

ИСТОРИЯ И КУЛЬТУРА НАРОДОВ СТЕПНОЙ ЕВРАЗИИ: ТРАДИЦИИ И ВЗАИМОДЕЙСТВИЕ

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THE SILK ROAD AS A SKILLED PRACTICE: TAKING THE TWO TEA ROADS AS CASES¹

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The Silk Road, an ancient network of trade and cultural exchange, has been a subject of significant scholarly interest, particularly in China, Russia, and Mongolia. This paper delves into the skilled practice that underpinned the operation of two major tea roads, emphasizing the continuity of the Silk Road's legacy. It argues for a new approach to the study of cross-cultural exchanges by examining the knowledge systems that supported the movement, adaptation, and exchange of goods and ideas across the Eurasian continent. The author introduces two conceptual tools: "Silk Roadness" to describe the aspects of knowledge reflected in the Silk Road's operation, and "Silk Road+" to denote the transformation that the Silk Road brought to knowledge systems. The paper posits that the Silk Road facilitated the formation, selection, and evolution of knowledge, endowing it with specific functions and creating specialized spaces for its practice. The study focuses on the Eurasian Tea Road ("万里茶道") and the Tea-Horse Road ("茶马古道"), examining the commercial cities, transportation methods, and the specialized skills that evolved along these routes. The author conducted field research in key locations such as Zhangjiakou and Qixian in the Eurasian Tea Road, and in Pu'er and Ya'an along the Tea-Horse Road, gathering information on historical sites, documents, artifacts, and traditional crafts. The paper highlights the distinct roles of Zhangjiakou and Qixian in the Eurasian Tea Road, where Qixian was a hub for Shanxi merchants, and Zhangjiakou served as a critical junction for trade between agricultural and nomadic regions. The author also discusses the Pu'er, Ya'an and Kangding in the Tea-Horse Ancient Road, which was key to the distribution of Yunnan and Sichuan teas to Tibet. The author identifies several key areas of skilled practice along the Silk Road, including commercial practical skills, transportation methods, trade infrastructure, communication and interaction skills, and product packaging and sales strategies. These skills were essential for the successful operation of the trade routes and for adapting to the diverse environments and cultural contexts encountered along the way. The paper concludes by emphasizing the importance of understanding the intricate relationship between the Silk Road and traditional knowledge systems. It calls for continued interdisciplinary research that incorporates the concepts of "Silk Roadness" and "Silk Road+" to build a more comprehensive framework for understanding the Silk Road as a vibrant network of knowledge evolution.

Keywords: practical skills, the Eurasian Tea Road, the Tea-Horse Road, Silk Roadness, Silk Road+

ВЕЛИКИЙ ШЕЛКОВЫЙ ПУТЬ КАК ЭФФЕКТИВНАЯ ПРАКТИКА: НА ПРИМЕРЕ ДВУХ ЧАЙНЫХ ПУТЕЙ²

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Великий Шелковый путь, древняя сеть торговых и культурных связей, является предметом пристального интереса ученых, особенно в Китае, России и Монголии. Данная статья посвящена изучению торговли, которая лежала в основе функционирования двух основных чайных маршрутов, подчеркивая преемственность наследия Шелкового пути. Обосновывается необходимость нового подхода к изучению межкультурных связей путем изучения систем знаний, которые способствовали перемещению, адаптации и обмену товарами и идеями по всему Евразийскому континенту. Автор вводит два концептуальных инструмента: "Шелковый путь" для описания аспектов знаний, которые находили применение при функционировании Шелкового пути, и "Шелковый путь+" для обозначения изменений и дополнений, которые Шелковый путь привнес в систему знаний. В статье утверждается, что Великий

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Шелковый путь способствовал формированию, отбору и эволюции знаний, наделяя их определенными функциями и создавая специализированные пространства для их применения на практике. Основное внимание в исследовании уделяется Евразийскому чайному ("万里茶道") и Конно-чайному ("茶马古道") путям. Рассматриваются торговые города, способы транспортировки и специальные навыки, которые формировались во время функционирования этих маршрутов. Автором были проведены полевые исследования в таких ключевых местах, как Чжанцзяоу и Цисянь, находившихся на Евразийском чайном пути, а также в Пуэр и Янь на Конно-чайном пути, собраны сведения о древних пунктах, документах, артефактах и традиционных ремеслах. В статье подчеркивается особая роль Чжанцзяоу и Цисяня на Евразийском чайном пути, где Цисянь был центром торговли Шаньси, а Чжанцзяоу служил важным торговым узлом между сельскохозяйственными и кочевыми регионами. Также определенное внимание уделяется Пуэр, Янь и Кандин, располагавшихся на Конно-чайном пути, который сыграл ключевую роль в распространении юньнаньских и сычуаньских чаев в Тибете. Автор выделяет несколько ключевых направлений деятельности на Шелковом пути, которые охватывают практические коммерческие навыки, методы транспортировки, торговую инфраструктуру, навыки коммуникации и взаимодействия, а также обеспечение сохранности товаров и сырья во время транспортировки и планирование продаж. Эти навыки были необходимы для успешного функционирования торговых маршрутов и адаптации к различной культурной среде и условиям, с которыми приходилось сталкиваться на этих маршрутах. В заключение подчеркивается важность понимания сложной взаимосвязи между Шелковым путем и традиционными системами знаний. Указывается необходимость продолжения междисциплинарных исследований, включающих концепции "Шелкового пути" и "Шелковый путь+", по созданию более всеобъемлющей основы в понимании Шелкового пути как динамичной сети эволюции знаний и навыков.

Ключевые слова: практические навыки, Евразийский чайный путь, Конно-чайный путь, Шелковый путь, Шелкового пути+



Fig. 1. The Eurasian Tea Road and the Tea-Horse Road
Рис. 1. Евразийский чайный путь и Конно-чайный путь

The Eurasian Tea Road is highly valued by scholars from China, Russia and Mongolia as a historical network of cultural and economic exchange. With the emphasis on transnational and interdisciplinary approaches to cooperation, it is worthwhile to think deeply about how to explore in depth the cultural heritage that is interconnected and at the same time profoundly localized in various places along the Eurasian Tea Road. There has been much discussion among scholars about the Eurasian Tea Road, most of which focuses on the history of commerce and material culture in the pre-modern and early modern periods, as well as on seeking opportunities to

promote contemporary cultural exchanges on the basis of history. Figures who were active on this trade route have also been the centerpiece of some of these discussions¹. However, scholars have often not paid sufficient attention to the foundational fact that cross-cultural exchange was first and foremost in antiquity a desire and a dream to overcome the conservative ideology of settling down. From this perspective, exotic goods were not only the driving factor, but also the content and result of exchange. Behind the strong motivation to move from generation to generation across the immensity of the Eurasian continent and into other cultures was

a set of knowledge and skills. This set of skills was initially derived from certain occurrences in the general body of knowledge, which was then passed on through repeated practice and transmission to specific groups of people, and eventually led to specialization and the formation of spaces for the concentrated practice of this specialization. This implies a new approach to the study of intercultural communication, which focuses on the characteristics of the Eurasian Tea Road (or the Silk Road in general) as a contact zone (Pratt, 1991, p. 33-40)², such as anticipation of a distant place, movement, adaptation, and communication, and to explore the knowledge system that constitutes these characteristics at the dimensions of intangible and daily behaviors.

In an earlier paper (Chen Wei, 2023, p. 95–98), I proposed two instrumental concepts. First, I use the term Silk Roadness to refer to those aspects within the knowledge system that embody and support the characteristics mentioned above. On the other hand, Silk Roads were also engaged in the formation of knowledge, filtering existing knowledge, stimulating the proliferation and evolution of related knowledge, giving it a clear function, and bringing it together to form a new system. I employ the term "Silk Road+" to refer to this mutation of knowledge brought about by the Silk Road. Obviously, this perspective also leaves the room for interpretation from an environmental point of view. Silk Road+ is very prominently manifested in so-called "caravan cities" (Rostovtzeff, 1932) or "trade ports" (Polanyi, 1963, p. 30–45). These locations sometimes sprang from earlier political or military centers (not necessarily located in the same place), but ultimately flourished more than the original settlements, and the knowledge systems that operated in the old and new locations evolved in very different directions.

At the same time, it should be noted that Silk Roadness and Silk Road+ are prevalent in different variants of the Silk Road. This is not to say that the knowledge systems along the Silk Road in different times and different types had gone through the exact same evolution, but it is possible to look at Silk Roadness and Silk Road+ in different places through comparative studies. On this basis, we can make a better description of the Silk Road from the perspective of "knowledge economy" (Renn, 2020, p. 145)³. In the case of the Eurasian Tea Road, the Tea-Horse Road (Fig. 1), located in southwestern China and

with outward connections to Southeast and South Asia, is the best comparison, both for its era and for the materials that mainly flowed along it. By examining relevant sites, documents (especially oral histories), relics and traditional crafts, as well as talking with local scholars, we have obtained a great deal of information on the knowledge of these regions since the Ming and Qing dynasties, which largely supports the previous research idea. For the Eurasian Tea Road, we obtained the richest information in Zhangjiakou 张家口 (Hebei Province) and Qixian 祁县 (Shanxi Province), and for the Tea-Horse Road, I have so far mainly conducted a short research in Pu'er 普洱 (Yunnan Province) and Ya'an 雅安 (Sichuan Province), but have collected a lot of relevant information. In the following, I will take the above locations as the core and use the previous two instrumental concepts to briefly describe the interaction between the knowledge system and the Tea Route from a comparative perspective.

I. Caravan Cities along the Two Tea Roads

Zhangjiakou and Qixian both played a very important role in the Eurasian Tea Road, their functions were very different but interconnected. Located in the Taiyuan Basin in central Shanxi Province, Qixian was the most important birthplace of the active *Jin* merchants on the Eurasian Tea Road, and is the centerpiece of the Chinese section of the Eurasian Tea Road. Today Qixian is famous for the grand mansions left behind by *Jin* merchants, and numerous documents have been left here, a significant portion of which have been compiled and published⁴. The majority of these documents are account sheets, purchase orders, deeds, tax clearance certificates, letters, etc., of daily operations, and a few are various manuals on business skills, which deal with business math, knowledge about commodities, business geography, and cross-linguistic communication, skills that are crucial to the development of a qualified merchant.

Compared to Qixian, where knowledge was constantly deposited in texts and even hidden in wealth, Zhangjiakou's "Silk Roadness" was more pronounced in both its physical and commercial geography. Physical geography, as the Silk Road key places rather than today's administrative division of Zhangjiakou is located in the Yongding River tributary of the Yanghe River valley at the northern end, about 800 meters above sea level, also known as the "under the dam" 坝下. Not far from here are the military

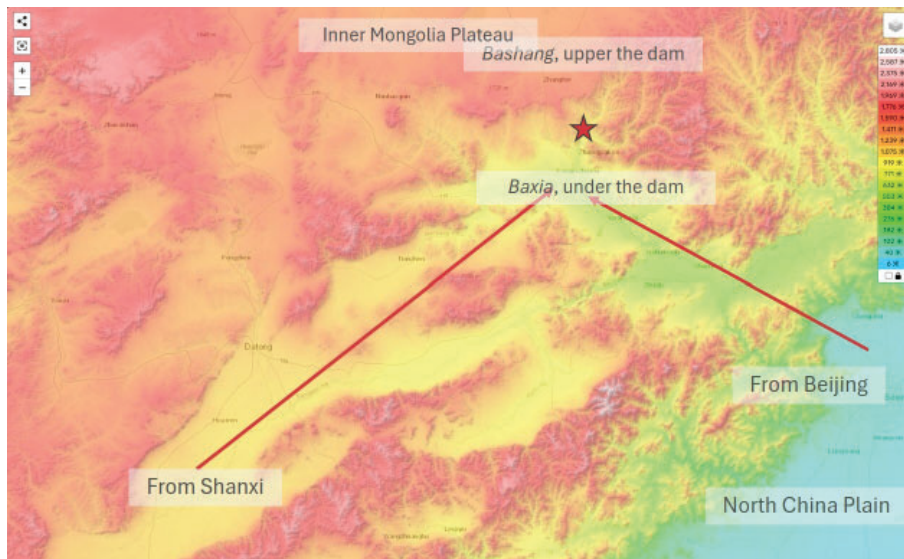


Fig. 2. Zhangjiakou (illustrated by the star) in the Eurasian Tea Road
Рис. 2. Чжанцзякоу (обозначен звездой) на Евразийском чайном пути

fortifications of Wanquan and Xuanhua set up by the Ming Dynasty, and Zhangjiakou originally originated from Zhangjiakou Fort, a subordinate military fort under the jurisdiction of the town of Xuanfu⁵. The "kou" in Zhangjiakou's name implies the nature of the passage at the end of the North China Plain. Zhangjiakou can reach Beijing through Xuanhua and Huailai in the southeast, and in the southwest through Tianzhen to the Datong Basin in the northwestern part of the mountains, and further south to Qixian and other places. To the north of Zhangjiakou are the Damaqu Mountain of the Yinshan Mountain Range, which separate the northern counties belonging to Zhangjiakou City to form the Upper the Dam坝上 Plateau, the southern edge of the Inner Mongolian Plateau. The landscape, climate, livelihoods, and population densities of the area under and upper of the dam are very different, and Zhangjiakou is such a major gateway from the North China Plain into the Inner Mongolian Plateau (Fig. 2).

In terms of commercial geography, Zhangjiakou was the easternmost of a series of government-run marketplaces between farming and nomadic areas after the Ming Dynasty, and was also known as "Dongkou". For hundreds of years, this was the area where the Han Chinese and Mongolians coexisted in close contact. After the Qing Dynasty and Russia signed the Treaty of Nerchinsk and the Treaty of Chakotu, the Eurasian Tea Road was officially opened. The *Jin* merchants reached out from the "heart" of Qixian to the "throat" of Zhangjiakou, where a

large percentage of Zhangjiakou's inhabitants made their living in commerce and trade-related businesses from the mid-19th century to the early 20th century. Most of the firms here were branches of Shanxi firms, and while Shanxi merchants mainly played the role of "desk-side" managers, Zhangjiakou locals were more likely to be engaged as transporters and "venture traders" (Larsen, 2015, 72), working in business related to the caravans traveling to Mongolia. Some were personally involved in the *Zhangku* Route张库大道, the transportation from Zhangjiakou to Kulun库伦(also known as Dakulue大圈圖, present-day Ulaanbaatar), while others were engaged in services such as caravanarais, or provided technical services in the form of raising livestock and repairing vehicles. In fact, commercial managers and actual traders occupied distinct areas even in Zhangjiakou. Institutions such as firms and managers' residences were located further south in Zhangjiakou Fort (which can be considered the CBD of Zhangjiakou). The actual trading business was centered around the Dajingmen大境门 (the open gate of the Great Wall), and the customs and markets adjacent to it. Outside the Dajingmen, there was a settlement of Russian merchants. To the north of Zhangjiakou, passing through Kulun to Maimaicheng买卖城 on today's Mongolia-Russia border, was the area where tea was transported across the steppe. From Chaktu, tea entered Russian territory and was mainly transported and sold by Russian merchants. The main Eurasian Tea Road spread out across the steppe like a canopy,

with Zhangjiakou being the starting point of the bifurcation. Here, the mode of transportation was converted from the short-distance sectional relay in the mainland China to the long-distance across Mongolian Plateau. A series of traditional technologies had to be transformed here to adapt to the new environment and the way transport was organized.

The name of Pu'er, thousands of miles away, is even closely related to the tea trade. The Tea Road in southwest China originated from the silk- and tea-horse trade between the Central Plains and the local authorities in Yunnan during the Tang and Song dynasties. During the Qing Dynasty, Pu'er tea became a tribute tea enjoyed by emperors, and road transportation became more established. During the Ming and Qing dynasties, Pu'er Prefecture was set up along the Mekong River in the southernmost part of Yunnan, including part of today's Pu'er City and Xishuangbanna, which became the origin and distribution center of tea in southwestern Yunnan. After the founding of the People's Republic of China, this area was divided into Simao Prefecture and Xishuangbanna Dai Autonomous Prefecture. With the popularity of Pu'er tea, Simao City was renamed Pu'er City in 2007 (the main source of Pu'er tea is located in the tea mountains of Xishuangbanna). Tea leaves were picked and processed from the tea mountains and then transported. The Pu'er area was a distribution center for tea in all directions, and was the center of the Tea-Horse Road's outward radiation. Transported to the tea, cotton and other commodities of the horse caravans (mainly mules) in the Simao city around the balking, the early 20th century Simao city of the tea folk up to thousands of people, used to transport tea mules, donkeys, horses and other livestock up to 20,000 to 30,000 heads.

The caravan cities along the Tea-Horse Road were far more than just Pu'er, and the culture of tea trade was also prevalent in cities in western Yunnan, such as Dali and Lijiang. Prior to the export of tea from Yunnan, western Sichuan was the main producing area for tea to Tibet and other places. Tea from Yunnan and Sichuan was fermented, extruded, packaged, and transported from today's Ya'an to Kangding (formerly known as Dajianlu 打箭炉) located in western Sichuan. Ya'an was both a tea-producing area famous for its Mengding green tea and a place of transit by land and water. Tea from other parts of Sichuan was also transported here by water to be blended

with locally produced black tea and shipped to Tibetan areas. Rivers west of Ya'an are seldom navigable, only the tea through Luding county town to take the mountain road to Kangding. The transportation on foot from Ya'an to Kangding took about 12 days, but involved an altitude difference of more than 1,500 meters (Fig. 3). In terms of the geography of the tea route, this place had a status and function similar to Zhangjiakou, a hub for transporting goods from the Sichuan plain to Tibetan Plateau. Here, the name, mode of transportation, and packaging of tea were dramatically transformed, and thus it was a key area for knowledge reassembly, and thus for changes in the knowledge system.

II. The Silk Roadness of the Tea Roads' Skills

As we have already mentioned, Silk Road knowledge needs to contribute to mobility, adaptation and exchange, and knowledge that serves this purpose and is widely utilized along the Silk Road in its various forms can be considered as having Silk Roadness. In turn, this means that there are differences in the specific ways in which knowledge is presented in different geographies or along different routes, but it needs to be of a similar character. With the help of a comparison of similar techniques on the two tea routes, it helps to perceive the embedded Silk Roadness.

1. Practical Commercial Skills in the Center of the Tea Roads

The rise of *Jin* merchants, who played a leading role in the commercial trade of the Eurasian Tea Road, was linked to the salt monopoly system that had been practiced in China since ancient times (Adshad, 1992, p. 6–7). By providing logistical services for military campaigns in Northwest China in exchange for licenses to sell salt, they gradually built up a network of commercial and financial services from the source of salt to the area of consumption. Within this network, Qixian, as well as neighboring Taigu and Pingyao, saw the emergence of many merchant investors whose managers, bookkeepers, and fellows came from various places along the Tea Route. During the long period of commercial practice, the merchants accumulated a lot of experience in keeping their business going, which involved both basic education in literacy and letter-writing, as well as ethical dogma, and technical knowledge. This knowledge was most concentrated in places such as Qixian, but also radiated to other areas along the Eurasian Tea Road, such as Zhangjiakou.

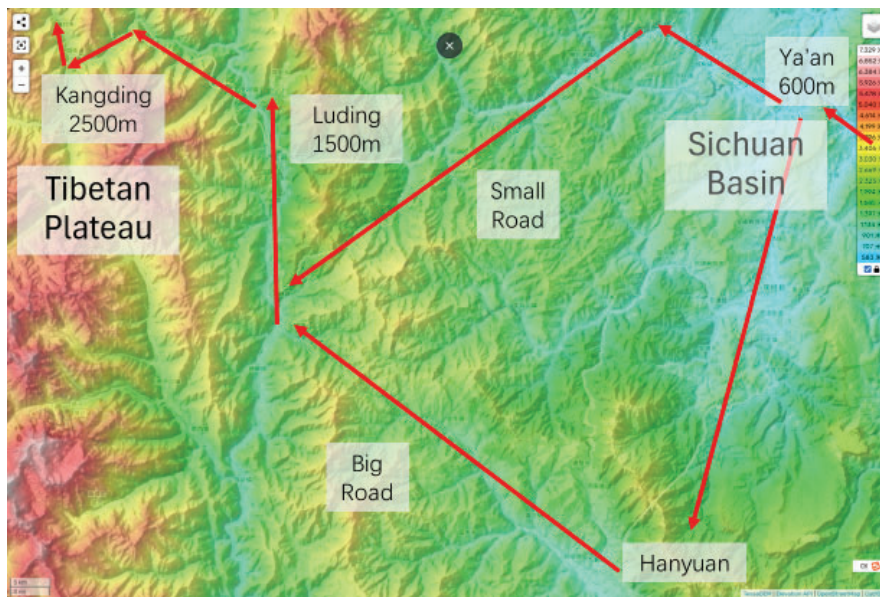


Fig. 3. The route between Ya'an to Kangding along the Tea-Horse Road

Рис. 3. Маршрут из Яаня в Кандин по Конно-чайной пути

Among them, the technical knowledge can be roughly summarized as follows:

A) Transport geography. In the historical sources of the *Jin* merchants, there is a category of road protocol-type manuals used to record information about places along commercial routes in order to guide merchants in their travels. These manuals generally listed in detail, in text rather than in map form, the names of taxing places, towns, villages, bazaars, and ferry ports that were distributed along a certain section of the route, and labeled their mode of transportation, size, topography, road conditions, availability of livestock and means of transportation, lodging facilities, folkways, places of interest, shortcuts and shortcuts, as well as distances to the next location. The manuals also recorded the customary expenditures for taxes, vehicles, boats, packaging, labor, and other expenses, so that the user can understand the approximate cost of transporting goods and the process of carrying out each matter (Fan Weiling, 2017). These manuals usually ended with a date taboo, a continuation of the tradition of the Road taboo day book, which had existed since the pre-Qin period. The transportation manuals used by merchants are clearly different from the transportation routes in the officially compiled square books. The former had a denser network than the latter (there were many secret trails that did not make it into writing in actual operation) and recorded more information. This can probably be attributed

to the different ways in which merchants and officials traveled.

B) Merchandise knowledge. In order to set up a store, it is necessary to know the origin, grade and price of commodities and necessary raw materials. Compared with the common daily-use books of the Ming and Qing dynasties, this kind of commodity science obviously had a distinctive perspective of the salesman. The content of the specific knowledge depended on the business scope of the merchants. For example, in addition to being well versed in the quality of tea, tea merchants also needed to understand the specific use, type, amount, and price of paper, gimlets, twine, and other items needed for packaging tea. Merchants trading in general goods needed to be clear about the units of measurement, quality evaluation standards, and places of origin of famous products for various types of goods, including medicinal herbs, foodstuffs, timber, minerals, spices, and handicrafts. The manuals used were generally divided by province and list the goods that were specialty products of that province's region, which in addition to domestic provinces also included foreign countries such as Goryeo, Luzon, Siam, and Flower flag (i.e., the U.S.A.). Another type of merchants, pawnbrokers needed to know the categories of goods with re-entry value, such as furs, cloths, garments, jewelry, gold, silver, metal utensils, and in a few cases, antiques. The knowledge of such specialized manuals focused on the identification

of good and bad authenticity, as well as valuation based on quality specifications. If we compare the commodity science manual of the pawn business (*dangpu* 当谱) with the records of tribute or the history of royal merchants in the Ming and Qing dynasties⁶, we can observe the close connection of the relevant commodity categories, which suggests the direction of the flow of distribution of prestigious commodities from the noble classes downward penetration.

C) Numismatics. During the Ming and Qing dynasties, silver was used as the main currency, and in actual circulation, the quality and quantity of silver were unstable. The actual weight and actual silver amount (collectively known as *pingse* 平色) per unit weight (i.e., 1 *liang* 两) of silver circulated by the government and in different local markets varied, and the ratio of exchange with copper coins also fluctuated. With the expansion of the business network of Shanxi merchants, the promissory notes (*yinpiao* 银票) issued by exchange shops also assumed the function of currency and circulated widely. The material characteristics of silver currency and the rapid expansion of the currency exchange business required merchants to familiarize themselves with Numismatics knowledge. The knowledge of identifying silver was summarized in separate manuals with titles such as the "Book of Identifying Silver" (*Bianyinpu* 辨银谱), as well as in chapters included in business textbooks. This knowledge was mostly in the form of easy-to-remember rhymes, which included the colors and patterns of fresh cuts of silver of different purities. Another type of handbook *Pingmakuanishi* 平码款式 mainly contained the silver exchange relationship between official rate and market rate, as well as the interest rates corresponding to different regional standards. Monopolizing this type of knowledge could help merchants obtain additional exchange fees.

D) Commercial mathematics. The development of Chinese abacus was inextricably linked to commercial practice, and apprentices entering the trade were strictly required to practice it. The textbooks of commercial mathematics preserved in Qixian and Taigu are all based on abacus. The system of mathematical knowledge and the format of sample questions and answers were in line with the tradition of ancient Chinese mathematical works, but usually set currency exchange, price calculation, and interest rate calculation, which were commonly encountered

in trade activities, as the primary content of the sample questions. The content could be traced back to the commercial arithmetic books of the Ming and Qing dynasties. The textbooks also contained some interesting abacus problems. In general, commercial mathematics paid much more attention to training the "hand" of the abacus operators than to the "brain" to solve mathematical problems. In addition, in the commercial field, merchants commonly used the Suzhou numerals, which were simple to learn and easy to write in, to keep accounts. From the point of view of accounting practice, Suzhou numerals were more convenient than Arabic numerals.

The commercial techniques used by the *Jin* merchants were not unique on the Silk Road, as many such books appeared in the commercial city-states of Italy during and after the Mongol Empire. Within China, similar works were circulated by the Huizhou merchants, who were equally important in the commerce of the Ming and Qing dynasties as the *Jin* merchants. If we turn our attention to the Tea-Horse Road, we could find that although the commercial centers here did not leave as many documents as the *Jin* merchants, the merchants here nevertheless had to be able to accurately and quickly identify the authenticity, color, and place of origin of the goods they dealt with, such as tea, bear gall bladders, musk, rhinoceros horns, musk, and so on. Merchants also had a clear perception of the potential risks of engaging in trade in different types of commodities⁷. After Southeast Asia became a French colony, traders in Pu'er and other places such as Laos and Vietnam would also accept paper money issued by French Indochina Bank (referred to as French paper) when trading, and the local exchange shop would exchange the French paper for silver dollars at a lower exchange rate, and then go to Kunming to exchange the French paper for silver dollars at a higher exchange rate, thus making a profit in foreign exchange (Duan Jinlu and Yao Jide, op. cit. pp. 366–367). Traders on the Tea-Horse Road also circulated relatively simple books of trade routes, while less educated backpackers passed down mountain songs (*kouliuzi* 口溜子) by word of mouth, which contained a wealth of information about distances traveled, topography, infrastructure, supply facilities, and the natural environment, making them a more folkloric form of geographic writing and knowledge creation.

2. Transportation mode as the foundation of moving technology

Both tea routes were typically overland silk routes. Although a significant portion of the Eurasian Tea Road was waterborne within China, such as Hubei and Henan, this most economically efficient mode of transportation was rarely used once it entered the plains of northern China. Camels and carts became the primary mode of transportation, and R. W. Bulliet has discussed at length the phenomenon of cartage once being carried by camels in many parts of Eurasia (Dali Bai, 2020, pp. 301–305; Duan Jinlu, Yao Jide, eds., 2002, p. 369–371). In the practice of the Tea Route, one can also see the co-existence of the "backward" pack transport and the more "advanced" cart transport from a modern standpoint. Ox carts, horse-drawn carts and camels were the main means of transportation moving eastward from the Black Sea, as documented in the 13th century in Pegrotti's *Pratica della mercatura*. The mixed tradition of transportation along the Tea Route helps to understand earlier transportation techniques.

Around Qixian, both camels and wagons were used for transportation. Compared to the Mongolian plateau, Shanxi was still a densely populated area with easy access to supplies along the way. Most camel and wagon teams here walked to the next caravansarai, unloaded their goods and returned, rather than traveling long distances. This was the norm for transportation in the ancient post road system⁸, and a true reflection of how the Silk Road trade unfolded section by section, rarely traveling thousands of miles.

From Zhangjiakou, the caravans would soon enter the grasslands and even more inhospitable deserts where supplies were scarce, and therefore needed to be better adapted to long-distance transportation. The camel was still an important means of transportation, and it was no longer paired with a horse-drawn wagon, but with an ox-cart. Camels were used since ancient times on the Silk Road in the Northwest, and Zhangjiakou local merchants originated from the retail sale of various types of goods to Mongolia (*suixiao* 碎销), and then gradually solidified and evolved into the use of traditional Han Chinese ox-drawn carts (*laoguanche* 老官车). Ox carts and camels carried basically the same amount of freight, about 300 kilograms. The ox carts could travel 30-40 *li* (15-20 kilometers) per day, while the camels could

reach a speed of 50-60 *li* (25-30 kilometers) per day. The two modes of transportation coexisted for the important reason that their travel seasons were exactly complementary. The camels shed their hair in the spring, making them unsuitable for long journeys, so the oxcart teams left in the second month of the lunar calendar, and the teams that end in Kulun return half a year later. At this time the camels were also rested and ready to go. The relationship between the two was like the monsoon on the ocean, allowing trade between North China and the Mongolian plateau to take place throughout the year. Furthermore, ox carts were mostly operated by Han Chinese, while camels were mostly bred by Hui people, creating a distinct difference in the technical knowledge between peoples. The ox carts carried smaller loads and more slowly, while camel caravans carried larger loads, so the two also complemented each other functionally.

Traveling for more than half a year and across thousands of miles in the grasslands, where technical services were lacking, required the oxcart to have a greater load capacity and durability than the average vehicle, and it had to be easily repairable. The manufacturing process was therefore different from that of the plank carts commonly found in the Chinese hinterland and the lele carts commonly found in the Mongolia Plateau. For example, its size was wider than that of a normal oxcart, its body was light but its axle was solid, its wheels had a large diameter, and its spokes tended to be more in the style of two horizontally and one vertically than radial spokes. (Fig.4) Hemp oil for lubrication was carried with the cart. The oxen pulling the carts were also fed with special fodder such as grain and wine dregs, and during leisure time were dispersed to each family and then centralized at the time of departure.

The Tea-Horse Road combined horse or oxen pack transport with the more primitive-looking human pack transport. Horse caravans usually had about 120 horses, with a leader (*maguotou* 马锅头), two deputy leaders (*erguotou* 二锅头) and general grooms. Oxen caravans could be as large as more than 200 head of oxen. The traveling speed of oxen caravan was approximately one-third that of horse caravan; however, oxen did not require much fodder⁹. The routes, the methods for sale and pack bundling taken by the horse caravans needed to be based on the nature of the goods transported to decide. For example, pack tea and



Fig. 4. The oxcart in Zhangjiakou
(Photoed by the author)

Рис. 4. Повозка, запряжённая волами, в
Чжанцзякоу (фото автора)

pack salt or groceries were tied in different ways, and if they got it wrong, it was easy to crush the horse's back and raise sores. Bells tethered to the livestock were widely used as an effective livestock information transmission tool on the tea roads. Different positions of the livestock wearing bells sounded different, these bells could serve as a hint to the surrounding there would be a caravan go through, but also allowed people to know the different positions of the livestock whether to fall out of line, the bells ring at night when resting could also be alarmed. These bells were generally supplied by blacksmiths along the way.

Whether on the Eurasian Tea Road or the Tea-Horse Road, the most important role in a caravan was the leader of the caravan. In Zhangjiakou, this role was called the *lingfangren* 领房人, and the route of the caravan was usually decided by them. Within the caravan, the *lingfangren* guided the carters, who were also drivers, repairmen, and livestock breeders, to ensure that each carter managed the one or two dozen oxcars under his charge. In terms of external communication, the *lingfangren* knew Mongolian or Russian languages, which allowed them to deal with bandits on the way, in addition to trading. They usually knew simple veterinary skills and were able to treat swollen and inflamed camel paws, skin ringworm, and bloated cow bellies. They also carried blacksmith's carpentry tools, such as bellows and saws, to accomplish livestock care tasks such as mending camel hooves and nailing the paws of cattle¹⁰. This role on the Tea-Horse Road was known as the *maguotou*. The purchase and distribution of goods for the horse caravan, the contacting of

business, and the sharing of food in the field camps were all decided by the *maguotou*. The *maguotous* were familiar with the customs along the way, clear which places are prone to danger should pay attention to guard, could decide in the horse caravans on the way to the residents on the way to trade, these transactions were often used in his arm around the ring-shaped abacus to calculate. The *maguotou* also carried with him an easy and efficient set of tools that allowed him to treat his animals or change the horse's shoes whenever needed. Malaria and other diseases (often attributed to "miasma") were common in the southwest China, and there was no shortage of remedies for malaria along the Tea-Horse Road. The caravans also had some knowledge of health care as they traveled through snow-covered mountains on their way to Tibet (Cunzhao, 2007, p. 16–17, 23). The leaders of horse caravans or porter teams could also give some advice on the choice of medical treatment. It could be said that the leaders of the caravans were the most knowledgeable people in the caravans.

From Ya'an to Kangding in Sichuan Province, porters played a more important role in transportation than horsemen. The equipment of a porters was very simple, the most important thing was the T-shape walking stick to support the body, as well as the back brace to hold the tea bags on their backs, and the sweat scraper. Although the porters seemed more primitive than the horsemen, they were better suited to the geography of this section of the road. The black tea was pressed into blocks or cakes and packed into strips weighing 16 *jin* (about 10 kilograms). On the flat ground, each horse could carry 12 strips of tea, but along the route from Ya'an

to Kangding, the gradient is usually 20°-30°, often encountering steep slopes of 45°, with the steepest section up to 65°, and only 2-3 *chi* (about 0.7-1 meter) wide at the same time. On such steep trails, a horse could only carry two tea strips and needed to be watched over by human. In contrast, a man could carry at least 12 tea bags and up to 19 to 20 bags, or more than 300 pounds. Even women could carry 7-10 tea bags. If the weather conditions were good and the porter was strong, he could reach Kangding in 12 days, not more than 16-17 days. After arriving at Kangding, the tea was changed to be transported to Tibet by oxen teams, and the livestock used was not the yak commonly found in Tibet, but the dzos, hybrid offspring of the yak and the cattle, which were stable and docile in nature, tall and powerful in size, and adaptable to the environment of the plains at a lower altitude (Sun Jiansan, 2012, p. 193-197).

3. Road rehabilitation, selection, and rest stops as components of trade infrastructure

In much of Eurasia, paved roads were rare outside of cities, which was an important reason why vehicular transportation was not widely available for so long and had to be carried by animals. In ancient China, the postal road system was relatively more sustainable, and road facilities were better built (especially near towns and cities). It should be noted, however, that the roads used for commercial transportation did not necessarily follow the post roads, both because they generally followed the principle of shortest distance and also because the smaller roads often allowed for the avoidance of taxes.

The oxcart caravans travelling in summer and autumn often set off at dusk, taking advantage of the cooler nights to follow smoother river routes, or taking the shortest route rather than a mountainous one, resting at intervals of about 20 kilometres in places where water and grass are abundant. The riverbed terrain was relatively flat and it was easy for livestock to find water. Using the riverbed as a road had been the practice of long-distance vehicle transportation on the Silk Road since Roman times (Young, 2001, p. 132). The caravanserais also followed this pattern. Often covering thousands of square meters, the caravanserais provided lodging, simple meals, and cattle herding, although they usually did not play a role in guarding against the bandits that frequented them. Caravans generally relied on hired bodyguards to deal with bandits. Caravans

might also stay in tents if caravanserais are not available. Camels, which traveled about one and a half times as many miles per day as ox carts, had simpler accommodation requirements. However, although camels could subsist on their own stores of nutrients or eat plants that are rougher or even more thorny than oxen, they must be replenished with salt, so in grassland or desert areas salt pans must be included in route planning, or the caravan could carry its own salt blocks, which sometimes were used to pay for lodging at the caravansarai¹¹.

In the Zhangbei area of the mountainous terrain with dramatic elevation rise, the vehicle could not be climbed by oxen alone. At this time, the nearby villagers would drive the horse beside the vehicle to help push, called *labiantao* 拉边套. Climbing section of the caravan only went about 5 kilometers a day. Climbing the grassland upper the dam, the original caravans according to a certain road forward were divided, to their respective sales areas to go forward, not gathering again until before crossing of the desert. During this period, the distance the caravan traveled each day varied with the distribution of water sources, the *lingfangren* with experience in traveling to Mongolia are able to plan ahead for the day's departure in order to reach the water source at rest.

Along the Tea-Horse Road, there were many mountains, and in order to promote trade and transportation, roads, bridges and other infrastructure were built on a larger scale. Such as the Ming Dynasty in western Sichuan to build post roads, to 1845-1850 years Pu'er area built from Simao to Yiwu tea horse stone post road, 530 *li* (about 265 kilometers) long, the main body for the width of 3-5 *chi* (1-1.3 meter) of the stone board. Other places were paved with hand-beaten stones and gravel, lime stone and red sandstone. Bridges were also built mainly of strips of lime stone, with a binder between the stones made of crushed bark of trees unique to the region, mixed with steamed glutinous rice, cow dung, chaff, dried pine needles, and lime¹². However, in many places such as Dali and Lijiang, the roads outside the towns are were mainly earthen. Tea transporters did not always take the official roads, and many chose the closer paths. The Ming Dynasty imposed a state monopoly on the tea-horse trade, which was strictly regulated, but it was difficult to eliminate smugglers, and many of the small roads leading to Lhasa in history were opened by smugglers.

From Ya'an to Kangding there were options of North Road and South Road. The North Road seemed closer on the map, but the route was very steep and rugged and lacks supplies, so it was not as good as the South Road, which was farther away but had better supply facilities. Therefore, the North Road was also known as the "Little Road" and the South Road was also known as the "Big Road". The porter's requirement for the road was relatively low, but the porter, in turn, also participated in the formation of the road. The porter rest on the T-shape thong crutch, the end of which was an iron pier. While resting the porters would pestle the crutch against a solid rock a few times, chiseling out small pits to prevent slipping. The porters behind would often continue to pound in the small pits chiseled out by the person in front of him, allowing the pits to become deeper and deeper, thus creating imprints on the trail the backpacker had traveled (Li Xidong.2012, p. 158–159)¹³. On the mountain road along the Eurasian Tea Road, the pits to the hoof of the horse could often be seen. In public historiography, they are often simply categorized as having been stepped on by horses passing through the road over a long period of time, but some scholars believe that the hoof pits were intentionally cut out by caravans to allow the horses to step on them, which also served as a non-slip feature. Early Mediterranean mountains also had "pole paths" for pedestrians to climb with hiking poles, and the phenomenon of building ruts for vehicles to drive on instead of roads (Casson, 1994, p. 68–70), as well as China's Qin dynasty also famously standardized the axle spacing of vehicles across the country. Ruts were also formed when iron wrapped wheels run over the pavement. These could be attributed to an early form of track pavement different from paved roads.

The flora and fauna along the Tea-Horse Road were abundant, and the horse caravans were easily supplied, and the distribution of the post stations or caravansarais was not as regular as along the Eurasian Tea Road. However, various facilities were often clustered around the post stations, forming towns and cities. The caravansarais were able to accommodate about 300 horses and have both rooms and stables to supply feed for the horses. However, the horse caravans could still only camp in many cases, and this was when the *maguotou* will choose a place on high ground, sheltered from the wind. The ground was covered

in turn with leaves, palm blankets, blankets, etc. to sleep on. Around the campsite, a burning fire was built, in which grass fruits were placed, and made smoke to drive away wild animals. Stakes were nailed to the campsite to tie the horses, and experienced horsemen usually cut the stakes into triangles; a quadrilateral or rounded cross-section indicated that the horseman was a novice, and that he might attract thieves (Dali Bai, 2020, p. 381–382).

4. Proficiency in communication and exchange for intercultural mobility

In addition to delivering tea and other goods to Mongolia, the oxcart caravan also undertook other transportation operations. For example, salt and alkali were transported back from many salt ponds in Inner Mongolia. The carts travelled slowly, the contact between them and the firms in the back mainly went through the Qing Dynasty postal system. An important type of information in commercial correspondence was the price list of goods in various places. Some of these price lists were printed forms with blanks at the corresponding goods for traders to fill in the prices. Keeping abreast of price changes was obviously of paramount importance in deploying the sale of goods. In order to keep commercial secrets, most of the firms had a system of passwords that were changed from time to time, especially the representation of dates and numbers.

In addition to using the post system, people also trained animals such as pigeons to carry out the task of delivering messages. A particularly interesting legend is that of a team of oxcart who were stranded in the snow and unable to return, so they sent a large black dog that had accompanied the team to deliver a message. Sled dogs were used to deliver messages in Alaska and the Canadian Arctic at the end of the 19th century, but at other times, dogs that could deliver messages were mostly regarded as lucky charms, like the legendary black dog in Zhangjiakou's legend. However, when I was conducting research in Zhangjiakou, I heard that some people still keep dog collars that can hold letters. Whether the black dog messenger is just a legendary case remains to be further investigated.

There is a saying in Zhangjiakou: "The legs of a big black dog, the mouth of Li Yuxi." Li Yuxi, who was as famous as the black dog, was a famous commercial translator in the late Qing Dynasty. He was good at English, Russian, Japanese, Italian, German, French and other foreign languages, and

had served as a representative of the company and the Qing government in foreign negotiations. In addition to such outstanding figures, there were many more talented people on the Eurasian Tea Road who were proficient in foreign languages. Due to frequent trade with the Mongols and Russians, cross-language communication was a common business practice for the caravans. Among the various manuals for merchants, there is a category of Chinese-Mongolian and Chinese-Russian translation manuals that merchants carried with them or used for learning. This type of manual has been studied from a linguistic perspective by Russian sinologists I. F. Popova (Martynyuk, 2017), but has not yet been examined in detail from a knowledge history perspective. Most of these manuals were bilingual, with Chinese characters indicating the pronunciation of other languages. It is clear that this pidgin language would leave a strong Chinese trace in the pronunciation and grammar for the learners. The content of language learning materials placed a high priority on trade. For example, an 1889 Chinese-Russian dictionary began with a list of cardinal numbers, and then went on to list more than ten categories of goods, including colors, textiles, tea, furs, and miscellaneous goods, as well as common terms used in transactions, such as sizes and units of measurement (Huai De Tang Hui Zi Hua..., 2018, p. 481–516)¹⁴. Other translation manuals included

common expressions for greeting and bargaining. They all showed the attribute that such books are specifically for business transactions. The content of the Chinese-Mongolian and Chinese-Russian manuals differed greatly. For example, the Chinese-Russian manuals were much richer in terms of vocabulary about tea categories than the Chinese-Mongolian manual. This can be used to illustrate the deployment and growth of knowledge in the face of different trading partners.

The merchants on the ancient Tea-Horse Road in Yunnan also attached great importance to keeping business secrets. For important goods mentioned in letters, they usually used code names, and they also created coded messages internally. When sending telegrams, they would often reverse the order of the words to hide the content. For example, if the market was rising, it would be said to be bullish, but if it was falling, it would be said to be bearish. In the cutthroat private business of that era, all major firms had such a system. Each had its own code, which was known only to insiders and was not to be divulged. It was used as a confidentiality system in the formulation of regulations. Although most of the caravan routes were markets within China, merchants were still required to know Naxi and Tibetan when traveling to Lijiang and Tibet. When trading with Southeast Asia, they needed to learn English, Burmese,

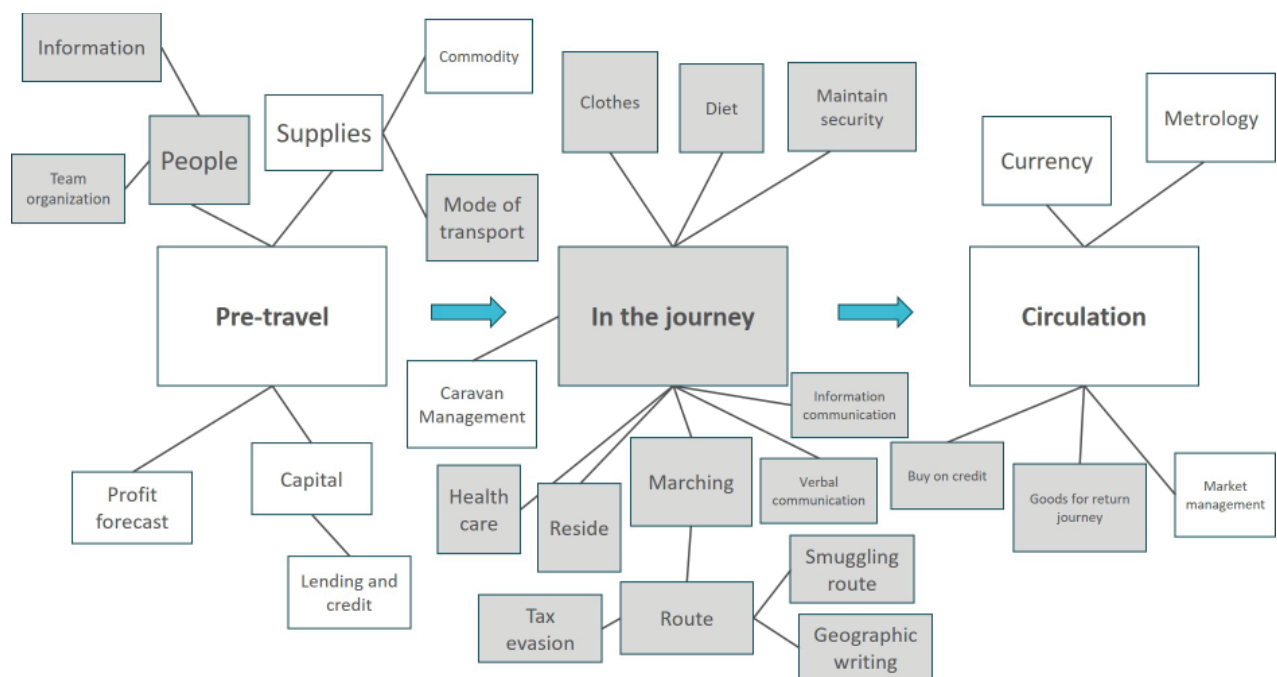


Fig. 5. The framework of Silk Road's practical skills

Рис. 5. Структура практических навыков Шелкового пути

Indian and Southeast Asian languages, with English as the main language (Dali Bai, 2020, pp. 304–305).

5. Commodity packaging and distribution for international markets

Whether the Eurasian Tea Road or the Tea-Horse Road, tea had to be transported over long distances from their place of origin to the consumer market, which was different from the traditional tea consumption habits in hinterland China. In most cases, only tea that had undergone the fermentation process could maintain its taste during long-distance transportation, and even added a special flavor under the action of mold. Long-distance transportation inevitably experienced wind and rain, cold and heat, so tea processing and packaging were obviously important skills in the tea trade to ensure product quality. In addition to processing in the tea-producing areas, tea underwent a repackaging process at various transit hubs.

Zhangjiakou's tea warehouses were concentrated in Caochang Lane and Xihuozi in the old town. Tea bricks transported by horse-drawn carts were repackaged here. The number of tea bricks in each box had more common specifications, such as 24, 27, 36, etc., and were named after the number of pieces, such as a package of 27 tea bricks called "*Erqi* Tea." Different specifications of tea were favored by different markets.

After the caravans and porters on the Tea-Horse Road transported the tea to Kangding, it had to be repackaged to adapt to the environment and transportation conditions in the Tibetan area. In Kangding's pot village, people sawed the striped tea bags carried by the porters into two pieces, wrapped six pieces of tea in a fresh yak skin just slaughtered, and used fresh yak skin strips as thread to tightly sewn. During the drying process, the yak leather packaging would shrink with each step, and after drying, it would be completely waterproof and airtight. It would not be damaged even if it fell into a ravine hundreds of meters away, or get wet if it fell into a rapid stream. Each package of Tibetan tea weighted about 60 *jin*. During the year-long journey to various Tibetan regions, the "Tibetan tea" was further mellowed in the new packaging. By the time it arrived at its destination, the tea color, tea flavor, and tea taste were all more mellow and authentic (Sun Jiansan, 2012).

In order to promote their sales, each merchant had to create a unique trademark and adapt their advertisements to the destination market. Tea merchants in Yunnan had a strong sense of brand awareness and often printed their trademarks on the packaging, the paper inside the packaging, and even on the tea cakes themselves. In addition to the trademark, the inside label also contained information about the origin of the tea, its high quality, the address of the tea shop, and contact information¹⁵.

6. Knowledge systems serving as the foundation for Silk Road+ specialization

The knowledge system of the Silk Road trading network at the transcontinental level was formed after a special filtering and development process that I call "Silk Road +," which led to the formation of independent interpersonal networks and geographical spaces. There was always a close interaction between practical skills and traditional knowledge systems along the Silk Road.

The commercial knowledge that supported long-distance trade was a special development of domestic commercial trade. Whether it was business ethics, commodity science or commercial geography, it was largely part of the existing commercial knowledge system. The encyclopedias of daily knowledge since the Ming and Qing dynasties also provided a knowledge base for ordinary readers, allowing a wider class of citizens to be psychologically prepared to accept foreign goods or go out to make a living. Of course, doing business was not praised in traditional Chinese society and culture, and it was necessary to create a good atmosphere in certain areas. The caravan cities along the tea roads were obviously areas that were conducive to business development.

The traditional craftsmanship in the Zhangjiakou area strongly supported the caravan trade. When the caravans returned, they brought back a large number of animal skins and fur, which helped Zhangjiakou develop a prosperous fur processing industry. In addition to producing various types of high-quality fur products, fur craftsmen also provided the caravans with clothing such as fur coats, felt boots, and felt hats to help them adapt to the cold climate of northern Mongolia. In addition, the containers for liquids such as water, wine and vinegar on the ox carts were often made of paper inner body covered

with felt, which reduced weight and increased durability.

As mentioned earlier, the transportation and sale of salt was the basis and an important part of long-distance trade, whether it was the Eurasian Tea Road or the Tea-Horse Road. It provided tea merchants with caravan organization, transportation routes, financial services, trading skills, and even the preparation of physical currency. It can be said that the tea trade is an extension and upgrade of the salt trade on the scale of the Silk Road.

III. Conclusion

It is challenging to provide a comprehensive and detailed promotion of the practice skills that have persisted the Silk Road active in an introductory article. This paper attempts to point out the rich aspects of the skills that supported the operation of the Silk Road from multiple perspectives. As a form of the Silk Road that

is closer to the contemporary period, a detailed examination of the Tea Road can help us more reasonably speculate on the actual operation of the ancient Silk Road. This paper mainly focuses on the collection of data along the Tea Road, mainly in China, while also referring to existing discussions on ancient long-distance trade. We expect to adhere to a cross-cultural comparative approach, cooperate with scholars with a richer cultural background, and conduct research along the Tea Road from a technical anthropology perspective, focusing on the concepts of "Silk Road" and "Silk Road +", to construct a more complete framework for the practice of Silk Road skills (Fig.5), and to examine the close interaction between the Silk Road and traditional knowledge and skill systems, thereby complementing previous research on the Silk Road and understanding how the Silk Road is a vibrant network of knowledge evolution.

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Notes:

¹ The Eurasian Tea Road is still a fairly new topic in Chinese academia, and the opportunity for its introduction was the joint application of the World Cultural Heritage by the countries along the route. Its academic foundation is the study of the *Jin* merchants 晋商, resulting in the fact that the history of commerce, the history of the people, and the history of tea are still the most fruitful aspects of the field. Due to space constraints, it is not possible to provide a comprehensive list of related works here, but readers may refer to Ping Yingzhi and Huang Boquan, "A Review of Research on the Eurasian Tea Road since the 20th Century," *Agricultural Archaeology*, Vol. 5, No. 5, 2020.

² Contact zone is a concept developed by M.L. Pratt to refer to a social space where two or more cultures exchange and negotiate shared histories and power relations. See Pratt M L. *Arts of the Contact Zone*, *Profession*, 1991: 33-40.

³ "Knowledge economy" here refers to the collection of social practices and institutions for the production and reproduction of knowledge, see Renn J. *The Evolution of Knowledge: Rethinking Science for the Anthropocene*. Princeton: Princeton University Press, 2020, p. 145.

⁴ The largest collection of materials available is Liu Jianmin ed., *The Collection of Historical Sources on the Jin Merchants* (The Commercial Press, 2018), and the documentation in the category of commercial skills ("protocols") can be found in volumes 67-75.

⁵ For the transformation of border military cities such as Zhangjiakou into commercial cities, see He Yimin and Fu Juan. *From Military Town to Commercial City: the Transformation of Military Border City in the Qing Dynasty: Taking Tengchong and Zhangjiakou as Examples*, *Collection Papers of History Studies*, 2014, (6).

⁶ The material culture of the Qing elite can be found in Lai Huimin, *Qianlong's Treasure Chest: Qing Palace Treasures and Capital Fashion*, Xinbei: Baqi Culture, 2023.

⁷ An interesting example is that of a fledgling merchant in Ya'an who made his "first bucket of gold" by peddling salt, but was advised by his more experienced elders to stop because the market price of salt fluctuates so much that it can easily turn one into a pauper. See Chinese People's Political Consultative Conference, Sichuan Province, Hanyuan County Committee, ed. *The Hymn of Porters*, Sichuan Nationalities Publishing House 2015, p. 35.

⁸ Owen Lattimore and many other scholars have noted this in travel, see Lattimore O. *High Tartary*. Boston: Little, Brown & Co. 1930, p. 16.

⁹ Pu'er Municipal Association, ed. *Pu'er Tea-Horse Road*, Kunming: Yunnan Science and Technology Press, pp. 225-226.

¹⁰ Interview with Yang Zhaode by Liu Zhenying, July 30, 2009, to be published.

¹¹ Interview with Zhang Yingjie and Zhao Caixia by Liu Zhenying, October 19, 2009, to be published.

¹² Pu'er Municipal Association, ed. op. cit. pp. 225–226.

¹³ Li Xidong. The Historical Role and Relevance of Backpackers on the Tea-Horse Road, in Ya'an Municipal People's Government, Sichuan Provincial Administration of Cultural Relics, Proceedings of the Border Tea, Hidden Horses: Symposium on Protection of the Cultural Heritage of the Tea-Horse Road (Ya'an), Cultural Relics Publishing House, 2012, pp. 158-159.

¹⁴ Unknown author. Huai De Tang Hui Zi Hua in the 16th year of Guangxu, in Liu Jianmin, ed., The Collection of Historical Sources on the Jin Merchants. Beijing: The Commercial Press, 2018, vol. 72, pp. 481-516.

¹⁵ Pu'er Municipal Association, ed. op. cit. pp. 252.

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