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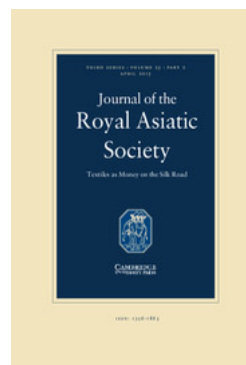
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## Determining the Value of Textiles in the Tang Dynasty In Memory of Professor Denis Twitchett (1925–2006)

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# *Determining the Value of Textiles in the Tang Dynasty*

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*In Memory of Professor Denis Twitchett (1925–2006)<sup>1</sup>*

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ANGELA SHENG

How did people in Tang dynasty China view textiles and how did they conceive of their value? Those involved in production could calculate the value in terms of the costs of raw materials, labour and the loom used to weave a particular textile. They might add to this the costs of workshop supervision and maintenance, distribution and marketing, and they might expect to see some benefit – a profit – in the process. However, most people would be end users, and would reckon the value of textiles by eye, if not also by hand, and what they considered to be the market value. Some might have expert knowledge, but many would not. The non-expert evaluation by eye and hand would likely include aspects such as colour, pattern, level of workmanship and intricacy but would probably also reflect some awareness of status and fashion.

When textile specialists look at historical textiles today, they have to work backwards, examining in close detail the fibres, dyes, weave structures and patterns of the textiles in order to rediscover how they were produced, and to recreate the context in which those textiles were used. In the case of the Tang dynasty, the dynastic histories and excavated contemporary documents offer a wealth of textile terminology and contextual evidence, but it still remains difficult to discern the true nature of the textiles recorded in these texts, both from the point of view of a textile maker and a textile user.

We know from the dynastic histories and excavated texts that textiles served as money on the Silk Road. We also know that different kinds of textiles had different values. This article aims to show how a textile historian would navigate through the evidence and ultimately explain why simpler textiles were better suited to serve as money on the Silk Road, and more elaborate textiles were better suited to other types of exchanges.

As a heuristic device, let us distinguish three kinds of textiles based on the complexity of their technological construction and whether they are ornamented with repeated motifs (patterns) or not. First, let us call “simple” all those unadorned and woven in the simplest binding structure of tabby, because tabby can be woven on the simplest kind of loom. This definition would include simple silks (specified in French as *taffeta*) and simple cloths in

<sup>1</sup>Long ago when Professor Twitchett met me in his office at Princeton to discuss research topics, he had hoped that I would tackle the relationship between textiles and taxation in the Tang in my dissertation. Long after I finished my dissertation on rural textile production in the Song, I am finally able to address some aspects of this issue that he had first raised with me back then. I am grateful for his foresight and encouragement. For this opportunity and for their editorial refinement, I thank Helen Wang and Valerie Hansen. Thanks also go to Zhao Feng for sharing the resources at the National Silk Museum in Hangzhou in 2010. Travel was funded in part by McMaster Arts Research Board Conference Grant, acknowledged with gratitude.

wool, hemp, ramie and other plant fibres. Second, let us call “complex” those woven in binding structures other than the tabby such as twill, satin, gauze and compound weaves (elaborations follow in sections below), because these binding structures require looms more complex than the simplest loom for weaving tabby. Since the more complex looms would also permit the weaving of repeated motifs, that is, patterns, most complex textiles feature patterns whether monochrome or polychrome, small or large, geometric or curvilinear. Third, let us call textiles “fancy” all textiles that have been adorned with patterns, whether dyed, woven, or even handpicked through the simple tabby. Thus, a textile woven in tabby would become “fancy” when dyed with patterns, but a tabby degummed or dyed piecemeal in colour (no pattern) would still be “simple”. Both extant textual and material evidence shows that most fancy textiles in Tang China were woven in silk. Thus, here, we are referring mostly to fancy silks. Complex silk weaves are fancy silks, but not all fancy silks are woven in complex structures.

### **The Chinese Cultural Framework for Considering Textiles as Money**

Helen Wang’s article in this special issue sets the scene for considering textiles as money and elucidates on the definitions of money and currency in general. To extend her discussion to a specifically Chinese cultural context, I will continue to refer to the eight criteria for money as defined by Paul Einzig in *Primitive Money*, even though the economic situation in Tang China was far from primitive:<sup>2</sup> (1) utility and criteria; (2) portability; (3) indestructability; (4) homogeneity; (5) divisibility; (6) stability of value; (7) cognizability; and (8) liquidity. But different cultural contexts shape the way different money objects emerge and are used, and it is important, as Einzig emphasises, to look at the context of “the people who used [money] and their economic conditions, social institutions and cultural background”.<sup>3</sup>

Richard von Glahn, in *Fountain of Fortune: Money and Monetary Policy in China, 1000–1700*,<sup>4</sup> outlines the fundamentals of classical Chinese monetary analysis. He raises questions that can be applied in the case of textiles as money (inserted *textiles* are mine): “On the more abstract level of economic generalisation, what economic functions did money (*textiles*) perform? And on the more concrete level of historical contingency, what types of money (*textiles*) existed and to what extent did they (*textiles*) fulfill the functions of money?” Von Glahn identifies the functions of money as being a means of exchange; a measure of value; a store of value; and a means of making state payments. If we compare these attributes with those traditionally defined by economists and bankers (see Helen Wang’s article), we notice that the first three functions are similar in both but that Von Glahn has replaced “a standard of deferred payment” with his own “a means of making state payments”. This is a very important differentiation between early Chinese monetary thinking and that prevailing in early Europe. Von Glahn makes the pertinent observation that while the ancient Greeks thought of money as originating from the requirements of exchange (known as Aristotle’s catallactic theory of money), the ancient Chinese had a different concept of the origins of money. To quote von Glahn, “they linked the invention of money to the ruler’s crucial

<sup>2</sup>Paul Einzig, *Primitive Money in its Ethnological Historical and Economic Aspects* (Oxford, 1966), p. 321.

<sup>3</sup>Einzig, *Primitive Money*, p. 20.

<sup>4</sup>Richard von Glahn, *Fountain of Fortune: Money and Monetary Policy in China, 1000–1700* (Berkeley, 1996). For direct quotes below, see pp. 15, 16–18, 23 and 25.

responsibility for securing the livelihood of his subjects . . . as the sage-king”.<sup>5</sup> Thus, to follow the early Chinese understanding of money, we should reorder von Glahn’s defining attributes of money to reflect these different priorities, placing “store of value” and “means of state payment” above “means of exchange” and “measure of value”.

Embedded in “store of value” and “means of state payment” is the notion of symbolic value. The symbolic aspect is of paramount importance when analysing the use of silks in imperial China. The emperor as the sage-king received silks as tribute and tax payment, and redistributed them among his supporters. Some would be simple silks, which, along with simple tabbies of hemp and ramie, and also grain, would be redistributed to members of his bureaucracy (including the military) as remuneration for services (see Arakawa’s article in this issue), much in the way he provided food and clothing for the needs of his subjects. Once distributed, the textiles and grain could be used by the recipient or could be further redistributed or used in exchanges. Indeed, I would suggest that commoners probably felt textiles good enough to act as taxes guaranteed their use as money. But the emperor would also make special awards, say, as commendation for admirable behaviour – for example, a demonstration of loyalty – and these awards might be in the form of fancy silks, whether woven in complex weaves or dyed with patterns. In this way, redistributing simple textiles and fancy silks substantiated social relations between the emperor and his subjects, thereby ensuring social order.

### **Appreciating the Difference between Simple versus Complex Textiles and Fancy Silks**

In our modern, global economy nearly every commodity has an explicit price or a monetary value. This universality of price allows for standardised comparison with other commodities, and encompasses time, labour and other costs. Most people do not need a price tag to recognise something as special, unique or unusual, and its rarity or specialised workmanship renders it valuable and desirable. Examples abound: one-of-a-kind art works, once-only performances, a medal, a certificate and so on. The same can be said about fancy textiles.

Rarity can be inherent, as in the large, deep-blue Hope Diamond weighing 45.52 carats (9.10 g), now housed in the Smithsonian Natural History Museum in Washington, DC, or manufactured, as in today’s high-speed and seasonal fashion industry. The human need for complex ornamentation of textiles is as true now as it has ever been. What is at the root of this need? Perhaps it is “the enchantment of technology and the technology of enchantment”, an explanation proposed by the late Alfred Gell for the Trobrianders’ motivation to carve their canoe boards so elaborately.<sup>6</sup>

<sup>5</sup>That is, in the highly hierarchically organised Confucian society, the ruler was the most important patriarch of his empire, responsible for the welfare of the people and, as such, and mandated by heaven, was morally obligated to provide for their basic needs. The emperor (state) did so by providing land for farmers to cultivate and in return collected taxes (rent) partially in kind and redistributed the taxed grain and textiles. This practice persists today, though sometimes in disguise. Civil servants (including university professors) are still paid in money and in kind – for example, subsidised housing – both in Taiwan and on the mainland. Even during the early Communist period, until the economic reforms in the late 1970s, state workers also received coupons for oil, grain and fuel for heating. It also explains the attitude of entitlement many Chinese working for the state espouse.

<sup>6</sup>A. Gell, “The Technology of Enchantment and the Enchantment of Technology,” in Anthony Shelton et al. (eds), *Anthropology, Art, and Aesthetics* (Oxford, 1992), pp. 40–63.

On the other hand, advanced technology cannot always deliver satisfaction. The textile historian Rita Bolland has observed that although the young people in Bhutan have switched from local, traditional hand woven textiles to imported, modern machine-woven textiles for their sartorial needs, the traditional weaving culture there is still active. The reason is that people continue to appreciate the hand woven textiles; they command a higher price and enhance the wearer's status more than the imported machine-woven kinds. Bolland explains why: "Many people still know the amount of work involved in the different patterns and so are able to judge the value".<sup>7</sup>

It seems reasonable to anticipate that the more complex the early Chinese hand woven textiles were – that is, those requiring more skilled labour and involving more complex techniques – the higher the price they would fetch. Each piece of fancy silk woven and embellished with unique motifs had its own unique value. The fancy silks, being elaborate and intricate, not to mention rare, would also have had a higher prestige value. But the rarer and more prestigious the textiles were, the further removed they became from Einzig's eight criteria. They could not have functioned as a universal medium of exchange. Instances in which fancy silks changed hands were more likely to fall into two categories: symbolic exchange at a high social level, or in more isolated, one-off exchanges. By contrast, simpler textiles were more common, more consistent, more numerous and would appear more regularly in exchanges. In this way, they were much closer to matching Einzig's eight criteria.

### How Does a Textile Historian Assess the Value of Historical Textiles?

The textile specialist's physical examination of historical textiles typically includes analysis of the fibres, the weave structure, and may also include embroidery and dyes. These findings can also inform how we consider the likelihood of certain textiles being used as money.

#### *Fibres*

Textiles fall into different categories depending on the raw materials used to make them. Animal fibres include wool, gleaned from sheep and other hairy animals (such as camels and alpaca), and silk from silkworms. Plant fibres can be culled from both domesticated and wild species of hemp, ramie, banana, cotton, creeper vine and so on.<sup>8</sup> Each source, animal or plant, involves a different process of production – from animal husbandry to sericulture and agriculture – first to obtain the fibre, then to convert the fibre into textile through spinning and/or silk-reeling and finally, weaving. Alternative techniques include knitting and felting.<sup>9</sup>

<sup>7</sup>R. Bolland, *A Loom from Bhutan*; with an Introduction by Alet Kapma and Wouter Ton (Amsterdam, 1995), p. 11.

<sup>8</sup>Contrary to popular misconception, flax was not indigenous to China (but was to India) so that no linen was ever produced in early China. Hence, we translate *ma* 麻 as hemp and *zhuma* 苧麻 as ramie, and not as linen.

<sup>9</sup>For a detailed and seminal discussion on spinning and silk-reeling, see D. Kuhn, *Textile Technology: Spinning and Reeling*, part IX of vol. 5, *Chemistry and Chemical Technology, Science and Civilization in China* (Cambridge, 1988), and for an ethnographic report on felting, see M and V. Gervers, "Felt-making Craftsmen of the Anatolian and Iranian Plateau", *Textile Museum Journal* Vol. IV, No. 1 (1974), pp. 15–29 and L. D. Levine, "Notes on Felt-Making and the Production of Other Textiles at She Gabi, a Kurdish Village", in V. Gervers (ed.), *Studies in Textile History* (Toronto, 1977), pp. 202–213.

Nature determined the initial geographic spread of different fibres in antiquity. In the case of China, wool came from sheep that roamed the pastures to the north of the Yellow River and on the Silk Road stretching from China to Central Asia under the care of semi-nomadic peoples. Their sedentary counterparts, rarely, if ever, tried to convert agricultural land to pasture for the sake of obtaining wool; instead, they tried to adapt and grow species of new plants, usually acquired through trade.<sup>10</sup> A good example of this, although from a much later period, is the widespread planting of cotton in the lower Yangzi region in the thirteenth century. In the case of silk, it was usually the leaves of the mulberry tree, native to Central China (subtropical Asia), that the sedentary sericulturists fed to silkworms. But in certain places silkworms were fed with leaves from other trees, which resulted in silk of variant textures: for example, silkworms fed on oak produced a coarser silk.

Then, as now, the rarity of the fibre contributed to the value of the textile made from it – the rarer the fibre, the more valuable the textile. Dynastic records on tribute in the first millennium show many such entries: for example, woollens (*he* 褐, *he* 氍) from Central Asia and cottons (*baidie* 白疊) from South Asia.<sup>11</sup> However, their rarity, and thus irregular supply and likely instability of value, would render textiles made from rarer fibres less suitable as money.

### *Weave Structure*

When textile specialists look at weave structure they are essentially determining how the warp and weft are bound together. The warp (*jing* 經) is longitudinal, with the warp threads parallel to the selvages of the finished textile. The weft (*wei* 緯) is latitudinal, with the weft threads parallel to the warp- and cloth-beam at the ends of a loom. The warp and weft can be bound in many different ways, ranging from a very simple weave to a much more complex weave structure. The weaver manipulates the warp threads by preparing them in groups threaded through shafts. When the shaft is raised, it lifts those threads above the rest of the warp threads, and creates a space, known as the shed, through which the weft threads (known as the picks) can pass. The three basic weave structures are tabby (*pingwen* 平紋),<sup>12</sup> twill (*xiewen* 斜紋) and satin (*duanwen* 緞紋). In these ground weaves, the warp and weft lie flat on top of each other.<sup>13</sup>

<sup>10</sup>D. Zohary and M. Hopf, *Domestication of Plants in the Old World* (Oxford, 2000).

<sup>11</sup>For a brief discussion on woollens, see Wu Min, “The Exchange of Weaving Technologies between China and Central and Western Asia from the Third to the Eighth Century Based on New Textile Finds in Xinjiang”, translated by Angela Sheng, in Regula Schorta (ed.) *Central Asian Textiles and Their Contexts in the Early Middle Ages*, *Riggsberger Berichte* 9 (2006), pp. 211–242, especially pp. 212–213. For analyses on the cottons, see Zhang Bingquan, “Zhongguo gudai de mian zhipin” [Cotton textiles in ancient China] in *Lishi yuyan yanjiusuo jikan*, (Taipei, 1981) Vol. 52, No. 2 pp. 203–233 and E. Trombert, *Le Crédit à Dunhuang, vie matérielle et société en Chine médiévale* (Paris, 1995). For a discussion of both cottons and woollens in early South Asia, see Gouri P. Lad, “Textiles in the Vinaya Pitaka”, *Bulletin of the Deccan College Research Institute (Professor H. D. Sankalia Memorial Volume)* 49 (1990), pp. 227–235 (Thanks to Shayne Clarke, a colleague at McMaster, for bringing this to my attention).

<sup>12</sup>Also known in English as ‘plain weave’.

<sup>13</sup>For the clearest definitions of textile terms in English and illustrations, see Dorothy Burnham, *Warp and Weft: A Textile Terminology* (Toronto, 1980). Her definitions correspond to those proposed by members, including British textile historians, of the Centre International d’Études des Textiles Anciens (CIETA) in Lyons, France. For examples of how ancient Chinese and other weaves were successfully reproduced, see J. Becker, *Pattern and Loom, a Practical Study of the Development of Weaving Techniques in China, Western Asia and Europe* (Copenhagen, 1987), 2 vols.

Tabby is the simplest weave and can be woven on any loom. The naked eye sees the threads crossing over one thread, under the next, and continuing over-under-over-under. To produce a plain tabby, a weaver simply raises one shaft (threaded with alternate warp threads) in one shed opening and passes the weft thread through. To produce a patterned tabby, the weaver makes selective use of warps and wefts of different colours or textures.

Twill is recognisable by the appearance of diagonals, which look like “V”s and inverted “V”s, on the finished textile. To produce twill, the weaver needs a loom equipped with at least three shafts (four would be more common). The diagonal patterns are created by raising three sets of warp threads at a time, and passing the weft pick through the sheds. It is the structure of twill that gives it the distinctive diagonal pattern. The pattern can be subtle and overlooked; for example, the denim used to make blue jeans is a twill.

Satin is recognisable by its smooth, glossy surface. This is created by the long warp floats on the textile’s surface. To produce satin, the weaver needs a loom with at least five or six shafts. These are raised in a sequence that gives maximum exposure to the warp threads in the finished textile. A silk satin is prized for its sheen, created entirely through the weave structure. If patterns are desired, they are usually embroidered afterwards.

Tabby, twill and satin are weaves that involve one set of warp threads and one set of weft picks. Only tabby can be woven on a simple loom, whereas twill and satin require more complex looms and are here considered as complex textiles. To create even more complicated weave structures, the weaver increases the number of sets of warp and weft. These structures are known as compound weaves (*chong jing* 重經 or *chong wei* 重緯). Increasing the number of sets of warp and weft allows more scope in terms of structural binding and patterning but requires even more complex loom technology than that required for weaving twill and satin. In compound weaves the patterns can be repeated across the warp, or across the weft or across both. If the warp and weft cross each other, twisting as they interlace (i.e., not lying flat one on top of the other, as in the simple weaves), they form the structure of gauze (*luo* 羅). For the warps to interlace, a different loom is necessary, called the gauze loom.<sup>14</sup> Patterns can be woven into gauzes and other compound weaves.

All these complex structures can be woven using silk, with greater or lesser ease at various densities. Textile specialists measure textile density by counting, per square centimetre, the number of warp threads (the number dressed on the loom prior to weaving) and the number of weft picks (the number of times a single weft passes through the warp threads).<sup>15</sup>

Through fibre analysis the textile specialist can determine the original materials from which a textile is made. By examining textile density the specialist can determine the true quality of the production. The density reflects the quantity of original fibre used, the equipment with which it was made and the manual dexterity and expertise required to design and produce it. Close investigation of the dyes can reveal their sources, and also reflect patterns of production: for example, excavated fragments of textiles and documents show

<sup>14</sup>Dieter Kuhn, *Die Webstühle des Tzu-jen-i-chih aus der Yüan-Zeit* (Wiesbaden, 1977), pp. 109–124.

<sup>15</sup>This demanding task, previously performed with the aid of a magnifying glass, is now made much easier and far more accurate with a computer-assisted magnification that can then be projected on a large screen for clear viewing. For more details, see ‘Notes on Textile Terms’ in Angela Sheng, “The Disappearance of Silk Weaves with Weft-effects in Early China” in *Chinese Science* 12 (1994–95), pp. 61–65.

that whereas silk tabbies were often dyed with patterns of several colours, more complex silk twills were usually monochrome, having been piece-dyed in one colour.

The textile specialist has a very high level of expertise and knowledge. However, the non-specialist can also appreciate the difference between simple weaves (unadorned tabbies), complex weaves and fancy textiles. They can see the patterns in the weaving, which range from simple, linear and geometric designs to more complex and curvilinear motifs. They can appreciate that production of both dyed and woven motifs, repeated as patterns, is labour-intensive and requires more expertise and more sophisticated technology, the woven more costly than the dyed motifs. They know that these factors increase the cost of production, and that this enhances their desirability as luxury goods, or indicators of prestige and status.

### A Closer Look at Tabby

Of all the weave structures, tabby is the simplest. It can be woven with any fibres on any loom. Han dynasty (and probably earlier) Chinese textile terminology for tabby varied according to the fibres in the textiles. Tabby woven in hemp was called *bu* 布. Tabby woven with other plant fibres (including bast, or pounded tree bark) was called after the plant fibre, with the *bu* 布 tacitly understood. For example, *ma* 麻 (hemp) understood as hempen cloth, *zhu* 苧 (ramie) as ramie cloth and *ge* 葛 (creeper vine) as cloth woven of creeper vine are all found in the *The Book of Rites* (*Liji* 禮記), compiled in early Han times.<sup>16</sup>

For tabby woven in silk fibre, a different word was used. In the early Han, plain silks woven in tabby were broadly called *bo* 帛.<sup>17</sup> In the Tang dynasty, at least from 624 CE when new taxation rules were promulgated, tabby woven in silk was more frequently, and more specifically, called *juan* 絹.<sup>18</sup>

Silk tabby could be ornamented by other processes such as painting, embroidery and dyeing. Once further embellished, these textiles would be referred to by their distinguishing features. For example, a painted silk would be known by the title or content of the painting; and the same was true for embroidered silk.<sup>19</sup>

There was another level of terminology which distinguished between dyed and undyed textiles. The terms *bo* 帛 or *juan* 絹 were not used for silks that had been dyed; instead, dyed textiles were given special names which reflected their colour or pattern. Similarly, some silks that had been specially treated (for example, degummed prior to dyeing) also had special names: for example, *juan*-silk that had been degummed was known as *lian* 練. These terms will be discussed later in the article.

<sup>16</sup>Chen Weiji 陈维稷, *Zhongguo fangzhi kexue jishushi* 中国纺织科学技术史 [The history of weaving technology in China] (Beijing, 1984), pp. 41–43.

<sup>17</sup>Ban Gu (32–92 CE), *Hanshu* 漢書 [History of the Han dynasty] (Beijing, 1975), 24.1117.

<sup>18</sup>Liu Xin (887–946), *Jiu Tangshu* 舊唐書 [Old Tang history] (Beijing, 1975), 48. 2088.

<sup>19</sup>During the time of Three Kingdoms (220–265), Sun Quan 孫權, King of the Wu 吳 kingdom, lamented the lack of a detailed map for working out a strategy to conquer the other two kingdoms of Wei 魏 and Shu 蜀. His wife, Lady Zhao 趙夫人, also sister of Prime Minister Zhao Da 趙達, was noted for her artistic talents. Upon hearing her husband's wish, she painted a landscape showing mountains and lakes. Moreover, she even embroidered a map of five mountains on a square piece silk (*fang bo* 方帛). For this story, see Chapter 4 of Zhang Yanyuan's 張彥遠 (ca. 825–877), *Lidai minghua ji* 歷代名畫記 [Records of famous paintings throughout the ages] *Huashi congshu* 畫史叢書 Vol. 1 (Taipei, 1974), pp. 66–67.

### The Use of Silk and Hemp Tabby as Money

Silk (*bo* 帛) and hemp cloth (*bu* 布) woven in tabby were used in payments long before the Han dynasty. Indeed, the state recognised and accepted them as tax payments (*fu* 賦) during the Warring States period (475–221 BCE). Excavated documents recording the laws of the Qin state show that by the mid-third century BCE, hemp cloth for tax payment was being produced to a standard measurement of 8 feet in length by 2 feet 5 inches in width (about 180 cm × 54 cm), which was equivalent in value to 11 *banliang* 半兩 coins.<sup>20</sup> This confirms that hemp cloth was used in payment, and was a medium of exchange that was regulated by the state, which standardised its dimensions and determined its value.

These dimensions deserve some discussion. The width of the silk and hemp cloth corresponded roughly to the span between a weaver's two hands, slightly stretched beyond the width of the weaver's two shoulders, when the weaver sat at a slanted treadle loom. A loom with a slanted warp frame already existed during the Warring States period and probably even earlier.<sup>21</sup> Because the width of the handloom did not vary much, the width of the tax textiles stayed close to the pre-Han standard of 2 feet 5 inches.<sup>22</sup>

The pre-Han tax obligation of 8 feet (approx. 1.8 m) amounted to one-fifth of a bolt (*pi* 匹), the length of which was specified as 40 feet (approx. 9 m).<sup>23</sup> Based on archaeological evidence, a simple jacket with long sleeves and a pair of long trousers – what the majority wore – would require roughly 5 m of fabric of average width (between 55 cm and 63 cm), about 2.5 m each for the jacket and the trousers for a person of average size and height.<sup>24</sup> Thus, the taxed amount of 1.8 m did not even suffice to make either a jacket or a pair of trousers.

In the later Han period, one bolt became the required length for tax payments, with the standard size of a bolt of hemp cloth increased to 4 decafeet by 2 feet 2 inches (about 972 cm × 55 cm).<sup>25</sup> This new, larger amount permitted the cutting of almost two sets of

<sup>20</sup>Banliang coins were first issued by the Qin state during the Warring States period; they were round coins, cast in bronze with a square hole in the middle and the inscription *banliang*, which translates as 'half a [Chinese] ounce'. One pre-Han foot measured about 22.5 cm (Ogawa Tamaki 小川環樹 et al., *Shinjian* 新字源 [A new source of characters] (Tokyo, 1987) p. 1225. See also *Shuihudi Qin mo zhujian zu* 睡虎地秦墓竹簡整理小組 (ed.), *Shuihudi Qin mo zhujian* 睡虎地秦墓竹簡 [Bamboo slips from the Qin tomb at Shuihudi] (Beijing, 1990), pp. 35–41, cited in François Thierry, *Monnaies de Chine* (Paris, 1997), p. 14 and personal communication with him.

<sup>21</sup>Variations of the slanted treadle loom were carved on Han stone slabs to illustrate the Confucian story of Zengzi's 曾子 mother ready to cut the cloth that she was weaving to teach her son a lesson on moral rectitude. Apparently, even when Zengzi's mother heard her son accused of murder three times, she still believed in his innocence (Hung Wu, *The Wu Liang Shrine: the Ideology of Early Chinese Pictorial Art*, Palo Alto, 1989, p. 277). Nine slabs were found in the modern provinces of Shandong, Jiangsu, and Sichuan. On each slab, the mother is represented as turning away from the loom to lecture a kneeling man. In the one found in Honglou 洪樓 of Tongshan 銅山 county in Jiangsu 江蘇, the mother is shown seated with her feet placed on the two treadles (Chen Weiji 陈维稷, *Zhongguo fangzhi kexue jishushi*, pp. 198–199, fig. III-5-1-1).

<sup>22</sup>Regardless of whether the loom were slanted or horizontal, its width was nearly always the same because it had to be just wide enough for a weaver to easily pass the shuttle with one hand from the right across the loom width and take it out with the left hand from the other side. This resulted in the varying widths of the simple silks and cloths, from 55 cm to 63 cm. However, the length of the warp threads stretched over the horizontal loom could be as long as the horizontal loom was supported and thus, much shorter or usually longer than the length of the warps stretched over the slanted warp frame on a slanted loom.

<sup>23</sup>Angela Sheng, "Textile Use, Technology, and Change in Rural Textile Production in Song China (960–1279)" (PhD dissertation, University of Pennsylvania, 1990), p. 281. One pre-Han foot measured about 22.5 cm (Ogawa Tamaki 小川環樹 et al., *Shinjian* 新字源 [A new source of characters] (Tokyo, 1987) p. 1225).

<sup>24</sup>Sheng, "Textile Use, Technology and Change", Appendix 3.

<sup>25</sup>*Hanshu*, 24.1149. One late-Han foot measured 23.04 cm (*Shinjian* 新字源 1987, p. 1225).

jacket and trousers! The Northern Wei dynasty (386–536) also required tax payments in cloth of these dimensions.<sup>26</sup>

The *Tang Code*, after much editing and revision, was finally promulgated throughout the empire in 737.<sup>27</sup> Its rules for the *zuyongdiao* 租庸調 tax system stipulated that every year each able-bodied male adult (*ding* 丁), representing his family, was to pay 2 piculs of grain as *zu* 租 tax and to perform 20 work days of corvée labour as *yong* 庸 tax, both of which could be replaced by and paid for in textiles. *Diao* 調 was the tax in kind, payable in local produce. In silk-producing areas the *diao* tax was 2 decafeet of silk (approx. 62.2 cm), payable in *ling*-twill, *juan*-silk or *shi*-silk and 3 ounces of *mian*-silk floss. In areas that did not produce silk, the *diao* tax was 2 decafeet 5 feet of hemp cloth (77.7 cm) plus 3 pounds of raw hemp fibre.<sup>28</sup>

The *Tang Code* stipulated that the full size of a standard piece of plain silk used in tax payments should be 4 decafeet (*zhang*) in length (about 12 m × 54 cm), and that it should be called a *pi* 匹.<sup>29</sup> This distinguished it from the *duan* 段, which was the standard length of hemp cloth and measured 6 *zhang* 丈 (18.7 m).<sup>30</sup> In fact, these rules were not strictly followed. As the law did not specify textile density, tax payers could cheat by weaving sparsely. To detect cheating, officials weighed the tax-textiles. Even this did not work thoroughly, as records of the Tang and Song dynasties show that tax payers resorted to coating textiles with powder or including small pebbles when they wrapped them up, in order to increase the weight.<sup>31</sup>

The fourfold increase in the quantity of tax-textiles from one quarter of a bolt in Han times to a whole bolt of plain silk in the Tang also reflects the increased use of plain silk as a medium of exchange as required and authorized by the state, and therefore also as a store of wealth, in payments and as a measure of value. The state needed the tax textiles as it continued to pay bureaucrats and soldiers in kind with grain and textiles. In addition to the practical aspects of this system, the payments in grain and textiles can also be seen as a symbolic demonstration of the Chinese sage-king's ability to take care of his subjects by feeding and clothing them.<sup>32</sup>

Everyday life in the Han dynasty had involved extensive use of metal money, usually in the form of cast bronze coins, or gold. After the collapse of the Han dynasty, production, circulation and management of coinage was more problematic and for about five hundred

<sup>26</sup>Shen Yue 沈約, *Songshu* 宋書 [History of the Liu Song dynasty] (Beijing, 1974) pp. 1559–1560 and Helen Wang, *Money on the Silk Road* (London, 2004), p. 14.

<sup>27</sup>Denis Twitchett, “Codification of the Law” in D. Twitchett (ed.), *The Cambridge History of China*, Vol. 3, *Sui and Tang, 589–906, Part I* (Cambridge, 1989), pp. 414–415.

<sup>28</sup>See Wang Binghua's article in this issue. One Tang foot measured 31.1 cm (Ogawa Tamaki et al., *Shinjen* 新字源 1987, p. 1226).

<sup>29</sup>Du You 杜佑, *Tang Liudian* 唐六典 (Compendium of administrative law of the six divisions of the Tang bureaucracy) in *Shi tong* 十通 (Shanghai: Shangwu yinshuguan, 1935–1936), vol. 3, p. 33).

<sup>30</sup>Working with Dunhuang manuscripts, Éric Trombert discovered, too, that these distinctions were sometimes forgotten so that a bolt of hempen cloth measured more than the official standard length of a *duan*. In contrast, the measure of *duan* was shortened for woollens so that a bolt measured less than the official standard length of a *duan*. See E. Trombert, *Le Crédit à Dunhuang* (Paris, 1995), pp. 126–127.

<sup>31</sup>Zhao Feng 赵丰, *Sichou yishu shi* 絲綢藝術史 [A history of silk art] (Hangzhou, 1992), p. 21 and Sheng, “Textile Use, Technology and Change”, pp. 174–175.

<sup>32</sup>Variations of this practice continued to the end of Qing dynasty (1644–1911) and even during the Republican period (1911–1949). Ironically, it was then transmuted into the Communist ‘iron bowl’ until the economic reforms of the 1980s that brought back private property and eroded this security.

years, from 220–750 CE, textiles and grain proved to be more reliable forms of money, not least because they maintained a greater stability of value than coins.<sup>33</sup> Detailed analyses of texts show precisely how widespread the use of textiles was during those five hundred years.<sup>34</sup> They also throw light on changes in textile terminology. While the word *bu* 布 for hemp cloth continues to appear in the texts, by the Tang dynasty the word *bo* 帛, used for silk tabby in Han dynasty texts, had been replaced by the word *juan* 絹. The change in terminology appears to reflect a closer attention to the specifications of the textiles. *Bo* was a generic term for a range of plain weave silk textiles that included variations of tabby, such as *chou* 綢 (a heavier and wavier silk due to the texture of the warp and weft) and *jian* 縑 (a thicker silk due to the doubling of the warp and weft in the structure). The specific and consistent references to *juan* 絹 suggest the emergence and use of a firmly identifiable type of silk that could be used in regular payments.

The use of textiles as money alongside coins varied according to region during the 500-year period. In northern China, *juan*-silk was used more frequently than coins and hemp cloth. In southern China, coins and hemp cloth were more important than *juan*-silk as a medium of exchange, but *juan*-silk was more valuable there because it was rarer.<sup>35</sup> The silk's higher value in the south made it less convenient as a medium of exchange than hemp cloth.<sup>36</sup>

Detailed analyses of tax records (*fu* 賦), tribute (*gong* 貢) and contracts (*qiyue* 契約) provide precise exchange values for both hemp and silk textiles during the 500-year period. The regulations of the Tang *zuyongdiao* taxation system show explicitly that hemp was less valuable than silk because the state required taxpayers to pay one-fifth more hemp than silk. The rate of commutation of labour at 3 feet (93.3 cm) of *juan*-silk for 20 days of corvée duty shows that the value of labour was reckoned at 4.6 cm of *juan*-silk per work day. Although these values may have varied over time and place, the textual record confirms that it was the regular hemp and silk textiles woven in the simple tabby structure that served as money.

### A Closer Look at the More Complex Weaves

If the textiles that served as money were woven in tabby, how should we consider the textiles that were not woven in tabby? The structures of twill and satin weaves have been discussed above, and are fairly straightforward to understand. But just as textile nomenclature in English may elude all but serious weavers, so too with the Chinese terms. References to textiles in

<sup>33</sup>On the shift from coins to textiles, see Quan Hansheng 全漢昇 *Zhongguo jingjishi yanjiu* 中國經濟史研究 [Research on the economic history of China] (Jiulong, 1976), Vol. 3, pp. 182–184. Wang Yichen suggests that crises of inflation were the main cause of the shift from coins; see Wang Yichen 王怡辰 *Wei Jin Nanbeichao de huobi jiaoyi he faxing* 魏晉南北朝的貨幣交易和發行 [The exchange and distribution of goods and coins during the Wei, Jin and Northern and Southern Dynasties] (Taipei, 2007), pp. 2–5.

<sup>34</sup>Lu Huayu 卢华语, *Tangdai cansang sichou yanjiu* 唐代蠶桑絲綢研究 [Research on the sericulture and silk textiles of the Tang dynasty] (Beijing, 1995) and Wang Yichen, *Wei Jin Nanbeichao de huobi jiaoyi he faxing*.

<sup>35</sup>Wang Yichen, *Wei Jin Nanbeichao de huobi jiaoyi he faxing*, p. 104.

<sup>36</sup>Plain silk commanded more than twice as much value as hempen cloth in 484 in the Southern Qi state (*Nan Qi shu* 南齊書 [History of the Southern Qi] (Taipei, 1983), 26.482–83 as cited in Wang Yichen, *Wei Jin Nanbeichao de huobi jiaoyi he faxing*, p. 105.

Chinese texts are often confusing.<sup>37</sup> Then, as now, when looking at a piece of fabric, most people would notice first if it is in a single colour or multi-coloured, if patterned or not, and then possibly some details of a pattern.<sup>38</sup> Unless we have an excavated historical textile marked with its name, it is impossible to discern the true nature of the silk textiles named in texts as *jin*-brocade (this term is used for all polychrome patterned silks), *ling*-twills and *luo*-gauzes.<sup>39</sup> Then, as now, most people would regard these complex weaves generically as fancy silks.

Of these three terms, it is *jin*-brocade that occurs most frequently in extant sources. The term refers to compound weaves that can be differentiated as either warp-faced (*jing jin* 經錦) or weft-faced (*wei jin* 緯錦). If the weaver used one or more extra sets of warp threads, then warp-faced brocade was woven. If the weaver used an extra set of weft threads, then the result was weft-faced brocade (*wei jin* 緯錦). Often, more than two sets of warp (or weft) in different colours were used. None but a weaver (and a seasoned textile curator) would necessarily know the difference.

The technology for the warp-faced compound brocade was developed in the pre-Qin period (before 221 BCE). Textile historians have argued that the tensile strength of the naturally long silk fibre (reeled from the cocoon) meant that the long silk warps could withstand repeated manipulation and that this led to the development of patterning in the silk warp. The archaeological excavation in 1972 of the Number One Han Tomb at Mawangdui 馬王堆 near Changsha 長沙 in Hunan 湖南 province yielded many fine examples of the warp-faced brocade, which can be dated to the time of death in 168 BCE of the deceased, Lady Dai 軀, wife of the Marquis of Dai. In 1982 when the Number One Chu Tomb at Mashan 馬山 near Jiangling 江陵 in Hubei 湖北 province (to the north of Changsha) was excavated, spectacular textile finds there pushed the date of the Chinese mastery of the warp-faced brocade back to ca. 340–278 BCE, which was the date of the tomb.

In contrast, weft-faced brocade was not produced in China until after Chinese weavers came into contact with the Sogdians in Turfan between 500 and 700 CE.<sup>40</sup> There are two varieties of weft-faced brocade: the weft-faced compound tabby (*wei xianhua hanxinwei er chong pingwen* 緯顯花含心緯二重平紋 or *taqueté* in French) and the weft-faced compound twill (*wei xian hua hanxinwei er chong 1-2 xiewen* 緯顯花含心緯二重斜紋, also known as

<sup>37</sup>For an extensive discussion of the categories, see Zhao Feng 赵丰 *Tangdai sichou yu sichou zhi lu* 唐代絲綢與絲綢之路 [Silks of the Tang dynasty and the Silk Road] (Xi'an, 1992) and Wu Min 武敏, *Zhi xiu* 織繡 [Weaving and embroidery] (Taipei, 1992).

<sup>38</sup>Zhao Feng and Wang Le have also classified the textile specimens in this manner: first by fibre, and second within silk, by monochrome vs. polychrome, and third, within monochrome, by weave structure and then by pattern. This classification privileges the user of a textile but does not reflect the logical considerations from the viewpoint of a textile maker.

<sup>39</sup>For simplicity, all *jin* 錦, meaning polychrome patterned silk weaves, will be translated as brocaded silk, even though the term is not entirely accurate. To brocade is to embellish a textile with pattern while weaving and usually by means of extra or differently coloured weft shot through each shed and not handpicked. For details, see Burnham, *Warp and Weft*, pp. 14–18.

<sup>40</sup>A. Sheng, "Innovations in Textile Techniques on China's Northwest Frontier, 500–700 A.D.," *Asia Major*, Third Series, Vol. 2, No. 11 (1998), pp. 117–160. Zhao Feng has new evidence that weft-faced compound tabby was woven in silk a few centuries earlier in West Asia (presentation at the Silk Trade conference held at Harvard University, 22 April 2012), referring to Matebabayifu and Zhao Feng (eds) 马特巴巴伊夫、赵丰, *Dayuan yijin – Wuzibiekistan Feierganna Mengqiatepei chutu de fangzhi pin yanjiu* 大宛遗锦——乌兹别克斯坦费尔干纳蒙恰特佩出土的纺织品研究 [Textile manufacture in Ferghana in antiquity and the middle ages] (Shanghai, 2010).

*samitum*). The latter is the more complex of the two. How and why weft-faced brocades came to be woven and by whom remain hotly contested issues among textile historians. Weft-faced twills (*weimian xiewen* 緯面斜紋) were first woven in China at some time after the sixth century, and weft-faced compound twill could not have been woven before weavers had learned how to weave twill (*xiewen* 斜紋).

Textile historians have argued that patterns in the weft or weft-faced textiles may have been developed by wool weavers. To produce twill, the weaver would need a loom with at least three, but more often four, shedding devices (heddles or shafts) to lift the single set of warp threads in three, or four, groups. Due to the shortness of wool fibres and due to their having been twisted into yarn for weaving, wool warp would not withstand as much manipulation for patterning as would silk warp. Accordingly, the patterns in wool would have been developed in the weft or weft-faced rather than in warp-faced woollens. The earliest twills were woven in short woollen fibres in the central and eastern highlands of Anatolia, though probably elsewhere independently as well.<sup>41</sup> In the 1990s the Sino-French archaeological team excavating the site of Djouboulak Koum, in the Keriya delta to the south-west of the Taklamakan Desert, found weft-faced wool fragments woven in twill. These show that the semi-nomads on the southern Silk Road were weaving twill at least around 1200 BCE and probably even earlier.<sup>42</sup> It is possible that the Han Chinese living in oases or outposts along the Silk Road learned to weave twill through contact with the semi-nomads, or that Han Chinese weavers in central China invented silk twill themselves.

There is some support for the argument for the independent invention of silk twill in China, insofar as at some time during the 400 years of the Han dynasty, Chinese weavers produced a silk in tabby patterned with twill, known as *qi* 綺, as well as a silk tabby patterned with warp floats, known as *Han qi* 漢綺.<sup>43</sup> These silks were woven with a tabby ground on a simple horizontal treadle loom, and the patterns in twill were handpicked by the weaver with the use of patterning rods (i.e. not mechanically controlled by shafts). These silks were precursors to the true twill weaves produced on looms with shafts which could mechanically raise the warps for the patterning.

Discussion about patterns in wefts, and weft-faced twill, is important, not least for the light it throws on *ling*-twills. It is generally agreed that the *qi*-silks of the Han dynasty (see above) came to be known as ‘tabby with twill patterns’ (*pingwen ling* 平紋綾) after the Han dynasty and that this was different from true ‘silk twill on twill ground’ (*xiewen ling* 斜紋綾), a more complex weave which appeared later.<sup>44</sup> The differences are subtle and most likely eluded all but the weavers.

<sup>41</sup>E. J. W. Barber, *Prehistoric Textiles, the Development of Cloth in the Neolithic and Bronze Ages, with Special Reference to the Aegean* (Princeton, 1991), p. 212.

<sup>42</sup>Sophie Desrosiers, “Une culture textile raffinée”, in Corinne Debaine-Francfort and Abduressul Idriss (eds), *Keriya, mémoires d'un fleuve: archéologie et civilisation des oasis du Taklamakan*, (Paris, 2001) pp. 144–155; especially p. 151, cat. no. 72.

<sup>43</sup>Becker, *Pattern and Loom*, pp. 22–23. Becker was inspired by Xia Nai’s pioneering discussion on this distinction; see “Xinjiang xin faxian de gudai sizhipin—qi, jin he cixiu” 新疆新發現的古代絲織品—綺錦和刺繡 [Newly discovered ancient silks—*qi*, *jin* and embroideries], *Kaoguxue he keji shi* 考古學和科技史 [Archaeology and the history of technology] (Beijing, 1979), pp. 69–97.

<sup>44</sup>Zhao Feng has argued that the *qi*-silks of the Han dynasty (see above) came to be known as *ling*-silk twills after the Han dynasty; see Zhao Feng, *Sichou yishushi*, p. 37. However, Wu Min points out that their nomenclature referred to different weave structures in the Tang; see Wu Min, *Zhi xiu*, pp. 134–136. Strictly speaking, silk twills (*ling* 綾) are silks woven in the twill ground. To distinguish the earlier silks in tabby ground with some handpicked

The frequently cited *Miscellaneous Records of the Western Capital* (*Xijing za ji* 西京雜記), attributed to Liu Xin 劉歆 of Han times, but more likely written by Wu Jun 吳均 of the Liang 梁 state in the sixth century, refers to a particular kind of silk twill called *sanhua ling* 散花綾. This translates as “silk twill with a scattered pattern (of binding dots).”<sup>45</sup> Without an actual example, it is impossible to know if it was a silk tabby patterned in twill (*qi* 綺) or a true twill in silk (*ling* 綾).

Fortunately, there is one extant textile fragment inscribed with the word *ling*-twill. Measuring 22 cm × 7.4 cm, it is a monochrome silk, in faded buff, with a pattern of paired dragons inside a roundel, and was excavated in Astana Tomb 226, Turfan, in 1972.<sup>46</sup> The inscription can be read as follows:

景雲元年折調 細綾一匹雙流縣八月官主簿史渝

The first year of Jingyun reign period [710], corvée obligation converted into equivalent tax payment of one bolt of *xi ling* 細綾 [fine twill], Shuangling county (in modern Sichuan), eighth month, chief accountant Shi Yu.<sup>47</sup>

Although the official who recorded this textile called it *ling*-twill, the weave structure is a tabby with pattern in warp floats in the twill. A textile historian today would classify it as a *Han qi* 漢綺 (according to the Han dynasty terminology) or *pingwen ling* 平紋綾 (according to Tang dynasty terminology). This example reflects the level of difficulty in classifying historical Chinese textiles and in understanding the textual references to textiles.

As the invention of shafts, used as shedding devices, on looms spread from imperial to private workshops, weaving technology became more widely spread. Textual references to *ling*-twills increased over time, and they are abundant in Tang poetry. Similarly, many varieties of *ling*-twills were itemised in Tang records of local tribute (*gong* 貢) in the 730s and 740s.<sup>48</sup> These included, for example, silk twill with a pattern of squares (*fangwen ling* 方紋綾) from Huazhou 滑州, and silk twill with four roundels and cloud pattern (*sike yun ling* 四巢雲綾) from Caizhou 蔡州, both of which were prefectures located in the heart of sericulture, Henan 河南.<sup>49</sup> For what these patterns might have looked liked, please see 72TAM170:25 and EO.3652. Although complex silk weaves were occasionally offered as local tribute, they were not used in tax payments. However, as *ling*-twills (both of tabby and twill ground) grew popular and supply increased during the Tang, edicts promulgated in 732 and 734 permitted

patterns in the twill from the later true silk twills, both Wu and Zhao agree that the earlier *qi* 綺 of Han dynasty appellation was the same weave as the post-Han appellation of “tabby with twill patterns” (*pingwen ling* 平紋綾).

<sup>45</sup> Zhao Feng, *Sichou yishushi*, p. 40.

<sup>46</sup> Wu Min, *Zhi xiu*, p. 134, pl. 101. It is now housed in the Museum of the Uyghur Autonomous Region, in Urumqi.

<sup>47</sup> The inscription is difficult to read. Wu Min interprets it as “one bolt of *chou ling*” and the chief accountant as Shi Yu. In contrast, Wang Binghua reads “one bolt of fine *ling*” and the chief’s name as Huo Yu 火愉. Regardless, the word *ling* is clear to both Wu and Wang and to any reader encountering the inscription for the first time.

<sup>48</sup> See tribute dated to year 25 of Kaiyuan Era (737), preserved in the *Tang Liudian* 唐六典 *Siku quanshu* edition, 20.6b–7b (Taipei, 1976). See local tribute dated to years 26–29 of the Kaiyuan reign period (738–741) in *Yuanhe junxian tuzhi* 元和郡縣圖志 [Maps and gazetteer of the provinces and counties in the Yuanhe reign period, 806–814 CE].

<sup>49</sup> On the distribution of silk weaves in early Tang, see Wang Yongxing 王永興, “Shilun Tangdai sizhiye de diqu fenbu” 試論唐代絲織業的地區分布 [A tentative discussion on the distribution of silk weaves in the Tang dynasty] in his *Chenmen wenxue gao* (Nanchang, 1993), pp. 310–319.

the use of silks in the form of *ling*-twill, *luo*-gauze and *juan*-silk, also hemp cloth and even raw silk and silk floss, as payment for estates, houses and horses. Indeed, any purchase with a value exceeding 1,000 coins had to be paid in kind.<sup>50</sup>

A logical technological development from *ling*-twill was satin (*duan* 緞), a simple binding weave based on a unit of five or more warp ends and a number of weft picks equal to (or a multiple of) the number of warp ends. The technical capability of weaving satin is apparent in the silk used to make a reliquary bag with a phoenix and butterfly pattern, dated to the tenth century that was recovered from the Sängim (Shengjinkou) Buddhist site near the Astana graveyard in Turfan. The weave structure of the silk was 5/1 twill in the ground (5 weft picks over warp ends and 1 weft pick under 1 warp end) with pattern in 1/5 weft (1 weft pick over 1 warp end and 5 weft picks under 5 warp ends),<sup>51</sup> which means that the loom on which it was woven could also have been used to produce satin weaves.

Complex weaves required more advanced looms than the average slanted or horizontal treadle looms used by peasant families for weaving tabby in hemp or silk. It is likely that only workshops operated by the state, or wealthy private patrons, would have had the necessary capital to invest in such advanced looms and the capacity to train weavers to operate them and produce complex silk weaves. The scale of production of complex silk weaves in the Tang dynasty is astonishing: for example, He Mingyuan 何明遠 of Dingzhou 定州 (today's Zhending 真定 in Hebei 河北 province) owned 500 looms for weaving *ling*-twill, operated by an estimated 1,600 weavers. This was over three times the size of the imperial silk manufactory in Sichuan in the Song dynasty which had 154 looms operated by 500 weavers.<sup>52</sup>

The figures above suggest that a large operation employed about three to four weavers per loom. How much could an individual weaver produce? Sources on this question are scarce. One Tang text reveals that a professional weaver could produce one and a half bolts (about 18 m) of *juan*-silk in two days, or about 9 m per day.<sup>53</sup> As one loom can only produce one textile at a time, at this rate He Mingyuan's looms running at full capacity could produce 4.5 km of *juan*-silk per day (500 × 9 m per day). These figures would need to be adapted for complex silk weaves, depending on the weave, the type of loom and the skills of the weaver(s). For example, weaving silk gauze (*luo* 羅) was particularly labour-intensive and time-consuming, possibly taking nine times as long to produce as *juan*-silk.<sup>54</sup>

Although end-users and consumers are unlikely to have had much understanding of the production of the complex silk weaves, they would nonetheless appreciate that it required

<sup>50</sup> Lu Huayu, *Tangdai cansang sichou yanjiu*, p. 146.

<sup>51</sup> Wu Min, *Zhi xiu*, pp. 131–133, pl. 98. For its significance, see Sheng, “Innovations”, pp. 158–159 and “Textiles from Astana: Art, Technology, and Social Change”, in *Central Asian Textiles and Their Contexts*, p. 127.

<sup>52</sup> Zhao Feng 赵丰 (ed.), *Tangdai sichou yu sichou zhi lu* 唐代絲綢與絲綢之路 [Silks of the Tang dynasty and the Silk Road] (Xi'an, 1992), p. 57, citing Li Fang 李昉 (925–996) et al. (eds), *Taiping Guangji* 太平廣記 [Extensive records of the Taiping era, 976–983] (Beijing, 1986), 243.1784.

<sup>53</sup> Another text indicates that a skilled weaver could produce 9.75 bolts (*pi*) per month but a novice only 2.25 bolts – that is, nearly three times as much (117 m versus 32 m). For details of both entries, see Zhao Feng, *Tangdai sichou yu sichou zhi lu*, p. 19.

<sup>54</sup> Lacking sources for the Tang period, let us consult a local gazetteer in the Song that provided information on how labour-intensive and time-consuming it was to weave *luo* 羅 silk gauze. It took a skilled artisan working in an imperial manufacture at Runzhou 潤州 (today's Zhenjiang in Jiangsu) 12 days to weave one bolt of *luo*-silk (12 m). In other words, a skilled *luo*-weaver could only weave 1 m of silk gauze per day, one-ninth of what the skilled *juan*-weaver could produce in a day. Sheng, “Textile Use, Technology, and Change”, p. 61.

extra time and skill to create them. Complex silk weaves must have commanded much higher prices than plain silks, but, interestingly, prices of complex silks were rarely stated.<sup>55</sup> Valerie Hansen and Rong Xinjiang provide an exceptional record found in Astana Tomb 506 (see Document 4: Records of Receipt of Expenses in Beiting under the Tang). This record is dated 731–732 and gives the value of 54 feet of brocaded silk (possibly with stripes) as worth 2,200 coins (probably silver coins):

5–6 口曹司造褙子，錦綢伍拾肆尺，直准錢貳仟貳佰文。九月四日付主安莫。安(下為‘莫’的粟特文署名)

54 feet of brocade was needed for [gap in text] Section to make pouch, equal to 2,200 coins.  
Paid to the master An Mo on the 4th day of the 9th month. An (with the Sogdian signature Māk below).

If one bolt of this brocaded silk (possibly with stripes) measured 40 feet (about 12 m), then 54 feet of this fancy silk was the equivalent of about 1.35 bolts, and the price per bolt would have been about 1,630 coins. This was at least five times more expensive per bolt than the large-loom *lian*-degummed silk at 300 coins per bolt, which appears in the same record.

However, for the most part we must rely on people's perception of the value of fancy silks relative to the value of other commodities. For example, in the Tang dynasty one bolt of a special, densely woven silk twill called *basuo ling* 八梭綾 (literally 8 weft-shuttle *ling*) made by Mother Li 李母, an elderly village lady of Yezhou 鄴中 (today's Anyang in Henan) was worth *wu kuang mi* 五筐米 or 5 baskets of rice.<sup>56</sup> But neither the size of the basket nor the variety of the rice is known. Some records appear to be more meaningful than they actually are; for example, the values in a record relating to 780 CE are given as one bolt of *juan*-silk worth 4,000 cash, and one *dou* 斗 of rice worth 200 cash, but these cannot be regarded as absolute unless we know the context in which those values are given.<sup>57</sup> Indeed, it is often the case in the dynastic histories that there is more evidence of prices in extreme situations: for example, following natural disaster or war. Without context, such comparisons can be misleading.

The lack of surviving price data for fancy silks (with dyed or woven patterns) in the Tang dynasty reflects several social conditions. First, fancy silks were used by the imperial elite and the wealthy, a miniscule fraction of the total population. Second, those who used fancy silks

<sup>55</sup> Ikeda On's 池田温 thorough analysis of Turfan documents gives prices for all kinds of commodities in Jiaohe in 743 but not those of complex weaves. Ikeda On first published in 1968 his scrupulous reconstruction of textual fragments brought back by Ōtani to Japan that he then revised in his *Chūgoku kodai sekichō kenkyū* 中國古代籍帳研究 [Studies in ancient Chinese household registers] (Tokyo, 1979, pp. 447–62). This research was published in Chinese with additional fragments found in Lüshun 旅順, China, as “Zhongguo gudai wujia chutan, guanyu Tianbao 2 nian Jiaohejun shigu'an duanpian” 中國古代物價初探，關於天寶 2 年交河郡市估案斷片 [Initial investigation of early Chinese commodity prices based on fragments of a Jiaohe document on market estimates dated year 2 of Tianbao era] in his *Tāngdai yanjiu lunwen xuanji* 唐代研究論文選集 [Selected essays of research on Tang dynasty] (Beijing, 1999), pp. 122–89. This price register has also been translated into French, see E. Trombert and É. de la Vaissière, “Le prix des denrées sur le marché de Turfan en 743” in *Études de Dunhuang et Turfan*, textes réunis par Jean-Pierre Drège avec la collaboration d'Olivier Venture (Paris, Droz, 2007), pp. 1–52.

<sup>56</sup> 古代织綾名。《云仙杂记》引《摭拾精华》：‘邺中老母村人织綾，必三交五结，号八梭綾，匹直米五筐’，cited in Chen Weiji, *Zhongguo fangzhi kexue jishushi*, p. 319.

<sup>57</sup> Li Ao 李翱, *Quan Tangwen* 全唐文 [Complete Writings of the Tang] (Beijing, 1983), 634.6403 cited in Lu Huayu, *Tāngdai cansang sichou yanjiu*, p. 154 and note 64.

were more likely to have received them as imperial gifts than to have purchased them. Third, the court received fancy silks in tribute, and thus had the greatest access to them. Tribute provided the court with a continuous supply of all varieties for the emperor to bestow on his worthy subjects as awards and rewards. As mentioned above, numerous varieties of silk twills were presented as local tribute from prefectures in centres of silk production.<sup>58</sup>

The common people would have had far less access to fancy silks, and, as fancy silks were generally the property of the imperial elite and the wealthy, they would not necessarily know the current monetary value of fancy silks. But they would admire them for their aesthetic and symbolic or prestigious value. Indeed, the abundance of fancy silks that appear in Tang poetry and other writings alerts us to the literati fascination with the changing fashions and novelty of new designs that were so popular in cosmopolitan Tang China.<sup>59</sup> But changing fashions and novelty tend to impact on prices in an extreme way, and the market value of fancy silks is likely to have fluctuated. In short, fancy silks might be desirable, but they did not represent cognizability or stability of value.

Furthermore, the ratio of values between fancy silks and simple silks varied over time and space. Analysing a tenth-century contract from Dunhuang (Otani 3060), Eric Trombert discerned that one bolt of *ling*-twill (of complex weave structure) in Dunhuang was valued three to four times higher than one bolt of *juan*-silk. His analysis of another text from Dunhuang (Pelliot 2680) shows that in 936 the value of *ling*-twill increased to seven times that of *juan*-silk, reaching the same value as white patterned *luo*-gauze (*bai hua luo* 白花羅) (also of complex weave structure).<sup>60</sup> Valued even more highly than the *luo*-gauzes was red brocaded silk (*hong jin* 紅錦). It is possible, with their place of manufacture being central China, that the cost of transportation augmented their value in Dunhuang.<sup>61</sup> Nonetheless, Trombert's analysis provides a possible scale for comparison of the values of *juan*-silk to *ling*-twill to *luo*-gauze to *jin*-brocades as roughly: 1 to 3 (or 4) to 7 to 9. This set of ratios tallies with both the increasing technical complexity and increasing amount of silk yarn needed for each weave, ranging from the simple *juan*-silk to the most complicated *jin*-brocade of compound warps and/or wefts (requiring more silk).

*Luo*-gauzes were complex weaves, and were usually woven in state workshops in key centres of silk production: Zhenzhou 鎮州 in Hebei 河北, Chengdu 成都 in Sichuan 四川, and Runzhou 潤州 and Yuezhou 越州 in Jiangnan 江南.<sup>62</sup> Some locations were renowned for producing particular patterns in the weave; for example, Zhenzhou was known for its *luo*-gauzes woven with "peacock" (*kongque* 孔雀), "pumpkin seed" (*guazi* 瓜子) and "spring" (*chun* 春) patterns.<sup>63</sup> We can imagine these designs, but we cannot be sure of them until actual examples are found. "Spring" pattern might suggest the use of the character for spring. "Pumpkin seed" pattern might be imagined as small rhomboids regularly repeated all over the silk gauze. "Peacock" pattern might refer to a full bird or to the "eye" in the

<sup>58</sup>These are listed in *Yuanhe junxian tuzhi*.

<sup>59</sup>For numerous citations, see Lu Huayu, *Tangdai cansang sichou yanjiu*, pp. 124–139 and Zhao Feng, *Tangdai sichou yu sichou zhi lu*, pp. 97–121.

<sup>60</sup>E. Trombert, *Le Crédit à Dunhuang*, pp. 110–112.

<sup>61</sup>E. Trombert, *Le Crédit à Dunhuang*, p. 112.

<sup>62</sup>These had been centres of silk production since 1000 BCE. Dieter Kuhn, "Silk Weaving in Ancient China: From Geometric Figures to Patterns of Pictorial Likeness", *Chinese Science* 12 (1995), pp. 80–81.

<sup>63</sup>Wang Yongxing, "Shilun Tangdai sizhiye de diqu fenbu", pp. 325–327.

peacock's tail. A peacock pattern was also known in *ling*-twill: it is recorded in one document (P.2680), and a peacock pattern (showing the full bird) woven in *ling*-twill survives in a small Tang dynasty fragment found at Dunhuang (MAS.889; see Glossary no. C.21),<sup>64</sup> but this exact pattern would have been too intricate to weave on the *luo*-gauze looms that were used in the Tang dynasty.<sup>65</sup>

All the Tang dynasty complex silk weaves discussed above were measured in bolts by length (4 decafeet) and by width (2 feet 2.5 inches), roughly about 12 m × 50–55 cm. They were woven on horizontal looms in central China, where the length of a textile could be as long as the warp and the loom could bear. However, clothing and tomb inventories unearthed from the tombs at Astana reveal that in the seventh century complex brocaded silks (*jin* 錦) woven locally were not measured by the bolt but by the sheet (*zhang* 張), which was 9.5 feet long by 4–4.5 feet wide (275 × 116–130.5 cm).

Clearly, these dimensions reflect that the local weavers did not use the same horizontal looms as weavers in central China. Rather, weavers in Turfan adapted the vertical loom (*liji* 立機) used locally for weaving cotton cloth<sup>66</sup> and woollen carpets to weave brocaded silks. The recorded names of these brocaded silks, such as “Persian” brocaded silk (*Bosi jin* 波斯錦) and “tree-leaf” brocaded silk (*shuye jin* 樹葉錦) confirm the Central Asian origins of their motifs. Examples of these silks have survived (see Glossary no. E.37 [*Bosi jin*] and E.48 [*shuye jin*]). Unfortunately, no prices or monetary values are known.<sup>67</sup>

### A Closer Look at Dyed Textiles

Dyed textiles were also popular in the Tang dynasty. Non-weavers can see with their own eye whether a textile is dyed in a single colour or has a multicoloured pattern. They can also tell the difference between silks that have been treated in preparation for dyeing and those that have not. The preparation process is called degumming, and involves removing the sericin (a protein) from the silk fibre so that the dye pigment can penetrate the fibre.<sup>68</sup> Untreated, or “raw”, silk (*juan* 生絹) is slightly uneven in colour and texture; degummed silk (*lian* 練) is whiter, smoother and also lighter in weight. The cost of degumming was reflected in the price, with *lian*-degummed silk having a higher value than *juan*-silk.

<sup>64</sup>This fragment was collected by Marc Aurel Stein (hence the prefix MAS), and is in the British Museum.

<sup>65</sup>However, this is an extremely detailed design, and to create the same peacock in a gauze weave would have required technological advances on the gauze loom (*luoji* 羅機). For a comprehensive discussion of this loom, see Dieter Kuhn, *Die Webstühle des Tzu-jen i-chih aus der Yuan-Zeit*, Sinologica Coloniensia 5 (Wiesbaden, 1977); Zhao Feng, *Sichou yishu shi*, pp. 2021. If so, this textual reference would push back the innovation to the tenth century from the mid-twelfth century, that is, after 1127 when the Song court moved south to Hangzhou and boosted the popularity of silk gauze weaves. Material evidence of complex silk gauzes woven with curvilinear and stylized flora was unearthed in 1975 from the tomb of Huang Sheng 黃昇 in Fuzhou, dating to the time of this woman's death in 1243 at age 17, one year after her marriage to Zhao, Yujun 趙與駿, a minor official and a distant relation to the ruling imperial family (Fuzhou sheng bowuguan (ed.) 福建省博物館, *Fuzhou Nan Song Huang Sheng mu* 福州南宋黃昇墓 [The tomb of Huang Sheng of the Southern Song in Fuzhou] (Beijing, 1982), English summary, pp. 1–3.

<sup>66</sup>E. Trombert, *Le Crédit à Dunhuang*, pp. 117–118.

<sup>67</sup>For a reference to the Persian *jin*, see it listed in a clothing inventory, 64TAM15:6 (*Tulufan chutu wenshu* 4: 31–33); for a reference to the tree-leaf *jin*, see Turfan Document #38, 60TAM 326:014 (Yamamoto and Ikeda 1987, Vol. III, No. 15 (205); and for references to location-specific *jin*, see Turfan Documents 75TKM90: 20, 75TKM88: 1(b) and 75 TKM99: 6 (b) (*Tulufan chutu wenshu*, Beijing, Vol. II, p. 18; and Vol. I, pp. 189 and 191).

<sup>68</sup>Roy H. Walters and O. A. Hougen, “Silk Degumming: I. Degradation of Silk Sericin by Alkalies”, *Textile Research Journal* Vol. 5, No. 2 (1934), pp. 92–104.

The degumming process is described in detail in the *Record of Surveying Crafts* (*Kaogongji* 考工記) that circulated in the Western Han dynasty (206 BCE–8 CE).<sup>69</sup> Essentially, it involved soaking raw silk in alkaline water (alkaline plant ashes, *hui* 灰, were added as necessary). Knowledge of the degumming process then spread beyond the state workshops. In *Important Arts for the People's Welfare* (*Qimin yaoshu* 齊民要術) published around 533–544, Jia Sixie 賈思勰 gave detailed instructions for whitening raw silks and clothing made of raw silk. Readers were instructed to soak them in water and stir them several times a day for at least six or seven days; when the water started to stink, the silk and silk clothing could be taken out; all would be whitened.<sup>70</sup>

Contact with traders from South Asia via the Silk Road led to the rapid development of dyes and dyeing techniques in China from the third century onwards. For example, Trombert traces the spread of safflower (*honglanhua* 紅藍花, *Carthamus tinctorius* L.) from Central Asia to China.<sup>71</sup> Jia Sixie also gave instructions for growing plants used as dyes: these included safflower, indigo (*lan* 藍, *Indigofera tinctoria* L.) and a 'purple plant' (*zicao* 紫草, *Lithospermum erythrorhizon* Sieb. Et Zucc.) to obtain the dye colours of red, blue and purple.<sup>72</sup> By the mid-Tang, professional dye shops had emerged.

The dyeing process could take place before or after the weaving. It was more usual to dye after weaving. When the dyeing came first, it involved dyeing the warp and weft threads before dressing the loom. With colourful threads it was possible to weave remarkable patterns even in tabby. For example, if an equal number of alternating red and white warp threads were dressed on the loom, and only white threads were used as the weft, then the resultant simple weave would be patterned with red and white stripes.

Archaeological evidence suggests that stripes were particularly popular for women's clothing in the Tang. Some female figurines were painted wearing long gowns with the skirt below the empire waist shown with stripes: stripes of alternating blue and brown on the gown of a female equestrian, and stripes of alternating red, yellow and brown on the gown of a standing female dancer.<sup>73</sup> Some striped silks have also been found, though the stripes were created in weaves more complex than tabby. Two striped fragments of *jìn*-brocade were excavated in Astana Tomb 108 in 1968: one shows alternating green and reddish brown stripes; the other shows alternating buff and reddish brown stripes. They were found with the hemp fragment with a handwritten inscription in ink giving the *zuyongdiao* tax conversion, dated 721.<sup>74</sup>

<sup>69</sup>It was probably composed sometime in 300 BCE. Wen Renjun 聞人軍 (annotated), *Kaogongji yizhu* 考工記譯註 [Annotation on the record of surveying crafts] (Shanghai, 1993), p. 57.

<sup>70</sup>Miao Qiyu (ed. and annotated), *Qimin yaoshu jiaoyi* 齊民要術 [Important arts of for the people's welfare] (Beijing, 1982), p. 164.

<sup>71</sup>Eric Trombert, "Des fleurs rouges en galette: une plante tinctoriale dans la chine ancienne: le carthame", *Journal Asiatique* Vol. 285, No. 2 (1997), pp. 509–547.

<sup>72</sup>Miao Qiyu, pp. 262–274.

<sup>73</sup>*Silu kaogu zhenpin* 絲路考古珍品 [Archaeological treasures of the Silk Road in Xinjiang Uyghur Autonomous Region] (Shanghai, 1998), cat. nos 98 and 100. The rider figurine, measuring 46 cm high, was excavated from Astana Tomb No. 187 in 1972, and the dancer figurine, measuring 31 cm high, was excavated from Astana Tomb No. 206 in 1973.

<sup>74</sup>*Sichou zhilu Han Tang zhiwu* 絲綢之路漢唐織物 [Silk Road textiles of the Han and Tang dynasties] (Beijing, 1973), cat. no. 40 (two silk fragments) and cat. no. 61 (hemp tax cloth). For the latter, see Wang Binghua's article in this issue.

There were other simple techniques for creating horizontal bands, checks, even plaids. For example, if all the warps were white, but there were equal passages of alternating red and white weft threads, the resultant plain weave would be patterned with white and red bands. But if the loom was dressed with alternating red and white warp threads, and alternating red and white weft picks were passed through, this would produce a plain weave with checks of white, red and pink squares. Surviving examples include a wool fragment with blue, buff and bluish-buff checks, dating between 200 and 500 CE, that was found in Khotan in 1959;<sup>75</sup> and a rare silk plaid of red, yellow and green, in a more complex pattern than the checks, that was sewn on a purple silk jacket, belonging to a female head of a household named Sungounü 大女孫狗女, who died in 377 and whose tomb at Bijiatan 畢家灘 of the Huahai 花海 area in Gansu 甘肅 province was unearthed in 2002.<sup>76</sup>

Intricate patterns could also be woven in tabby if the warps were dyed with preconceived patterns prior to being stretched on the loom. This is the technique used to produce *ikat* and, when the weft threads are also dyed with a preconceived pattern, double *ikat*. Records of local tribute in the early eighth century show that “mixed herbs” silks (*zayao* 雜藥) were offered as tribute from Runzhou 潤州 (in Jiangnan circuit) along with patterned silk twills (*wen ling* 紋綾).<sup>77</sup> The “mixed herbs” probably referred to the plants from which the dyes were obtained, and maybe mixed to obtain different colors. We can guess that the “mixed herbs” silks might resemble today’s silk *ikats*, still woven in tabby with colourful warps in Khotan and further west in Uzbekistan. Complex weaves could also be woven in *ikat*: for example, a silk fragment of complex weave that was woven with warp threads lined up in gradations of colours to form subtle stripes, was unearthed from Astana Tomb 105 in 1968.<sup>78</sup>

However, most dyeing took place after the textiles were woven. Surviving textiles indicate that both simple silks and complex silk twills were dyed in one colour. Examples abound: the silk twill on tabby ground with the character *gui* 貴 (noble or expensive) dyed in purple, dated to the Sui dynasty; and the silk twill on tabby ground with confronting dragons within a pearl roundel dyed in yellow, the silk twill on twill ground with stylized flora, and the silk gauzes dyed in pink and green, all from the Tang dynasty, and unearthed from tombs at Astana.<sup>79</sup>

There are also many examples from Astana that show the use of tie-dyeing (*jiaoxie* 絞纈) and block-printing (*jiaxie* 夾纈). The evidence indicates that these techniques were used on simple silks and silk twills: for example, a silk twill on tabby (*qi*) was tie-dyed to produce a pattern of light-coloured flowers on brown ground; the light-coloured part was tied to resist the brown dye.<sup>80</sup> Patterns of small stylized flora, large floral roundels and flying birds

<sup>75</sup> *Sichou zhilu*, *Han Tang zhiwu*, cat. no. 20.

<sup>76</sup> Her tomb is no. 206. Western Imprints, pp. 94–97, see Figs 2–5, a, b, c; see Zhao Feng 赵丰, Wang Hui 王辉 and Wan Fang 万芳, “Gansu Huahai Huajiatan 26 hao mu chutu de sichou fushi” 甘肃花海毕家滩 26 号墓出土的丝绸服饰 [Silk clothing unearthed in Tomb no. 26 at Hujiatan, Huahai, in Gansu province], in *Xibei fengge – HanJin zhiwu* 西北风格——汉晋织物 [Style of the north-west – Han to Jin weaves] (Hong Kong, 2008), pp. 84–113.

<sup>77</sup> *Yuanhe junxian tuzhi* 2.590.

<sup>78</sup> *Sichou zhilu*, cat. no. 41.

<sup>79</sup> Wu Min, *Zhi xiu*, col. pls. 99, 100, 103, and 106.

<sup>80</sup> Wu Min, *Zhi xiu*, col. pl. 107, Astana Tomb No. 191.

were block-printed on *juan*-silk and *luo*-gauze, and riders on horseback chasing rabbits were block-printed on very fine sparsely woven silk (*sha* 紗).<sup>81</sup>

How much did dyed textiles cost? Like the complex silk weaves, there was a vast range of dyed textiles, and prices are difficult to determine. Ikeda On has assembled and analysed a rare set of fragments belonging to an administrative record dated 743, which gives the prices of *juan*-silk, *lian*-degummed silk and dyed silks in Turfan.<sup>82</sup> The record gives three sets of prices for each category (superior, middle, inferior), and shows that *man*-silk 縵 dyed purple and pink commanded higher prices (respectively, 560 and 500 cash per bolt of the superior grade) than undyed raw *juan*-silk (480 cash per bolt of the superior grade). The dyed silks commanded prices higher than the inferior grade of undyed silk, and did not exceed the prices of the highest grade of plain *shi*-silk from Shaanzhou 陝州 and the same from Henan prefecture (respectively, 630 cash and 650 cash per bolt).<sup>83</sup>

The same record also reveals that simple silks and fancy silks were used in different ways. Simple silks, even when dyed piecemeal, that is, without patterns, like the ones cited above, were priced by the bolt, implying that they were bought and sold by the bolt for making clothes. In contrast, fancy silks – purple and pink silk twills, and silk twills with mixed greens – were priced by the foot. The simple and fancy silks were also sold separately. The Association of Simple Silks (*bolian hang* 帛練行) sold degummed silks of superior grade at 170 cash per bolt, the above-cited purple-dyed simple silk (*manzi* 縵紫) of superior grade at 560 cash per bolt, and pink-dyed simple silk (*manfei* 縵緋) at 500 cash per bolt. The Association of Colourful Silks (*caibo hang* 彩帛行) sold silk twills, which were a more complex weave: “cooked” purple silk twills (*zi shu mian ling* 紫熟綿綾) of inferior grade at 61 cash per foot (or 2,440 cash per bolt), and “cooked” pink silk twills (*fei shu mian ling* 緋熟綿綾) of inferior grade at 55 cash per foot (or 2,200 cash per bolt).<sup>84</sup> Rather than making a whole garment out of an expensive fancy silk, people could easily cut large pieces into smaller bits and recycle remnants for trimming. This practice, popular among non-Chinese travellers along the Silk Road, can be traced to the much earlier nomadic practice of trimming garments with fur.<sup>85</sup> Such astute use of fancy silks would account for the purchases in small, irregular amounts, measured by the foot.

Just as prices for complex weaves in silk are rarely noted in extant texts, there is a similar lack of prices for silks dyed with patterns. The reasons are similar for both: they were special pieces that were out of the realm of more ordinary textiles. They were also too variable for them to have a regular and stable value and thus they could not have served as money.

## Conclusion

In early China, both the state and the people used hemp cloth and simple silks in payments. They were simple weaves, produced in dimensions specified by the state and were in common

<sup>81</sup> Wu Min, *Zhi xiu*, col. pls. 109, 110, 111 (*sha*), 116, 117, 118, 119, 120.

<sup>82</sup> See fn. 55. Zhao Feng compared the textile prices with those listed in a contemporaneous military record found in Dunhuang (P3348), dated to year 4 of Tianbao (745) in *Tangdai sichou yu sichou zhilu*, p. 199.

<sup>83</sup> Ikeda On, “Zhongguo gudai wujian chutan”, pp. 127, lines 29–36.

<sup>84</sup> Ikeda On, “Zhongguo gudai wujian chutan”, pp. 127–128.

<sup>85</sup> E. R. Knauer, “A Man’s Caftan and Leggings from the North Caucasus of the Eighth to the Tenth Century: A Genealogical Study”, *Metropolitan Museum Journal* Vol. 36 (2001), p. 137.

use. The value of these textiles, as determined by the state, was clear to all, and thus they fulfilled the functions of money as defined by Richard von Glahn: they were a means of exchange; a measure of value; a store of value; and a means of making state payments. They also had a symbolic value: by collecting hemp cloth and simple silks as tax payment and redistributing them as salary and remuneration to the imperial bureaucracy, the work force and the army, the emperor could be seen as the sage-king, providing for his subjects. This was also true in the Tang dynasty.

Increased contacts with semi-nomadic and Central and South Asian traders and craftsmen along the Silk Road and advances in technology during the Tang dynasty gave rise to an unprecedented variety of textiles. Complex silk weaves, such as *luo*-gauzes and warp-faced polychrome brocaded silks were produced in state workshops and were collected in as tribute, providing the emperor with prestigious fancy silks to bestow upon the elite and for use in state payments. The production and circulation of fancy silks permitted the emperor to demonstrate his power and shape people's desire for rare and fashionable things, thus reinforcing the social hierarchy that he headed. As such, the value of fancy silks was more abstract than concrete, more symbolic than monetary. If we test them against van Glahn's criteria for money, they were certainly used in state payments. They were probably a means of exchange but only among the elite and for special purposes, and certainly not a means of exchange on a regular basis among ordinary people. Their rarity, variety and usage made it difficult to determine their value. As prestigious, high-quality items, they could be a store of value, but that value was difficult to gauge, and was subject to fluctuation. How do the fancy silks match up to Einzig's eight criteria of money? As I have shown in this article, the complex silk weaves of the Tang dynasty may have been beautiful, valuable and desirable, but they did not rate highly in terms of utility, portability, indestructability, homogeneity, divisibility, stability of value, cognisability or liquidity.

The values of the simple, complex, and fancy textiles of the Tang dynasty must be seen in the contexts in which they were produced and used. The plain weave textiles (tabbies in silk and plant fibres) were produced and used more widely and in greater quantity than the complex silk weaves and fancy silks with dyed and woven patterns. It was the plainness, universality and regularity of the simple tabbies, combined with the state authority that enabled them to function as money. The complex and fancy textiles were intended to be special, and to be used in particular ways. After the mid-eighth century, however, enough silk twills were produced that they were increasingly used in payments in the oases. Although there was state authority behind them, the complex and fancy textiles could never have functioned as money in the same way as the simple tabbies.

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