's Visit to the Buddha and Offerings	T 133			Extract
1090	阿闍世王 問五逆經	The Sūtra on King Ajātaśatru's Questions on the Five Heinous Crimes	T 508			Extract

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1092	阿闍世王 受決經	The Sūtra on King Ajātaśatru's Reception of his Prediction	T 509			Chinese indigenous
1102	優填王經	King Udayana Sūtra	T 332			Indic
1109	鏡面王經	Jing Mian Wang Jing	T 152 (89)			Indic
1110	察微王經	Chawei Wang Jing	T 152 (90)			Indic
1112	桀貪王經	Jietan Wang Jing	T 198 (1)			Indic
1114	薩羅王經	King Sāla Sūtra	T 520			Extract
1119	國王五人 經	Sūtra on the King and the Five People	T 152 (24)			Indic
1122	舍頭諫太 子二十八 宿經	Sūtra on Prince Punyarasmi and the Twenty-Eight Constellations	T 1301			Indic

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1123	太子刷護經	Prince Simha Sūtra	T 343			Indic
1127	誨子經	Sūtra on Instructing Children	T 154 (38)			Indic
1133	五百幼童經	Sūtra on the Five Hundred Young Children	T 154 (33)			Extract
1136	逝童子經	Shi Tongzi Jing	T 527			Indic
1145	長者詣佛說子婦不恭經	An Elder Tells the Buddha that His Daughter-in-Law Does not Respect Him	T 143			Extract
1146	長者子制經	Zhangzhe Zi Zhi Jing	T 526			Indic
1147	長者子懊惱三處經	Weeping in Three Places after the Death of an Elder's Son	T 525			Extract

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1160	十支居士 八城人經	Shi Zhi Jushi Ba Cheng Ren Jing	T 92		M.52 Aṭṭhakanagarasutta	Extract
1171	婆羅門子 命終愛念 不離經	Sūtra on a Brahmin's Grieving on the Loss of His Son	T 91		M.87 Piyajātikasutta	Extract
1173	婆羅門避 死經	Sūtra on Brahmins Attempting to Escape Death	T 131		Dhammapada. v. 128	Extract
1182	佛為黃竹 園老婆羅 門說學經	Fo Wei Huangzuyuan Lao Poluomen Shuo Xue Jing	T 75		A.VIII.11 Verañja	Extract
1190	審裸形子 經	Shen Luo Xing Zi Jing	T 154 (27)			Indic
1198	仙人撥劫 經	Sūtra on the Sage Bojie	T 154 (52)			Indic

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1199	五仙人經	Sūtra on the Five Sages	T 154 (11)			Indic
1203	光華梵志經	Guanghua Fanzhi Jing	T 154 (40)			Indic
1216	梵志計水淨經	A Brahmin's Checks the Purity of Water	T 51		Vatthūpamasūta (Majjhima Nikāya 7)	Extract
1226	前世諍女經	Sūtra on Quarrelling over a Woman in a Previous Life	T 154 (7)			Indic
1227	三摩竭經	Sumāgadhāvadāna Sūtra	T 129			Indic
1229	摩鄧女經	Mātangī Sūtra	T 1300			Extract
1233	釋家畢罪經	Sūtra on the Offenses of the Śākya Clan	T 152 (54)			Indic

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1236	殺身濟賈 人經	Sūtra on Killing to Save Merchants	T 152 (67)			Indic
1237	殺龍濟一 國人經	Sūtra on Killing of a Dragon to Save a Kingdom	T 152 (70)			Indic
1239	懈怠耕者 經	Sūtra on the Lazy Ploughman	T 827			Indic
1243	善生子經	Śrgālavāda Sūtra	T 17			Indic
1244	尸迦羅越 六向拜經	Sīgāla Pays Homage to the Six Directions	T 16		D.31 Siṅgālovādasutta	Indic
1250	貧窮老公 經	Poor Old Man Sūtra	T 797			Indic
1251	老母經	Old Woman Sūtra	T 561			Indic

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1253	負為牛者經	Sūtra on Paying the Debt Owed for a Bull	T 154 (39)			Indic
1256	阿遯達經	Aśuddha Sūtra	T 141			Indic
1257	樹提伽經	Jyotiṣka	T 540			Indic
1258	鞞摩肅經	Bimosu Jing	T 90		M. 80 Vekhaṇasasutta	Extract
1261	那賴經	Nalai Jing	T 154 (1)			Indic
1263	大意經	Mahāmati Sūtra	T 177			Indic
1265	申日兜本經	Candraprabhaku māra	T 536			Indic
1269	舅甥經	Sūtra on Uncle and Nephew	T 154 (12)			Indic
1270	越難經	Yuenan Jing	T 537			Indic

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1272	鸚鵡經	Śuka Sūtra	T 79			Indic
1274	水牛王經	Sūtra on the Water Buffalo King	T 154 (30)			Indic
1276	兔王經	Sūtra on the Rabbit King	T 154 (31)			Indic
1277	拘薩羅國 烏王經	Sūtra on the Kośala Crow King	T 154 (47)			Indic
1278	雀王經	Sūtra on the Sparrow King	T 152 (51)			Indic
1279	孔雀經	Sūtra on the Peacock King	T 154 (51)			Indic
1280	野雞經	Pheasant Sūtra	T 154 (6)			Indic
1285	大魚事經	Great Fish Sūtra	T 216			Indic

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1290	蠱狐烏經	Sūtra on a Fox and a Crow Flattering Each Other	T 154 (25)			Indic
1295	犢子經	Vatsa Sūtra	T 808			Indic
1296	驢駝經	Sūtra on the Donkey and the Camel	T 154 (50)			Extract
1298	獠狗經	Mad Dog Sūtra	T 214			Indic
1301	鰲獼猴經	Turtle and Monkey Sūtra	T 154 (10)			Indic
1306	鬼問目連經	Sūtra on a Ghost's Questions of Maudgalyāyana	T 734			Indic
1312	鐵城泥犁經	Sūtra on the Hell with Walls of Iron	T 42			Indic
1313	泥犁經	Niraya Sūtra	T 86		M.129 Bālapaṇḍitasutta	Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
1315	十八泥犁經	Sūtra on the Eighteen Hells	T 731			Indic
1316	四泥犁經	Sūtra on the Four Hells	T 139			Indic
1321	罪業報應教化地獄經	Sūtra on the Hell for Education of Karmic Retribution	T 724			Indic
1329	鹽王五天使者經	Sūtra on the Five Heavenly Messengers of King Yama	T 43		M. 130 Devadūtasutta	Indic
1331	數經	Shu Jing	T 70		M.107 Gaṇakamoggallānasutta	Extract
1332	時經	Sūtra on Times	T 794a			Indic
1334	意經	Yi Jing	T 82		A.IV.186 Ummagga	Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
1338	罵意經	Ma Yi Jing	T 732			Indic
1344	法觀經	Sūtra on Contemplation of the Dharma	T 611			Indic
1345	身觀經	Sūtra on Contemplation of the Body	T 612			Extract
1348	伏姪經	Fu Yin Jing	T 65		A.X.91 Kāmabhogī	Extract
1349	離睡經	Sūtra on Overcoming Sleepiness	T 47		A.VIII.58 Pacalā	Indic
1350	應法經	Ying Fa Jing	T 83		M.46 Mahādhammasa mādānasutta	Extract
1351	樂想經	Le Xiang Jing	T 56		M.1 Mulapariyāyasutta	Extract
1352	尊上經	Zun Shang Jing	T 77		M.134 Lomasakaṅgiyab haddekarattasutta	Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
1355	柔軟經	Rouruan Jing	T 26 (117)			Indic
1358	處處經	Chu Chu Jing	T 730			Indic
1359	閑居經	Resting Place Sūtra	T 154 (13)			Indic
1360	何苦經	Sūtra on What Suffering Is	T 26 (148)			Extract
1362	貧窮經	Sūtra on Poverty	T 26 (125)			Extract
1363	求欲經	Sūtra on Desire	T 49		M. 5 Anāṅgaṇasutta	Extract
1364	分別經	Sūtra on Discrimination	T 738			Indic
1367	慢法經	Man Fa Jing	T 739			Extract
1368	邪見經	Sūtra on Wrong Views	T 93			Indic

<b>CSZJJ No.</b>	<b>CSZJJ Title</b>	<b>Title (English)</b>	<b>Modern Ref.</b>	<b>Attribution Assumed for Analysis</b>	<b>Indic Parallel</b>	<b>Source Type</b>
1372	積骨經	Sūtra on a Pile of Bones	T 150A (30)			Indic
1373	苦陰經	Ku Yin Jing	T 53		M.13 Mahādukkhākāha ndhasutta	Indic
1375	灌臘經	Sūtra on Pouring Wax	T 391			Indic
1376	受歲經	Shou Sui Jing	T 50		M.15 Anumānasutta	Extract
1378	腹使經	Fu Shi Jing	T 154 (28)			Indic
1381	持齋經	Sūtra on Fasting	T 26 (202)			Indic
1382	盂蘭經	Yulan Jing	T 685			Chinese indigenous

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1386	恒水戒經	Sutra Spoken on Precepts at the River Ganges	T 33		A.VIII 20 Uposatha	Indic
1387	寂志果經	Sūtra on the Fruits of the Contemplative Life	T 22		D.2 Sāmaññaphalasutta	Indic
1394	戒消災經	Jie Xiao Zai Jing	T 1477			Indic
1398	法滅盡經	Sūtra on the Total Destruction of the Dharma	T 396			Chinese indigenous
1407	是我所經	Shi Wo Suo Jing	T 154 (5)			Indic
1408	阿耨風經	Anoufeng Jing	T 58		VI.62 Udaka	Extract
1414	惟日雜難經	Wei Ri Za Nan Jing	T 760			Indic
1419	內身觀章經	Sūtra on Contemplation of the Body	T 610			Indic

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1420	忠心政行經	Sūtra on a Sincere Mind and Forthright Practice	T 743			Indic
1422	罪業報應經	Zui Ye Bao Ying Jing	T 747a			Indic
1425	摩訶剌頭經	Fo Shuo Mohe Sha Tou Jing	T 696			Indic
1429	金剛清淨經	Jingang Qing Jing Jing	T 644			Indic
1438	淨除業障經	Sūtra on the Purification by Elimination of Karmic Obstacles	T 1494			Extract
1443	相應相可經	Xiangying Xiang Ke Jing	T 111		S.14.12 Sanidāna	Indic
1444	商人求財經	Sūtra on Merchants Seeking Wealth	T 26 (136)			Extract

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1450	前世三轉經	Sūtra on Three Past Lives	T 178			Indic
1459	阿含正行經	Āgama on Right Action	T 151			Indic
1461	摩訶乘寶嚴經	Sūtra on Mahāyāna Treasures	T 351			Indic
1468	父母恩難報經	Sūtra on the Difficulty of Repaying the Kindness of Parents	T 684			Extract
1480	犯戒罪報輕重經	Sūtra on the severity of Retribution for Violation of Precepts	T 1467			Indic
1481	大乘方等要慧經	Summary of Mahāyāna Wisdom Sūtra	T 348			Indic

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1484	仁王護國 般若波羅 蜜經	Prajñāpāramitā Sūtra on Humane Kings and Protection of the State	T 245			Indic
1485	阿難陀目 佉尼呵離 陀經	Ananta Mukha Sādhaka Dhāraṇī Sūtra	T 1013			Indic
1509	四品學法 經	Sūtra on the Four Levels of Practice of the Dharma	T 771			Extract
1511	四未曾有 法經	Si Weicengyou Fa Jing	T 136		D.16 Mahāparinibbāna 4-5	Extract
1513	四人出現 世間經	Si Ren Chuxian Shijian Jing	T 127		S.3.3.1 Puggalā	Extract
1518	七寶經	Seven Treasures Sūtra	T 26 (58)			Indic

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1526	十一思惟 念如來經	Shi Yi Siwei Nian Rulai Jing	T 138			Extract
1527	十二遊經	Shi Er You Jing	T 195			Indic
1529	十二頭陀 經	Sūtra on the Twelve Ascetic Practices	T 783			Chinese indigenous
1534	慈仁問八 十種好經	Ciren Wen Ba Shi Zhong Hao Jing	T 2867			Indic
1537	寶積三昧 文殊師利 菩薩問法 身經	Baoji Sanmei Wenshushili Pusa Wen Fashen Jing	T 356			Indic
1539	自誓三昧 經	Zi shi sanmei jing	T 622			Indic

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1540	佛印三昧經	Buddha Mudra Samādhi Sūtra	T 621			Indic
1541	法華三昧經	Lotus Flower Samādhi Sūtra	T 269			Indic
1542	月燈三昧經	Yue Deng Sanmei Jing	T 640 or T 641			Indic
1548	禪要呵欲經	Chan Yao He Yu Jing	T 609			Indic
1559	水喻經	Water Simile Sūtra	T 26 (4)			Indic
1564	群牛譬經	Herd of Cattle Simile Sūtra	T 215			Extract
1568	鼈喻經	Turtle Simile Sūtra	T 154 (35)			Extract

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1570	箭喻經	Sūtra on the Parable of the Arrow	T 94		M.52 Aṭṭhakanagarasutta	Extract
1572	毒喻經	Poison Simile Sūtra	T 154 (37)			Indic
1584	阿彌陀佛偈	Amitābha Buddha Verses	T 1978			Indic
1585	後阿彌陀佛偈	Later Amitābha Buddha Verse	T 373			Indic
1593	灌頂七萬二千神王護比丘呪經	Guan Ding Qi Wan Er Qian Shen Wang Hu Boqiu Zhou Jing	T 1331 (1)			Chinese indigenous
1594	灌頂十二萬神王護	Guan Ding Shi Er Wan Shen Wang	T 1331 (2)			Chinese indigenous

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	比丘尼呪經	Hu Biqiuni Zhou Jing				
1595	灌頂三歸 五戒帶佩 護身呪經	Guan Ding San Gui Wu Jie Dai Pei Hu Shen Zhou Jing	T 1331 (3)			Chinese indigenous
1596	灌頂百結 神王護身 呪經	Guan Ding Bai Jie Shen Wang Hu Shen Zhou Jing	T 1331 (4)			Chinese indigenous
1597	灌頂宮宅 神王守鎮 左右呪經	Guan Ding Zong Zhai Shen Wang Shou Zhen Zuo You Zhou Jing	T 1331 (5)			Chinese indigenous
1598	灌頂塚墓 因緣四方 神呪經	Guang Ding Zhong My Yin Yuan Si Fang Shen Zhou Jing	T 1331 (6)			Chinese indigenous

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1599	灌頂伏魔 封印大神 呪經	Guan Ding Fo Mo Feng Yin Da Shen Zhou Jing	T 1331 (7)			Chinese indigenous
1600	灌頂摩尼 羅宣大神 呪經	Guan Ding Moni Luodan Da Shen Zhou Jing	T 1331 (8)			Chinese indigenous
1601	灌頂召五 方龍王攝 疫毒神呪 經	Guan Ding Zhao Wu Fang Long Wang She Yi Du Shen Zhou Jing	T 1331 (9)			Chinese indigenous
1602	灌頂梵天 神策經	Guan Ding Fan Tien Shen Ce Jing	T 1331 (10)			Chinese indigenous
1608	七佛神呪	Seven Buddhas Sacred Mantra	T 1333			Indic

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1615	華積陀羅 尼神呪	Puṣpakūṭa Dhāraṇī	T 1356			Indic
1616	持句神呪	Chi Ju Shen Zhou	T 1351			Indic
1622	幻師鬘陀 神呪	Spells Taught by the Magician Bhadra	T 1378b			Indic
1624	摩尼羅亶 神呪	Maṇiratna Mantra	T 1393			Indic
1625	檀特羅麻 油述神呪	Sesame Oil Tantra	T 1391			Indic
1637	呪時氣	Zhou Shiqi	T 1326			Indic
1638	呪小兒	Mantra for Children	T 1329			Indic
1639	呪齲齒	Mantra for Tooth Decay	T 1327			Indic

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1649	安宅呪	Mantra for a Safe Home	T 1394			Chinese indigenous
1662	不退轉輪經	Bu Tui Zhuan Lun Jing	T 267			Indic
1681	甘露味阿毘曇	Abhidharmāmṛta Śāstra	T 1553			Indic
1693	如來智印經	Tathāgatajñānam udrā	T 633			Indic
1695	七佛父母姓字經	Sūtra on the Names of the Fathers and Mothers of the Seven Buddhas	T 4		D.14 Mahāpadānasutta	Indic
1753	滿願子經	Man Yuan Zi Jing	T 108		S.35.88 Puṇṇa	Indic

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1761	加丁比丘經	Jia Ding Biqu Jing	T 2028			Indic
1778	大沙門羯磨	Da Shamen Jiemo	T 1438			Indic
1809	魔試目連經	Māra Tests Maudgalyāyana	T 67		M. 50 Māratajjaniyasūtt a	Indic
1812	淨飯王經	King Śuddhodana Sūtra	T 512			Indic
1856	摩竭梵志經	Mojie Fanzhi Jing	T 198 (4)			Indic
1857	躄辭梵志經	Bici Fanzhi Jing	T 198 (8)			Indic
1858	猛觀梵志經	Mengguan Fanzhi Jing	T 198 (11)			Indic

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1859	法觀梵志經	Faguan Fanzhi Jing	T 198 (12)			Indic
1861	兜勒梵志經	Doulei Fanzhi Jing	T 198 (13)			Indic
1905	鼈王經	Turtle King Sūtra	T 154 (36)			Indic
1909	放牛法經	Sūtra on Herding Cows	T 123			Indic
1913	餓鬼經	Hungry Ghost Sūtra	T 746			Indic
1915	閻羅王經	King Yama Sūtra	X 21			Chinese indigenous
1926	古來經	Gu Lai Jing	T 44		Thera G. 910-919	Indic
1928	緣本經	Sūtra on the Roots of Causes and Conditions	T 37		Pāli A.X. 61-62	Indic

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1959	施色力經	Sūtra on the Giving of Physical Items	T 132			Indic
1998	甚深大迴向經	Sūtra on the Great Rewards of Dedicating Merit	T 825			Indic
2007	木鏘刺脚因緣經	Sūtra on the Causes and Conditions of a Spear in the Foot	T 197 (6)			Indic
2012	四輩經	Sūtra on Four Groups	T 769			Indic
2092	護諸比丘呪	Spell for Protecting Monks	T 154 (20)			Indic
2156	寶如來經	Bao Rulai Jing	T 637			Indic
2196	寶車經	Sūtra on the Jewelled Cart	T 2689			Indic