

## Innovations in Textile Techniques on China's Northwest Frontier, 500–700 AD

Among the abundant textiles unearthed in Turfan since the turn of the century, one type of polychrome silks (*chin* 錦) stands out. The items date to the sixth and seventh centuries, and their designs feature such simple geometric shapes as hexagons, a “chess-board 棋局,” and abstract patterns of tree-leaves. The motifs seem naive, and, in fact, their designs are elementary. Yet, the textiles are woven in compound weaves, namely, of more than one series of warp and/or weft. This odd combination of simple design with complex weave conflicts with the general principle applicable to other excavated Chinese silks – that during the ancient period complex weaves were usually used to make complex designs. Therefore, in order to study more systematically the surprising conflict between weave and design, I have brought the examples under one grouping, hereafter for convenience designated as “Group A.” The ten items in it are categorized by design, and their sources described, in the appendix to this article. Three figures, each representing one of the designs mentioned above, are reproduced after the appendix.<sup>1</sup>

Such complex weave structures require loom technology and weaving techniques far more complex than those needed in making *chüan* 絹, the simple silk tabby produced by peasants as subsidiary agricultural product for currency, tax payment, and occasional use. The designs of the Group A silks are simpler, however, than those of either earlier or later Turfan silks character-

FROM THE inception of my research on this topic in 1996, I have been grateful for help from the following Chinese institutions: The Museum of Turfan, The Museum of The Autonomous Uighur Region of Sinkiang (hereafter cited as Sinkiang Museum), and The Archaeological Institute of Sinkiang. In addition, I obtained assistance in the U. S. from The Art Gallery of Yale University and The Cleveland Museum of Art; and in Japan from Temple University Japan, The Ancient Orient Museum (Tokyo), and The Tokyo National Museum. Thanks also go to Ann Abid, Tom Boardman, Chang Kuang-ta, Ch'iu Ling, Hori Akira, Judith Lerner, Freda Murck, Ogasawara Sae, Elizabeth Owen, Larissa Schwartz, David Sensabaugh, Jonathan Skaff, and Takahama Shu. In particular, comments from Francesca Bray, Eric Trombert, and Wu Min, as well as anonymous reviewers, have greatly improved my work, but I alone am responsible for any mistakes.

<sup>1</sup> Images of the fragments have most recently been reprinted in Angela Sheng, “Woven Motifs in Turfan Silks: Chinese or Iranian?” in *Orientalism* 30.4 (1999), pp. 45–52, figs. 1–3.

ized by typically dense and curvilinear Chinese motifs,<sup>2</sup> and thought generally to have been woven in specialized Szechwan workshops and then sent as gifts to the rulers of Turfan. The combination of simple pattern and complex structure that we see in the Group A silk fragments presents something unusual. They easily may have been products of a technological change, perhaps of an intermediate or transitional nature on the Chinese frontier. The Group A textiles provide clues to the relationship between social change and technological change in medieval Turfan.

The Group A textiles have attracted little attention. They have been overshadowed by Chinese textiles displaying exceptionally complex pattern and structure.<sup>3</sup> The more spectacular silks were produced in imperial workshops using ancient techniques and abundant labor divided into discrete tasks. Standing apart from the constraints that faced the rest of the economy, imperial workshops commanded unlimited resources and were thus able to produce silks of extremely complex patterns and weaves for court use. This was not the case for textiles of intermediate technology, that is, more advanced than that required in making simple silk tabby and cloth of plant fibers, but not as advanced as that required for complex patterns in silk. As my work on textile production during the Sung (960–1279 AD) has shown, technological change

<sup>2</sup> For an example of an earlier Turfan textile woven in the warp-faced compound tabby, see Wu Min 武敏, *Chih-hsiu* 織繡 (Taipei: You-shih, 1992; hereafter cited as *CH*), p. 100, pl. 61. It is the famous Chü-ch'ü Feng-tai textile named after the tomb owner, dated to no later than 455, featuring paired birds and animals on navy ground (Sinkiang Museum: 72TAM177:48). For an example of a later Turfan textile, woven in the slightly more complex warp-faced compound twill, see *CH*, p. 125, pl. 80. It is a pillow fragment of no later than 689, with stylized floral compositions on green ground (Sinkiang Museum: 73TAM206:43/1). Wu Min argues that both were most likely made in Szechwan by Chinese weavers; "T'u-lu-fan ch'u-t'u Shu chin te yen-chiu" 吐魯番出土蜀錦的研究, in *Hsin-chiang she-hui k'o-hsüeh* 新疆社會科學 (1987.5), pp. 92–100. (For a short list of technical terms in weaving, see appendix to the present article.)

<sup>3</sup> I refer particularly to early, distinctive silks found in Chiang-ling, Ma-wang-tui, and Sinkiang. See Shang-hai-shih fang-chih k'o-hsüeh yen-chiu-yüan Shang-hai-shih ssu-ch'ou kung-yeh kung-ssu wen-wu yen-chiu-tsu 上海市紡織科學研究院上海市絲綢工業公司文物研究組, ed., *Ch'ang-sha Ma-wang-tui i-hao Han-mu ch'u-t'u fang-chih-p'in te yen-chiu* 長沙馬王堆一號漢墓出土紡織品的研究 (Peking: Wen-wu ch'u-pan-she, 1980); Fu-chien-sheng po-wu-kuan 福建省博物館, ed., *Fu-chou Nan-Sung Huang-sheng mu* 福州南宋黃升墓 (Peking: Wen-wu ch'u-pan-she, 1982); Hu-pei-sheng Ching-chou ti-ch'ü po-wu-kuan 湖北省荊州地區博物館, ed., *Chiang-ling Ma-shan i-hao Ch'u mu* 江陵馬山一號楚墓 (Peking: Wen-wu, 1985); and *CH*, pp. 21–93. T'ang textiles excavated from Fa-men-ssu, Shansi, have yet to be published; see Shih Hsing-pang 石興邦, *Fa-men-ssu ti-kung chen-pao* 法門寺地宮珍寶 (Sian: Shan-hsi jen-min mei-shu ch'u-pan-she, 1989). Textiles excavated from Tu-lan, Ch'ing-hai, resemble those excavated from Sinkiang in weave structures; Hsü Hsin-Kuo and Chao Feng, "A Preliminary Study of the Silk Textiles Excavated at Dulan," trans. Bruce Doar, in *China Archaeology and Art Digest* 1.4 (1997), pp. 13–34. For a detailed discussion on the division of labor, see Satō Taketoshi 佐藤武敏, *Chūgoku kodai hinu ori mono shi kenkyū* 中國古代絹織物史研究 (Tokyo: Kazama shobō, 1978).

in textile production usually reflected major social change.<sup>4</sup> For example, new varieties of ramie cloths and silks woven with intermediate technology flooded local markets everywhere in China. The new market demand in the eleventh and twelfth centuries enticed peasants to abandon agriculture in order instead to produce textiles.

Perhaps the unusual Group A silks also reflect social conditions in medieval Turfan. Why does it appear that this was the only period of Turfan's history in which such silks were produced? Given that the Chinese and Central Asians mingled extensively on the northwestern frontier, were the inventors of these unusual weaves Chinese or Central Asians? Where and why did they make them?

Two related hypotheses underlie my analysis. First, craftsmen new to Chinese silk weaving in complex structures made the simple designs as part of a learning process. After mastering techniques by making simple patterns, they moved on to make more complex designs. Because artisans are mostly anonymous in historical records and have not left signatures on their works, we can at best only construct a composite social profile. The second hypothesis is that only people who had enough surplus capital to invest in expensive weaving equipment and supplies but who escaped strict state control could have had the means to experiment with new weaving techniques. Central Asian merchants, such as rich Sogdians who were active in Turfan in the sixth and seventh centuries, come to mind. The possibility that Central Asians might have commissioned silks like the Group A fragments is suggested by stylistic differences compared with other Chinese silks. The tree-leaf motif, in particular, points to a Persian origin.<sup>5</sup> The Central Asians, whose homeland was the northeastern fringe of the Persian empire, traveled extensively along the Silk Road and thus came into close contact with the Chinese on China's northwestern frontier. The Group A silks, therefore, suggest a Central Asian background – probably Sogdian.

I begin with a brief survey of textile finds from Turfan in relation to the local historical background. Subsequently, I analyze the style of Group A silks in relation to their technological complexity. In order to determine if rich Sog-

<sup>4</sup> See Angela Sheng, "Textile Use, Technology and Change in Rural Textile Production in Song China (960–1279)" (Ph.D. diss., U. of Pennsylvania, 1990). Using primary texts and archaeological reports, I developed an index of weaves based on their structural complexity in order to gauge the extent of urban commercialization. I argue that peasants who produced textile fiber (hemp, silk, or both) greatly increased their output with many small but effective technological innovations. Moreover, those who left agriculture to produce textiles full-time became motivated to invent new weaves of intermediate complexity.

<sup>5</sup> For a detailed discussion, see Sheng, "Woven Motifs," pp. 45–52.

dians might qualify as the customers for expensive and complex silks, as well as sponsors of the necessary technology, I examine their presence and background in Kao-ch'ang (ancient Turfan). All this requires a summary of examples of unusual Sogdian-Chinese art in order to strengthen the argument that Sogdians commissioned art work that included textiles. As a conclusion, I propose a logical development in the technological change and sketch a composite social profile of the potential innovators.

#### TEXTILE FINDS IN TURFAN AND THE HISTORICAL BACKGROUND

Located at the western end of the Great Wall and on the northeastern edge of the Tarim Basin (see Valerie Hansen's Introduction in this issue, map 2), the Turfan Depression (in the Tarim Basin) was dominated by the Hsiung-nu early in the Han dynasty (206 BC–220 AD). However, as the Hsiung-nu weakened, in around 60 BC the indigenous people of Turfan, called Chü-shih 車師 (Ku-shih 姑師), submitted to the Chinese. Turfan became the Former Chü-shih kingdom, with Chiao-ho 交河 (Yarkhoto) as its capital. A Han garrison stationed there frequently fought off the Hsiung-nu to maintain Chinese domination, and this situation persisted through the third century. (Throughout this article, please refer to the list of geographic and ethnopolitical terms also given in Hansen's Introduction.)

Wooden tablets (variously dated, spanning the years 49 BC–8 AD) excavated from the Lop Nor area (near Lou-lan 樓蘭) indicate that the military personnel for the garrison brought their families, including women who made textiles, and even such followers as conscripted prisoners from China proper to set up military colonies (*t'un-t'ien* 屯田).<sup>6</sup> These settlers mixed with the indigenous nomadic peoples, teaching them irrigation and other advanced farming techniques as well as such handicrafts as iron tool-making.<sup>7</sup> In addition, extraordinary textiles unearthed in 1995 from the Ying-p'an 營盤 graveyard in Yü-li 尉犁 county (200 km west of Lou-lan) feature ancient Chinese and Persian motifs. Dated to the period between the third century BC and the fifth centu-

<sup>6</sup> Ma Yung 馬雍, "Ts'ung Hsin-chiang li-shih wen-wu k'an Han-tai tsai hsi-yü te cheng-chih ts'o-shih ho ching-chi chien-she" 從新疆歷史文物看漢代在西域的政治措施和經濟建設, in his *Hsi-yü shih-ti wen-wu ts'ung-k'ao* 西域史地文物叢考 (Peking: Wen-wu, 1990), pp. 4–5.

<sup>7</sup> Wang Ning-sheng 王寧生, "Han Chin hsi-yü tsu-kuo wen-ming" 漢晉西域與祖國文明, in *Hsin-chiang she-hui k'o-hsüeh k'ao-ku yen-chiu-so* 新疆社會科學考古研究所, ed., *Hsin-chiang k'ao-ku san-shih nien* 新疆考古三十年 (Urumchi: Hsin-chiang jen-min ch'u-pan-she, 1983; hereafter *HCKKSSN*), pp. 194–201.

ry AD, these silks and woolens certainly reflect the cultural fusion of the time.<sup>8</sup>

No further evidence of intercultural diffusion, nor any textiles, has been found in Turfan itself of this period. However, Turfan was an important stop along the middle route of the Silk Road, which extended westward from the Ch'ang-an region and passed through Lan-chou 蘭州, Wu-wei 武威, and on to Tun-huang 敦煌, where it split into three routes that bypassed the Taklamakan Desert. The northern route went along the northern rim of the T'ien-shan Mountains 天山, going through Pei-r'ing 北庭 (Beshbalik). The middle-north route followed the northern edge of the Tarim Basin (and thus sometimes confusingly also referred to as the northern route). It originated from Tun-huang, passing through Hami, Turfan, Karashahr, Kucha, Aksu, and on to Kashgar before reaching Samarkand, Bukhara, and beyond. It was this route that the Sogdians favored and controlled from early on.<sup>9</sup> Textiles of the third century BC have been unearthed along this middle-northern Silk Road. They are wool cloths, even twills; but not silks.<sup>10</sup> The southern route, seemingly preferred by the Chinese, skirted the northern foothills of the Kunlun Mountains on the southern edge of the Tarim Basin. It, too, began at Tun-huang, with stops at Miran 米蘭 (in present-day Jo-ch'iang 若羌 county), Ni-ya 尼雅 (in present-day Min-feng 民豐 county), Khotan, Yarkand, and continued to Kashgar.

Thus, through these various foothills flowed sumptuous silks from the Chinese court to the nomads, and in the opposite direction came luxurious tribute.<sup>11</sup> Many silk and woolen finds dated to the period from the third century BC to the fifth century AD have come to light from the ancient sites of Lou-lan (also in Jo-ch'iang county) and Ying-p'an (Yü-li county) along the middle route; and Ni-ya in Min-feng county, Shan-p'u-la 山普拉 in Lo-p'u 洛浦 county (near Khotan) along the southern route. Like even earlier wool finds along the middle Silk Road, these woolens were either locally made or imported from Persia, as attested by Kharosthi documents. In contrast, the silks were clearly Chinese exports often featuring not only Chinese motifs but also Chinese words conveying good wishes.<sup>12</sup>

<sup>8</sup> Li Wen-ying 李文瑛 and Chou Chin-ling 周金玲, "Ying-p'an mu-tsang k'ao-ku shou-huo chi hsiang-kuan wen-t'i" 營盤墓葬考古收穫及相關問題, in Ma Ch'eng-yüan 馬承源 and Yueh Feng 岳鋒, eds., *Hsin-chiang Wei-wu-erh tsu-chih-ch'ü ssu-lu k'ao-ku chen-p'in* 新疆維吾爾自治區絲路考古珍品 (Shanghai: Shang-hai i-wen ch'u-pan-she, 1998), pp. 63–74.

<sup>9</sup> Richard Frye, *The Heritage of Central Asia, from Antiquity to the Turkish Expansion* (Princeton: Markus Weiner Publisher, 1996), p. 156.

<sup>10</sup> *GH*, pp. 36–41.

<sup>11</sup> Huang Shih-chien 黃時鑿, *Chieh-shuo ch'a-t'u Chung-hsi kuan-hsi shih nien-piao* 解說插圖中西關系史年表 (Hangchow: Che-chiang jen-min ch'u-pan-she, 1994), pp. 3–59.

<sup>12</sup> Lin Mei-ts'un 林梅村, "Kung-yüan san shih-chi te hsi-yü fang-chih-wu" 公元三世紀的西

As China experienced political change during the fourth and early fifth centuries, so too did Turfan. Based on burial patterns at various Turfan sites, Chinese archeologists call this the “Kao-ch’ang 高昌 commandery (*chün* 郡)” period to reflect the political change from 327 to 442 AD.<sup>13</sup> In 327 Chinese forces sent by the Former Liang dynasty (313–376) first established a commandery in Kao-ch’ang. It was then successively governed by the Former Ch’in (350–394), the Later Liang (386–403), the Western Liang (400–421), and the Northern Liang (397–439). After the Tabgatch people – who had founded their own Northern Wei dynasty (386–535 AD) – destroyed the Northern Liang in 439, many fled from Northern Liang rule and settled in Turfan. They were so great in number that for a time they caused a food shortage in Turfan. But, subsequently, having brought with them their skills and culture, they intensified Chinese cultural influence in Turfan. In 442 Chü-ch’ü Wu-hui 沮渠無諱 of the royal Northern Liang family defeated the prefect of Kao-ch’ang commandery, changed the reign title to Ch’eng-p’ing 承平 in the next year, and renamed his new state the Great Liang.

Scant burial goods mark Astana graves of this Kao-ch’ang commandery period. People in charge of the burials, perhaps family members, even elaborated their written funerary inventories in order to compensate symbolically for the material paucity. Such manipulation is evident when the inventory found in Astana tomb 39 is compared with the actual burial goods. Despite her elite background, a young woman went to the afterlife with only cotton shoes, plain silk clothing, and bedding. One embroidered item substituted for complex woven silks: it is a chain-stitch with “dots irregularly interspersed among meandering vines.” Other textile finds include clothing and bedding

域織物, in *Hsi-yü yen-chiu* 西域研究 (1998.1), pp. 9–20. On such Silk Road finds as a robe made of *chin* silk with “as you wish, forever” 萬世如意 motif woven in warp-faced compound tabby (l=122 cm; hem=142; sleeve-to-sleeve=174; 1st-2c. AD), kept at Sinkiang Museum (59 MNM [Ni-ya] 1), see *CH*, p.65, pl. 28; and on a *chin*-silk glove with “longevity suits progeny” 延年益壽人宜子孫 motif woven in warp-faced compound tabby (l=22 cm; w=14 cm; 1st-2c. AD), kept at Sinkiang Museum (59 MNM [Ni-ya] 1), see Hsin-chiang Wei-wu-erh tzu-chih-ch’ü ch’u-t’u wen-wu chan-lan kung-tso-tsu 新疆維吾爾自治區出土文物展覽工作組, ed., *Ssu-ch’ou chih tu Han Tang chih-wu* 絲綢之路漢唐織物 (Peking: Wen-wu, 1973; hereafter *SCCL*), pl. 4. On Silk Road textile discoveries in general, see Aurel Stein, *Serindia: Detailed Report of Exploration in Central and Westernmost China* (Oxford: Clarendon Press, 1921); idem, *Innermost Asia* (Oxford: Clarendon Press, 1928); *CH*; and Chou Yen-ch’ün, “Exhibition Review: Archaeological Treasures on the Silk Road in Xinjiang Uighur Autonomous Region, Shanghai Museum, 1 April to 15 October, 1998,” in *Orientalia* 29.1 (1998), pp. 64–66.

<sup>13</sup> See Mu Shun-ying 穆舜英, Wang Ming-che 王明哲, and Wang Ping-hua 王炳華, “Chien-kuo i-lai Hsin-chiang k’ao-ku te chu-yao shou-huo” 建國以來新疆考古的主要收穫, *HCKKSSN*, pp. 11–12.

made of hemp cloth and simple silk tabby (*chüan*) or a thicker variation called *t’i* 緜.<sup>14</sup> However, the additional discovery of cotton textiles and cotton batting attests to the local cultivation and weaving of cotton in Turfan that must have begun during this period.<sup>15</sup> Whether this resulted from earlier integration with the military colonies or massive Chinese migration from the Northern Liang remains unclear. It is also possible that techniques of cotton cultivation came from Indian areas south of the Hindukush.

One possible explanation for the paucity of burial goods is that tombs of the Kao-ch’ang commandery period were long ago robbed clean. At least three *chin* 錦 fragments that Stein found in Astana earlier this century indicate that local residents must have seen or even used complex silks in the fourth and fifth centuries. The three *chin* pieces are woven in the traditional Chinese warp-faced compound tabby.<sup>16</sup> The warp and weft are made of untwisted silk and twisted wool, indicating a combination of Chinese and local raw materials. Because the designs are geometric, even coarse, they might have been the first attempts by the locals – either Han Chinese or Central Asians, or both – to

<sup>14</sup> On the chain-stitch textile (69TAM39:2), see Li Cheng 李征, “Tu-lu-fan hsien A-sso-t’ana Ha-la-ho-cho ku-mu chün fa chüeh chien-pao” 吐魯番縣斯塔那哈拉和卓古墓群發掘簡報, *HCKKSSN*, pp. 80, 87. There was also a pair of silk shoes dated to circa 370 that resemble a woven tapestry kilim. Because it is not a complex weave it will not be considered here.

<sup>15</sup> *Liang shu* 梁書 (Peking: Chung-hua shu-chü, 1973), 48, p. 2811. Although merchants continued to bring cotton textiles from Central Asia to China via the Silk Road, cotton cultivation and weaving did not spread extensively in China proper until approximately the 13th c; Eric Trombert, “Une trajectoire d’ouest en est sur la route de la soie: La diffusion du coton dans l’Asie Centrale sinisée (6<sup>e</sup>-10<sup>e</sup> siècle),” pp. 207–27, paper presented at the conference La Persia e l’Asia Centrale da Alessandro al X Secolo, November, 1994, in Rome, Accademia Nazionale dei Lincei in collaborazione con l’Istituto Italiano per il Medio ed Estremo Oriente, 1996. At that time, advanced technology required for both cotton cultivation and weaving came from southern China to the lower Yangtze area. See Dieter Kuhn, *Textile Technology: Spinning and Reeling*, part 9 of volume 5, *Chemistry and Chemical Technology*, Joseph Needham, ed., *Science and Civilisation in China* (Cambridge: Cambridge U.P., 1988), pp. 205–24.

<sup>16</sup> Ast.vi.1.03, Ast.vi.02, and Ast.vi.2.04; Stein, *Innermost Asia*, pl. LXXX, LXXVIII, and XXXVI. Due to their un-Chinese designs, these fragments interested Krishna Riboud, who first categorized them as warp-faced compound tabby but later thought that they were weft-faced compound tabby; “Addendum to Techniques of Problems in Certain Han and T’ang Specimens,” in *The 1974 Proceedings of the Irene Emery Roundtable on Museum Textiles: Archaeological Textiles* (Washington D.C.: Textile Museum, 1975), pp.160–64; and idem, “Further Indication of Changing Techniques in Figured Silks of the Post-Han Period (A.D. 4th to 6th Centuries),” in *Bulletin de Liaison du Centre International des Etudes des Textiles Anciens* 41–42 (1975), pp. 13–40. Yokohari Kazuko followed Riboud’s second opinion; “On Chinese Weft-faced Compound Tabby Silk,” in *Bulletin of The Ancient Orient Museum* 11 (1990), pp. 257–80, and subsequent publications. However, Wu Min categorized the loosely woven hemp thread at the edge of fragment Ast.vi.1.03 as “loom head 機頭” thread, where the textile first emerges on the loom, thus making all three fragments warp-faced compound tabby; “Tu-lu-fan A-sso-t’ana ku-mu ch’u-t’u ssu-chih-p’ in hsin-t’an” 吐魯番阿斯塔那古墓出土絲織品新探, in *Tun-huang Tu-lu-fan yen-chiu* 敦煌吐魯番研究 4 (1999), forthcoming.

reproduce *chin* silks exported from the Western Han court.<sup>17</sup>

The second archeological period in Turfan, the “Kao-ch’ang kingdom 王朝” period, 442–640, was a time during which power was contested between Chinese and Central Asian rulers, but simultaneously peoples on the frontier were integrating socially. From about 460 to 510 the nomadic confederacy of the Jou-jan, followed by that of the Kao-chü (related to the Turks), dominated Turfan with appointed kings. Throughout a time of political change and uncertainty, astute Central Asian merchants continued to spread cultures along trade routes.

Turfan grew more stable after Ch’ü Chia 麴嘉, a man of ethnic-Han origin from Chin-ch’eng 金城,<sup>18</sup> founded the Ch’ü kingdom of Kao-ch’ang in 502 AD. Ten Ch’ü kings (see table of Kao-ch’ang rulers in the article by Zhang and Rong, this issue) ruled Kao-ch’ang until 640, when the T’ang emperor T’ai-tsung (r. 627–49) brought Kao-ch’ang under Chinese control as Hsi-chou prefecture. In what follows, I place the time-frame for the Group A silks into the relatively stable period of Ch’ü-family rule just described, when Chinese and Central Asians seem to have flourished socially and economically.

Based on 115 tombs dating to the Kao-ch’ang kingdom period, archeologists have been able to identify proportionally many more complex silk weaves than those of the Kao-ch’ang commandery period, of a century or two earlier. Abundant documents have also survived. Still, precious complex weaves were used sparingly – as face-covers (*fu-mien* 覆面) for corpses and as decorative trim for clothing and bedding.<sup>19</sup> In addition to silks with tree-leaves woven in the warp-faced compound tabby, others woven in this complex structure feature complex figures and animal patterns (see the appended illustrations). For example, consider the silk fragment of paired birds and animals on navy ground, unearthed from the tomb of Chü-ch’ü Wu-hui’s heir, Chü-ch’ü Feng-tai 封戴,

<sup>17</sup> Riboud also compared the colors of these three fragments to those of two fragments that Stein had found in Lou-lan: L.M.1026 and the so-called Dura-Europos fragment woven in weft-faced compound twill (The Art Gallery of Yale University accession number 1933.486). See Riboud, “Addendum,” p. 166, pl. 4, 5; and John Becker, with the collaboration of Donald B. Wagner, *Pattern and Loom* (Copenhagen: Rhodos International Publishers, 1987), p. 90 and fig. 73. The hypothesis that the technology of weaving traditional Chinese warp-faced compound tabby was transmitted to western Asia in the 4th c. awaits further research.

<sup>18</sup> Near modern Kao-lan in Kansu and known as Kymzym to 2d-c. Sogdians; J. Harmatta, “Sogdian Sources for the History of Pre-Islamic Central Asia,” in *Prolegomena to the Sources on the History of Pre-Islamic Asia* (Budapest: Academy Kiado, 1979), p. 162.

<sup>19</sup> See Hsin-chiang Wei-wu-erh tzu-chih-ch’ü ch’u-t’u wen-wu chan-lan kung-tso-tsu, “Ssu-ch’ou chih lu shang hsin-fa-hsien te Han T’ang chih-wu” 絲綢之路上新發現的漢唐織物, *WW* (1972.3), pp. 13–19, and figs. 10, 11; and “Tu-lu-fan A-ssu-t’a-na Ha-la-ho-cho ku-mu-ch’ün fa-ch’ieh chien-pao (1963–65)” 吐魯番阿斯塔那哈拉和卓古蘇群發掘簡報 (1963–65), *WW* (1973.10), pp. 7–26.

cited above. Like earlier Han silks found along the southern Silk Road, the Feng-tai fragment belonged to a royal family of the Northern Liang. These complex silks were brought from China and not woven in Turfan.

A new weave, the warp-faced compound twill, appeared in the navy and white “chess-board” piece of our Group A silks, representing a technological breakthrough. Others of this weave show roundels (or medallions) within which is a single standing animal, such as a deer, or part of an animal, such as a board’s head.<sup>20</sup> Even more dramatic is the weft-faced compound tabby utilized in other Group A silks; it has a simple geometric shape plus the Chinese word for “king 王,” or the word for “auspicious 吉.” Still, most clothing and footwear was made of cotton, hemp, and silk, all woven in the basic tabby.

In contrast, silks of complex patterns woven in complex structures dominate textile finds from 173 tombs dated to the third archeological period of T’ang-controlled Hsi-chou 西州 prefecture (640–803 AD). Unlike the Group A silks, they have been studied in detail.<sup>21</sup> Many such examples of Chinese variations on animal motifs within roundels indicate a booming export trade from China proper. Reflecting yet another breakthrough is a *chin* fragment with floral roundels on red ground dated to the early-eighth century; it is woven in weft-faced compound twill.<sup>22</sup> The logical advance in technology would seem to be an exceptional satin with flying phoenix and butterflies around floral roundels.<sup>23</sup> Both of these above advances feature unmistakable Chinese designs.

<sup>20</sup> See the deer-in-the-roundel fragment, warp-faced compound twill (21 x 20 cm; Sinkiang Museum: 60TAM332:5), published in *SCCL*, pl. 32; and the boar’s-head-in-the-roundel fragment, also woven in the warp-faced compound twill (17.5 x 23.5 cm, Sinkiang Museum: 59/60TAM325:1), published in *CH*, p. 126, pl. 84.

<sup>21</sup> E. g., F. H. Andrews, “Ancient Chinese Figured Silks Excavated by Sir Aurel Stein at Ruined Sites of Central Asia,” in *Burlington Magazine* 37 (1920), pp. 3–10, 71–77, 147–52, 215, 265, and 326–27; Becker, *Pattern and Loom*; Po Hsiao-ying 薄小瑩, “Tu-lu-fan ti-ch’ü fa-hsien te lien-chu-wen chih-wu” 吐魯番地區發現的連珠紋織物, in Pei-ching ta-hsüeh k’ao-ku hsi 北京大學考古系, ed., *Chi-nien Pei-ching ta-hsüeh k’ao-ku chuan-yeh san-shih-nien chou-nien lun-wen chi* 紀年北京大學考古專業二十周年論文集 (Peking: Wen-wu, 1990), pp. 311–40; M. Meister, “The Pearl Roundel in Chinese Textile Design,” *Ars Orientalis* 8 (1970), pp. 225–67; K. Riboud and G. Vial, *Les Tissus de Touen-huang conservés au musée Guimet et à la Bibliothèque Nationale*, Tome XIII du Mission Paul Pelliot, documents archéologiques publiés sous les auspices de l’Académie des Inscriptions et Belles-lettres sous la direction de Louis Hambis (Paris, 1970); Wu Min 武敏, “Hsin-chiang ch’u-t’u Han-T’ang ssu-chih-p’in ch’u-t’an” 新疆出土漢唐絲織品初探, in *WW* (1962.7), pp. 63–72 (rpt. *HCKKSSN*, p. 431, table 1, item 16); *CH*, pp. 95–139; and Hsia Nai 夏鼐, “Hsin-chiang hsin-fa-hsien te ku-tai ssu-chih-p’in ch’i chin ho t’u-hsiu” 新疆新發現的古代絲織品綉錦和刺繡, in idem, *K’ao-ku-hsüeh ho k’o-chi shih* 考古學和科技史 (Peking: K’o-hsüeh ch’u-p’an-she, 1979), pp. 69–97.

<sup>22</sup> True *wei-chin* (14.8 x 8.5; dated to early-8th c.), kept at Sinkiang Museum (72 TAM 230); see *CH*, p. 132, pl. 95.

<sup>23</sup> This silk fragment was part of a reliquary bag excavated from a Buddhist site at Sengim, Turfan, in 1959 (37.5 x 30 cm; 10th c.), kept at Sinkiang Museum; *CH*, p. 133, pl. 98. Satin is not

After An Lu-shan's Rebellion (755–763 AD), T'ang troops were withdrawn from Ho-hsi and the so-called Western Regions (Hsi-yü), thus paving the way for Tibetan encroachment. In 786 AD the Tibetans captured Tun-huang (the T'ang administration's Sha-chou 沙州 prefecture). In alliance with the Qarluq and white-clothed Turks, in 789 AD the Tibetans seized the T'ang-controlled Pei-t'ing (Beshbalik) protectorate (located about twenty kilometers north of the modern town of Jimusar in Sinkiang. To fight back, T'ang troops sought the support of the Orkhon Uighur khanate. Ironically, T'ang lost Turfan to the Uighurs in 803 AD. Thereafter the Uighurs controlled Turfan, renamed it Karakhoja and ended Han Chinese domination there for many centuries.<sup>24</sup>

Several facts have emerged from this brief overview. First, excavated finds show that silks (not woolens) traded along the Silk Road until the mid-fifth century, including those found in Turfan, were dominated by Chinese designs. Moreover, in the Kao-ch'ang commandery period (327–442 AD) the most complex weave structure was consistently the warp-faced compound tabby. Woolens have also been found along the Silk Road but not in Turfan. However, it appears that people who knew how to weave woolen twills did not pass on their knowledge to the Chinese who continued to weave complex patterns as *chin* silks in the old way. Social integration in Turfan, if any, might have been superficial despite active, long-distance intercultural trade. Group A silks were made in the sixth and seventh centuries, shortly after massive Chinese migration from the Northern Liang and during the relatively peaceful rule by the Ch'ü family (the Kao-ch'ang kingdom period; 442–640 AD). By the end of the seventh century there appeared two structures new to the Chinese textile technological repertoire: the warp-faced compound twill and the weft-faced compound tabby. Subsequently came the weft-faced compound twill in the eighth century (the Hsi-chou period; 640–803 AD). And finally, the exceptional satin, a weft-faced, but not compound, weave, appeared in the tenth century.

What happened? How are these complex compound silk weaves related? Because Group A silks embody clues to these questions, we will next analyze their style relative to their technology.

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a compound weave. Due to its weft-faced aspect, its appearance is predicated on the technical mastery of weft-faced weaving and that of the twill. Still another new weave, the double weave called "double-faced *chin*" (*shuang-mien chin*), appeared at the turn of the 8th c.; see *CH*, pp. 131–32, pl. 98. As a compound weave of tabby binding, it is a by-product of the transition from warp-faced compound weaves to weft-faced compound weaves. But in itself it is not critical to this transition and for this reason, it is excluded from consideration here.

<sup>24</sup> For a clear account of the events, see L. Petech, "The Silk Road, Turfan and Tun-huang in the First Millennium A.D.," in A. Cadonna, ed., *Turfan and Tun-huang Texts: Encounter of Civilization on the Silk Road* (Florence: Leo S. Olschki Editore, 1992), pp. 1–3.

## STYLE AND TECHNOLOGY

By burial context, the Group A silks can be dated to the sixth and seventh centuries, although it is possible that they could have been made far earlier than their burial. Three groups of designs in ascending order of stylistic complexity stand out: hexagons, "chess-boards," and tree-leaves (see the appendix, for categorization of Group A silks; and for a list of technical terms in weaving). The hexagons seem to be innovations in the disposition and arrangement of the usual iconographic vocabulary of Chinese textile design. Woven in large areas of two or three colors – white (faded to buff) and orange, white (faded) and brown, and green, two samples sport abstract "turtles" made of six or more hexagons. Instead of the "turtle" motif, the third fragment shows elongated beige loops that resemble foreign script on alternating thick stripes of red and white and brown.

Two colors are easily achieved in weaving by using one color each for the warp and weft. By dressing the loom alternately with warp of two or more colors, one can also easily produce a textile with multicolored vertical stripes without affecting the weave structure. By alternating the colors of either the warp or weft or both, colorful patterns were achieved even in a simple tabby. If both the warp and weft were the same color, then the outcome was a plain textile. If the warps were alternately dressed in different colors, but only one color for the weft, then a striped textile was produced. Conversely, with one color for the warp, but alternate colors of weft, then a textile of colorful bands was produced. Varying the colors of both the warp and weft, for example, in equal proportions produced a checkered cloth. A "tartan" effect was achieved when the proportions were unequal. All of the above color variations could be woven in the simple tabby as well as the twill or satin, although the added structural complexity of the latter two would not have changed the color effect.

All three Group A two-color items feature simple, angular, and repeated representation of Chinese pictograms: "auspicious 吉" and "king 王." They are woven in the weft-faced compound tabby. The patterns, most visible in the Chinese pictograms, are woven horizontally along the weft, hence weft-faced. To read the pictograms upright, the textile must be turned 90 degrees and cannot hang more naturally along the warp.

In contrast, geometric shapes organized into a "chess-board" pattern that can be read either vertically or horizontally appear in two other silk fragments: one woven in navy and white and the other in red and white. While the red-and-white piece is woven in the warp-faced compound tabby, the navy-and-white sample is woven in a more complex warp-faced compound twill. The

difference is that the twill binding requires at least two more shafts on the loom. Both weaves are structurally less complex than the weft-faced compound tabby, by which the hexagons were made. However, the smaller size of the motifs and jagged outlines of the navy-and-white fragment show a technical control finer than that exhibited in the hexagon designs. Here, the two-toned chess-board patterns are woven in the warp, and are hence warp-faced. In this aspect (but not in the binding), they are similar to the following group of silks patterned with tree-leaves woven in the warp-faced compound tabby.

Group A contains many tree-leaf style fragments, and this style is also mentioned in contracts and funerary inventories.<sup>25</sup> The motif can be interpreted either as a tree or a leaf, and are hence termed tree-leaves. Similar to tree-leaves on the fifth- to sixth-century garment worn by a banqueter painted on the west wall of the residential complex at Balalyk Tepe (near Balkh, the center of Bactria [also known as Tokharistan]; see Hansen, Introduction, map 1), it is probably a Persian motif. Anna Ierusalimskaia has in fact identified an abstract version of the tree-leaf as a Sogdian weaving motif. It certainly is foreign to the Chinese stylistic repertoire.<sup>26</sup> The tree-leaf fragments show variations of the same theme: leaves in blue and green and white on a solid brown ground, or of one color, reddish brown, on alternating stripes of colors like blue and white, or blue and green and white.<sup>27</sup> Because only two colors – one for the pattern (tree-leaves) and the other for the ground – prevail for each

<sup>25</sup> E. g., Turfan document #38, 60TAM326:014; see Yamamoto Tatsuro and Ikeda On, *Tunhuang and Turfan Documents concerning Social and Economic History* (Tokyo: Toyo Bunko) 3, p. 16 [205], and Turfan document 72TAM170, dated 543, cited in Hou Ts'an 侯燦, "Tu-lu-fan Chin T'ang ku-mu ch'u-t'u sui-tsang i-wu shu tsung k'ao" 吐魯番晉唐古墓出土隨葬衣物疏綜考, in *Hsin-chiang wen-wu* 新疆文物 (1988.4), p. 37.

<sup>26</sup> Hsin-chiang Wei-wu-erh tzu-chih-ch'ü po-wu-kuan 新疆維吾爾自治區博物館, "Hsin-chiang Tu-lu-fan A-ssu-t'a-na pei-ch'ü mu-tsang fa-ch'ieh chien-pao" 新疆吐魯番阿斯塔那北區墓葬發掘簡報, *WW* (1960.6), p. 17. For the painting, a north Bactrian mural from a 5th–6th-c. fort at Balalyk Tepe in the Surkan Darya region of south Uzbekistan, see Guitty Azarpay, "The Development of the Arts of Transoxiana," in Ehsan Yarshater, ed., *The Cambridge History of Iran, Vol. 3.2, The Seleucid, Parthian and Sasanian Periods* (Cambridge: Cambridge U.P., 1983), pl. 135. See also L. Albaum, *Balalyk-tepe: k istorii material'noi kul'tury i iskusstva Tokharistana* (Tashkent, 1960); Guitty Azarpay, "Sogdian Painting," in *The Pictorial Epic in Oriental Art: With Contributions by A. M. Belenitskii, B. I. Marshak, and Mark J. Dresden* (Berkeley: U. of California P., 1981), pp. 87–89, and pl. 3; Mario Bussagli, *Paintings of Central Asia*, trans. Lothian Small (Geneva: Editions d'Art Albert Shira, 1963), p. 35; and Dorothy Shepherd, "Sasanian Art," in *The Cambridge History of Iran* 3.2, pp. 1089, 1144, and pl. 135. See especially Ernest Herzfeld, *Iran in Ancient East. Archaeological Studies in the Lowell Lectures at Boston* (New York: Hacker Art Books, 1988), pp. 331–32, fig. 415 and pl. CXXX; and Anna Ierusalimskaia, "K slozheniyu shkoly khudozhestvennogo shel'atskachevstva v Sogde" ["Formation of the Sogdian School of Artistic Silk Weaving"], in *Sredniia Azia i Iran (sbornik statei)* (Leningrad: Gosudarstvenii Ordena Lenina Ermitazh, 1972), pp. 36, pl. 21–23.

<sup>27</sup> Fragments numbered: 72TAM170:38, 59TAM303:2, 59TAM303:15, and 72TAM169, kept at Sinkiang Museum.

strip of tree-leaves in all samples, they are woven with two series of warp (two colors at a time). Further color variation results from a simple substitution of warp in other colors without changing the weave structure. However, just like the hexagons, the tree-leaves are woven horizontally along the weft so that, were the tree-leaves to stand upright, the textile would need to be turned 90 degrees to be viewed.

All textile samples discussed above are woven in complex structures usually indiscriminately termed *chin* in Chinese texts. In fact their structural differences reveal levels of loom complexity. Paradoxically, as the designs of Group A silks increase in stylistic complexity (from the hexagons, to the "chess-board," to the tree-leaves), their technological complexity decreases (respectively, from the weft-faced compound tabby, to the warp-faced compound twill, to the warp-faced compound tabby). Whereas a warp-faced compound tabby structure (tree-motifs) requires at least two (or more) series of warp and one series of weft; a warp-faced compound twill (navy-and-white "chess-board") requires even more: at least two (or more) series of both warp and weft.

Focusing on the least complex of them all, the warp-faced compound tabby,<sup>28</sup> I would like to emphasize its salient feature – the outwardly invisible inner weft (*chia wei* 夾緯) made of barely twisted silk. This inner weft intersects with the patterning warp and is hidden underneath the latter's long floats. In contrast, the inner warp (*li ching* 裡經), although also made of barely twisted silk, is at times visible when it alternately functions as a patterning warp. That is, depending on the color of the warp required for patterning, any one of the two or three series of warp (namely, two or three colors) can function either as the binding or as the patterning warp. This is far more complex than the set-ups described above, where in the one and only one series of warp, two or three colors alternate to create a striped effect.

The importance of the inner weft is its uniqueness to the Chinese warp-faced compound tabby.<sup>29</sup> This structure was first woven during the Han era, if

<sup>28</sup> "Warp-faced compound tabby weave" is what Hsia Nai used to describe a textile made of two or more series of warp that are used for both the tabby binding and patterning as well as one series of weft, alternately used for the tabby binding and for patterning as an inner weft (*chia wei*); Hsia, "Ku-tai ssu-chih-p'in," p. 77, n. 4. Hsia's term conforms most closely to standard textile vocabulary; see entries on "double-faced weave," "double weave, rib," "warp-faced weave," and "warp-patterned" in Dorothy Burnham, *Warp and Weft: A Textile Terminology* (Toronto: Royal Ontario Museum, 1980). Wu, "Han-T'ang ssu-chih-p'in," calls this structure "*ching-hsi-wen*," or compound warp rep," which Hsia, and subsequently Wu, considered inaccurate. We do not have the detailed technical analysis of all the illustrated samples under discussion: Wu, although analyzing all, has published only some. Yet one may hypothesize about those without published details based on what is known of the others.

<sup>29</sup> Untwisted silk has been used in weaving in China since antiquity. It was well understood that if the silk cocoon were killed (boiled) before the moth emerged, one could reel off approx.

not earlier.<sup>30</sup> Only imperial workshops both endowed with unlimited resources and equipped with looms that allowed individual manipulation of the warps could produce such luxuries then.<sup>31</sup> Thus, two possibilities arise concerning the production of the Group A silks. One, they were woven for export (trade or gifts) in Chinese imperial workshops that thrived in the capital and other major weaving centers. Or, two, they were made by weavers in Kao-ch'ang who had learned how to weave this particular Chinese textile structure.

A check on the warp and weft count unravels the mystery. First, the weft count of all Group A silks is consistently low, ranging from 11 to 18 per cm. The lower the count, the easier it is to weave. However, the warp count for the tree-leaves, at 56 per cm, is remarkably higher than that of all other samples in the Group A silks, ranging from 13 to 25. Moreover, 56 warps per cm is close to that of other contemporaneous textiles featuring much more obvious Chinese patterns.<sup>32</sup> It also closely approximates the warp count of earlier silk weaves of the same structure, especially a stylistically related piece – the silk stocking

650- to 1200-m lengths of silk yarn; see Ch'en Wei-chi 陳維璣, ed., *Chung-kuo ta-pai-k'o ch'üan-shu fang-chih* 中國大百科全書紡織 (Peking: Chung-kuo ta-pai-k'e ch'üan-shu ch'u-pan she, 1984), p. 16. Because silk is a protein fiber with great elasticity, it can be warped onto the loom without first being twisted. Perhaps due to this property, Han-Chinese emphasized the manipulation of warps and made patterns in them. In contrast, although wool is a protein fiber, it is short and must be twisted together, i. e., spun to form a long yarn before it can be used in weaving. Plant fibers such as hemp and cotton are also short but not at all elastic and require spinning. Central Asians and west Asians have long specialized in wool-weaving and its requisite wool-spinning techniques. They have applied such techniques to silk, even today; see Maria Zernnickel, "The Textiles of Uzbekistan," in Johannes Kalter and Margareta Pavaloi, eds., *Heirs to the Silk Road: Uzbekistan* (London: Thames and Hudson, 1997), pp. 211-62, esp. fig. 432. Thus, textile historians often seek evidence of twisted or untwisted silk yarn as proof of Chinese or non-Chinese weaving. However, this factor alone is not sufficient to determine the location of manufacture, since counter-examples can exist. Furthermore, Eric Trombert recently has suggested that Buddhist weavers might have preferred to weave with broken silk rather than kill silkworms while in cocoon (March 31, 1999; personal communication).

<sup>30</sup> E. g., a textile with the words "as you wish, forever" and one with "longevity suits progeny" (see n. 12) were discovered in Ni-ya (Min-feng) and dated to the Eastern Han; Wu, "Han-T'ang ssu-chih-p'in," table 1: items 1, 2. The earliest warp-faced compound tabby was discovered in 1982 at the Ch'u Tomb no. 1 in Chiang-ling. Made of either two or three series of warp, i. e., two or three colors, and one weft, such textiles had a high warp count (84-156 per cm), about three times that of the weft count (24-54 per cm); see *Chiang-ling Ch'u-mu*, pp. 34-35.

<sup>31</sup> See Dieter Kuhn, "The Silk-Workshops of the Shang Dynasty (16th-11th B.C.)," in Li Kuohao, Chang Meng-wen, and Ts'ao T'ien-ch'ün, eds., *Explorations in the History of Science and Technology in China: The Special Number of the Collection of Essays on Chinese Literature and History in Honor of the Eightieth Birthday of Dr. Joseph Needham, F.R.S., D.B.A.* (Shanghai: Ku-chi ch'u-pan-she), pp. 367-408; and Angela Sheng, "The Disappearance of Silk Weaves with Weft Effects in Early China," *Chinese Science* 12 (1995), pp. 41-76.

<sup>32</sup> Warp count refers to the number of single warp threads per centimeter of the textile, and similarly for the weft count. This measure reveals the density of the textile and more importantly both the fine degree with which threads are spun for weaving, the technical capability of the loom, and the weaver's competence. The hexagon is item 19 (M339:055); the "chess-board":

dated to the Eastern Han found in 1959 in Ni-ya (Min-feng) on the southern Silk Road route. Whereas dotted diamonds form its overall pattern,<sup>33</sup> only one such identically dotted diamond adorns each Group A tree-leaf, but it does so conspicuously in the center of every leaf. Yet, one technical difference distinguishes the Group A tree-leaf from the Ni-ya silk stocking: the latter is woven with three series of warp, and Group A silks are woven with only two series. One more series of warp means one more color and thus more possibilities for design complexity. It also requires more complex looms and greater technical mastery.

If weavers in Chinese imperial workshops of an earlier time could easily handle three series of warps, why would they bother with the simple patterns dictated by much simpler techniques used for weaving tree-leaves? They would not, except perhaps for purposes of export or demonstration. Thus, we suspect that perhaps the tree-leaf fragments with the much higher warp-count were made by Chinese weavers for foreign consumption. If woven for demonstration, then for whom? Weavers new to making an invisible weft in the warp-faced compound tabby, would seem logically to have started with two series of warp and made simple geometric designs such as the red-and-white chess-board, and then have graduated to tree-leaves. Both are much easier to weave than intricate curvilinear designs encompassing minute color changes of three series of warps, as in the paired birds and animals mentioned above.

This progression would make sense only if one were already a confident weaver of twills and weft-faced patterns. Excavated Chinese silks show that most complex weaves are usually warp-faced. That is while the ground is woven in the simple tabby (the binding), patterning is achieved by individual manipulation of the warp. For weavers to make patterns in the weft, in contrast, they must first know how to weave the twill. This also requires a different loom technology than that used for making the warp-faced compound weaves. At least three shafts are necessary for the simplest 2/1 twill (where the warp end passes over two, and under one, weft picks). If this latter technology were combined with that for the warp-faced compound tabby, then one could pro-

item 16 (M308:029); and tree motif is item 5 (field number M315:018), in Wu "Han-T'ang ssu-chih-p'in," table 1. For each textile fragment, the number of binding and that of the interior weft is the same. Thus, actually, there are twice as many weft threads per cm as the count, i. e., 22 to 36 wefts per cm. For warp-weft count given here of items not illustrated, see *ibid.*, items 6-9. We can surmise from Wu's stylistic analysis of contemporaneous animal patterns of her Type I and Type II and of meandering plant patterns that these items 6-9 are Chinese in style; *CH*, pp. 101, 109.

<sup>33</sup> The Ni-ya silk stocking (warp count 46 per cm) is made entirely of diamonds in red, yellow, and blue, filled with dots forming triangles; *SCCL*, pl. 6, and Wu "Han-T'ang ssu-chih-p'in," table 1, item 3. The dots in diamonds precede those on the tree-leaves.



duce warp-faced compound twill. By further combining this "hybrid" technology with that of weft-faced patterning technology, one could then go on to weave weft-faced compound tabby and weft-faced compound twill.

Thus far, no twill or weft-faced pattern of silk-weaving has been found in China proper from antiquity to the sixth and seventh centuries. However, woolen finds from the northwestern frontier show that such a weaving tradition flourished among nomads from as early as the third century BC.<sup>34</sup> We must therefore ask if there could have been weavers in Kao-ch'ang in the sixth and seventh centuries who were familiar with twills and weft-faced patterning methods on the one hand, and, on the other hand, unfamiliar with the Chinese way of weaving warp-faced compound tabby.

### SILK PRODUCTION IN HISTORICAL TURFAN: KAO-CH'ANG

Sericulture began in Kao-ch'ang sometime after ethnic Han people settled as military colonists there during the first century and contributed greatly to agricultural technologies.<sup>35</sup> Excavated documents from Turfan show that by the fifth century it was already well established. The amount of land cultivated for mulberry, the leaves of which were fed to silkworms, ranked only next to that of grains and perhaps even exceeded that of grapes. In addition, the profit from the mulberry fields greatly surpassed that of other types of fields.<sup>36</sup>

<sup>34</sup> See *CH*, pp. 36-41, 78-92. Because my earlier analysis of narrow silk bands unearthed in Chiang-ling was based on published reports that have since been modified, I can only conclude cautiously that the silk bands were not weft-faced weaves as stated in Angela Sheng, Addendum to "Chinese Silk Tapestry: A Brief Historical Perspective of Its Early Development," in Elizabeth Knight, ed., *Chinese and Central Asian Textiles: Selected Articles from Orientations 1983-1997* (Hong Kong: Orientations, 1998), p. 225.

<sup>35</sup> See Ma, "Han-tai tsai hsi-yü," pp. 1-10. According to myth, in 419 a Chinese princess introduced to the nomads the secret of the silkworm, having hidden it in her headdress when she was sent to marry the ruler of Khotan, Vijayajaya. See Chia Ying-i 賈應逸, "Hsin-chiang ssu-chih chi-i te ch'i-yuan chi ch'i t'e-tien" 新疆絲織技藝的起源及其特點, *KK* (1985.2), p. 173. It is more likely that Chinese women who came with their husbands, fathers, or brothers to set up military colonies during the Han dynasty spread the basic knowledge of sericulture and the weaving of simple silk tabby. Historians have mentioned that Hami (near Kao-ch'ang) was suited for sericulture; see Wei Ch'ang-hung 魏長洪, "Hsin-chiang ssu-ch'ou ts'an-sang te ch'uan-ju yü fa-chan" 新疆絲綢蠶桑的傳入與發展, in *Hsin-chiang ta-hsüeh hsüeh-pao* 新疆大學學報 (1979.1-2), p. 140. For the excavated find of an ancient ceramic silkworm, see Shih Shu-ch'ing 史樹青, "Hsin-chiang wen-wu tiao-ch'a sui-pi" 新疆文物調查隨筆, in *HCKKSSN*, pp. 152-53.

<sup>36</sup> Wu Min provides a thorough analysis of this subject based on two Turfan documents: 63TAM1:16 and 75TKM99:17; see "Ts'ung ch'u-t'u wen-shu k'an ku-tai Kao-ch'ang ti-ch'ü te ts'an-ssu yü fang-chih" 從出土文書看古代高昌地區的蠶絲與紡織, in *Hsin-chiang she-hui k'o-hsieh* (1987.5), pp. 92-100. Also see Chia, "Hsin-chiang ssu-chih chi-i"; Han Kuo-p'an 韓國磐, "Ts'ung T'u-lu-fan ch'u-t'u wen-shu k'an Kao-ch'ang te ssu-mien chih-yeh" 從吐魯番出土文書看高昌的絲棉織業, in his *Tun-huang T'u-lu-fan ch'u-t'u ching-chi wen-shu yen-chiu* 敦煌吐魯番出

The profitability of the mulberry suggests that raw silk could have been produced for markets over and beyond the minimal need to weave silk tabby for annual tax payment – calculated at approximately the rate of five or six meters for each household of one adult male. Indeed, other Turfan documents bear witness to an active sale of raw silk on the Silk Road. Most sales occurred at the end of the fourth and beginning of the fifth lunar months. As the supply increased, it reduced the price by half. Of special interest is the fact that among the five recorded sales, neither the buyers nor the sellers were ethnically Han Chinese. One seller in three instances sold altogether 170 catties (*chin* 斤, about 82 kg) of silk that would have required at least 2,720 catties (*chin*, about 1,305 kg) of silkworms.<sup>37</sup> One such seller with a Central Asian name (Pai Chia-men-jung 白迦門賊) must have bought from various producers and then sold to silk buyers who also bore Central Asian names (such as K'ang Mo-p'i-to 康莫毗多).<sup>38</sup>

Central Asians were not the only ones who required raw silk. Still other

上經濟文書研究 (Hsia-men: Hsia-men ta-hsüeh ch'u-pan-she, 1986), pp. 344-56; K'ung Hsiang-hsing 孔祥星, "T'ang-tai ssu-ch'ou chih lu shang te fang-chih mao-i chung-hsin Hsi-chou" 唐代絲綢之路上的紡織貿易中心西州, *WW* (1982.4), pp. 18-23. For a discussion on the agricultural operation of various fields, see Eric Trombert, "Contracts and Juntian [*chün-t'ien*] Documents: Two Complementary Source Materials on the Farming System in Turfan," presented at the 1998 Silk Road Conference at Yale University. Trombert also cautions whether the analysis can be justly extended to the whole area of Turfan.

<sup>37</sup> See Wu, "Kao-ch'ang," and 新疆維吾爾族自治州博物館 and 武漢大學歷史系, *T'u-lu-fan ch'u-t'u wen-shu* 吐魯番出土文書 (Peking: Wen-wu, 1981; hereafter cited as *CTWS*) 3, pp. 318-21. I use the rate of 480 grams per *chin* for the Kao-ch'ang kingdom. Although we lack comprehensive data on taxation in the Kao-ch'ang kingdom period, excavated documents suggest that the taxation system there early in the T'ang followed closely what was practised in China proper (on this, see Valerie Hansen's "Path of Buddhism," in this issue of *Asia Major*). See Han Kuo-p'an, "Ken-chü Tun-huang ho T'u-lu-fan fa-hsien te wen-chien lüeh-t'an yü-kuan T'ang-tai t'ien-chih te chi-ko wen-t'i" 根據敦煌和吐魯番發現的文件略談有關唐代出制的幾個問題, in *Li-shih yen-chiu* 歷史研究 (1962.4), pp. 198-213 (rpt. in idem, *Sui T'ang Wu-tai shih lun-uen chi* 隋唐五代史論文集 [Peking: San-lien ch'u pan-she, 1979]). Despite debate on minor deviations cited in Ma Yung, "Ch'ü Pin tsao-ssu-pei so fan-ying te Kao-ch'ang t'u-ti wen-t'i" 麴斌造寺碑所反映的高昌土地問題, in *HCKKSSN*, pp. 116-20, for our purposes, we can assume that a household with one male adult was required to pay: 2 *chang* of *chuan* (or approx. 5 to 6 meters of silk tabby); 2 *chang*, 5 *ch'ih*, of *pu* (or approx. 5.1 to 6.2 meters of hemp cloth), and even the 20 days of corvée could be converted to payment in silk tabby and hemp cloth; see Han, "T'ang-tai t'ien-chih," p. 226.

The width of silk tabby and hemp cloth was roughly the width of the simple horizontal treadle loom used by one person. Extant samples of hemp cloth for taxation show that the width varied from 52 to 59 cm. Thus, coincidentally, the taxed 5 or 6 meters of silk tabby or hemp cloth of the above widths was just enough to make a simple jacket and a pair of trousers for an adult; Sheng, "Rural Textile Production in Song China," appendix 3: "An Estimate of Cloth Requirement." The increased width of the cloth to 63 cm in the Sung period did not affect the cut or the length of the clothes, only the width.

<sup>38</sup> The K'ang surname indicates Sogdians from Samarkand; see Ikeda On 池田溫, "Ha seiki chuyō ni okeru Tonko no Sogudo jin shuraku" 八世紀中葉における敦煌のソグド人聚落, in *Tūra-shia bunka kenkyū* ユラシア文化研究 (Hokkaido daigaku, 1965), 1, p. 61.

Turfan documents of the fifth century show that the Kao-ch'ang government either taxed or commissioned the reeling of raw silk in the fifth month.<sup>39</sup> The timing of silk reeling according to the silkworm's maturation cycle – like the timing of the sale of raw silk, just mentioned – further provides evidence of local silk production. The only use for the reeled silk is weaving.

Did the Kao-ch'ang government have its own weaving workshops or were there private ateliers? A Turfan document lists fire-damaged property of a Kao-ch'ang family that includes, in order of appearance: woven textiles: 4 sheets (*chang* 張) of unspecified *chin* (probably warp-faced compound tabby) with a purple ground and 3 Chinese-bolts (*p'i* 匹) or thirty-six meters of white cotton; half-finished work: 38.6 meters of silk warp ready for weaving; weaving equipment: a silk tabby loom; and raw materials for weaving: silk and cotton yarn of various amounts and ten sheets of silkworm eggs.<sup>40</sup> The inventory also includes clothes, shoes, bowls, wooden plates, housing supplies and means of transportation.

Wu Min 武敏 convincingly argues that this inventory belonged to a weaving household that did not own the listed property.<sup>41</sup> Rather, the government did, and it required a report. Further, the absence of any agricultural tools would indirectly support the deduction that this family was exclusively engaged in textile production. Wu Min adds that just as in China proper where the government supplied the materials and equipment and controlled such weaving households, so too did the government in Kao-ch'ang. Like the founding family of the Kao-ch'ang kingdom who fled from social unrest in China proper during the fifth and sixth centuries, many Chinese artisans also migrated to the frontier for the economic opportunity it offered. While the elite brought their methods of control, the artisans brought their trade and craft.

What did such weavers weave? In the fire-damage inventory are listed both the simple weave of white cotton and the complex weave of *chin* with a purple ground. However, as noted above, the unit of measure for the complex

<sup>39</sup> See Turfan documents 63TAM1:24 and 63TAM1:17, in *CTWS* 1, pp. 18, 20.

<sup>40</sup> The document, 975TKM99:17 (*CTWS*, 1, p. 195), bears no relationship to the tomb in which it was found. For a detailed analysis, see Wu, "Kao-ch'ang," p. 92. The measure *chang* is usually used for carpets woven on vertical looms (*ti-chi*). Since other textiles are measured in length, we can assume that they were woven on horizontal looms, the kind that the Chinese used traditionally for weaving complex silks. Thus, both the vertical and horizontal looms were in use. I use Wu's figures: approx. 1 *p'i* = 40 *ch'ih*, 1 *ch'ih* = 30 cm.

<sup>41</sup> Since later private Tun-huang contracts show that clothing, even shoes, was often provided for workers on an annual basis, by extension it is not difficult to imagine that the government provided for the housing and other household implements to its workers at an earlier time in Turfan; Yamamoto and Ikeda, *Tun-huang and Turfan Documents* 3, nos. 389, 390, 393, 395, 402, 407, 408, 413, and 414.

weave of *chin* in question is "sheet" (*chang*), a unit of measure usually reserved for carpets woven on vertical looms. But this unit of measure is consistently employed in several other Turfan documents to describe the quantity of *chin*. For example, one sheet of Shu-le 疏勒 (Kashgar) *chin*; half a sheet of a *chin* "with white ground facing the west"; and one sheet of Ch'iu-tz'u 丘慈 (near Kucha) *chin* with yellow ground, woven of cotton warp and cotton weft, and of medium size measuring 9 *ch'ih* 尺, 5 *ts'un* 寸, in length by 4 *ch'ih*, 5 *ts'un*, in width (2.3 x 1.1 meters). Such wide textiles could not have been woven in China proper where no looms of such dimensions existed at that time. In addition, this last complex weave of *chin* was made of cotton and not silk, suggesting not only local production but also a liberal application of a basically Chinese silk weave structure for making textiles using fiber other than silk.<sup>42</sup> Furthermore, as the descriptions of these textiles were brief, limited to the ground color, their designs must have been rather simple. References to place names such as Kashgar and Kizil also show local specialization, indicative of new, intermediate textile technology in the making.<sup>43</sup>

Thus, local weavers in Kao-ch'ang must have made textiles similar to those of the Group A, but did they make them in a government workshop or elsewhere? The inventory of fire-loss would suggest that weavers wove at home. We lack records on local government workshops but we have evidence of artisans' quarters. An architectural analysis of the Kao-ch'ang site shows that an outer city surrounded the inner city and the palace to the north. In the southwest corner of this outer city stood a large monastery (see map 3, in Hansen's Introduction).<sup>44</sup> To the northeast and southeast of this monastery were

<sup>42</sup> See Turfan documents 75TKM88:1 (b) and 75TKM99:6 (b), in *CTWS* 2, p. 18; 1, pp. 189, 181. On the looms, see Wu, "Kao-ch'ang," pp. 98–99. We have evidence of wide looms in the Sung period. They were used for weaving wide silks that some artists preferred especially for the painting of landscapes. See Li Lin-ts'an 李霖燦, "Su Tung-p'o shih ho Ts'ui Pai 'Shuang-hsi t'u' lun Sung-hua k'uo-ch'uan hsia-ch'uan wen-t'i" 蘇東坡詩和崔白雙喜圖論宋畫闊狹網問題, in *Ku-kung hsieh-shu chi-h'an* 故宮學術季刊 (Taipei) 2 (1984), pp. 1–8. Wu, "Kao-ch'ang," points out an excavated find of mixed silk and cotton; also Wu, "Han-T'ang ssu-chi-wu," table 1, item 12.

<sup>43</sup> See Sheng, "Rural Textile Production in Song China," pp. 195–201.

<sup>44</sup> See Yen Wen-jü 閻文儒, "T'u-lu-fan te Kao-ch'ang ku-ch'eng" 吐魯番的高昌故城, *WW* (1962.7–8); rpt. *HCKKSSN*, pp. 136–41. Different in arrangement was the plan of nearby Karakhoja [Chiao-ho], a town established in the sixth century when the Kao-ch'ang kingdom was both stable and prosperous. A main road of 350 m (10 m wide) stretched along the north-south axis. In that no doors or windows opened onto this artery and only narrow lanes branched off from it, the street plan of Karakhoja resembled that of major cities in China proper (This rule was not broken until the Northern Sung, when increased commercialization brought doors to the main streets of K'ai-feng). To the north of the artery was situated the largest monastery, and to its west, groups of smaller monasteries. They were mostly Buddhist, judging from the relics and sculptures. To the east of the largest monastery, in the northeast corner of the town, was a group of *fang* defined by thick and high walls. Houses within such *fang* were multistoried with a subterranean cave. The upper levels show remains of windows. Raised platforms were found near the

located two neighborhoods (*fang* 坊). In the southeast neighborhood are the ruins of two north-south rows of orderly houses that faced one another with open space nearby. It is conjectured that these houses were artisans' workshops, and the nearby plaza-like open space served as the market place for the artisans' wares. This would have been the most probable place for private workshops including those of weaving. Thus, whether artisans worked exclusively for the government or not remains ambiguous. If Central Asian merchants bought so much silk, not all of it necessarily went to western Asia (Persia) as raw silk. Could not some of it have been assigned to local weavers instead? To find out, we need to know who the potential users were.

#### TEXTILE COMPLEXITY AND TEXTILE USE

Commoners could not easily afford expensive silks. For most peasants there was little economic and material opportunity outside of their work in the fields: the could not have had the means to buy extravagant textiles.<sup>45</sup> Turfan contracts show clearly that most textiles used for exchange, interest, or guarantee were plain silk tabby or simple hemp cloth.<sup>46</sup> People who managed better than subsistence sometimes wore silks with dyed rather than woven patterns that were more difficult to make and hence more costly. Even the wife (née P'eng) of Chü-ch'ü Meng-sun 沮渠蒙遜, who was king Ch'eng-hsüan 承玄 of Northern Liang (r. 428-429), had buried with her only small, miniature rolls of simply dyed silk tabbies as symbolic wealth. Not only had she no complex silk weaves to speak of as burial wealth, but also none was written in her funerary inventory dated to 458 AD.<sup>47</sup> This paucity was partly due to the fact that *chin* silks were rare during the Kao-ch'ang commandery period.

*fang* walls at intersections of lanes; these were likely storefronts. However, there are no clear signs of workshops. See Kuan Min 觀民, "Chiao-ho ch'eng tiao-ch'a chi" 交河城調查記, in *HCKKSSN*, pp. 142-48. There was also evidence of another monastery in the southeast corner; see Yen, "Kao-ch'ang ku ch'eng," p. 136.

<sup>45</sup> If an average household of husband and wife, with an older child and two younger ones, had 35 *mu* [one-sixth acre] of land, barring natural disaster or illness that would drastically reduce the harvest, such a family barely had enough to eat after paying taxes. They might not even have the resources to pay for cooking implements, tool repairs, or new clothing; see Han, "T'ang-tai t'ien-chih," pp. 224-27. Most families might not have even so much land or if they did, the areas would be discontinuous; see Sha Chih 沙知, "T'u-lu-fan tien-jen wen-shu li te T'ang-tai tsu-tien kuan-hsi" 吐魯番個人文書里的唐代租佃關係, in *HCKKSSN*, pp. 307-16.

<sup>46</sup> Such examples are too numerous to list; e. g., Turfan documents 31, 32, 33, 69, 73, 74, and so on, see Yamamoto and Ikeda, *Tun-huang and Turfan Documents* 3, 13[208], 14[207], 25[196], 26[195], and 27[194]. In some of these contracts, the silk referred to is *lien*, also a simple silk tabby, cooked - degummed of protein - but not dyed. See Chao Feng 趙豐, *Su-ch'ou i-shu shih* 絲織藝術史 (Hangkow: Che-chiang mei-shu hsieh-yüan ch'u-pan-she, 1992), p. 34.

<sup>47</sup> The miniature rolls of silk are numbered 79TAM383:6; kept at Turfan Museum.

In contrast, as complex silk weaves became more readily available in the following Kao-ch'ang kingdom and Hsi-chou periods, the ruling elite were dressed in nothing but finery. Complex silk weaves with more typically Chinese patterns overflowed from the tombs of the Chang family who were closely related to the royal Ch'ü family by marriage. Nor were the aristocrats the only ones who led the good life. Senior monks indulged in luxury, always eating the best of food and wearing the finest of silks. Their wills, donation inventories, and loan contracts list far more complex silks than those of commoners.<sup>48</sup> No evidence suggests that these complex silks could have been made in the monasteries. Instead, they received expensive complex silks from wealthy and royal patrons for the creation and perpetuation of merit.<sup>49</sup> The elite armed with wealth and power could easily receive or buy complex silk weaves.

Some Turfan documents show that the Chinese system of commercialization also reached the frontier by early in the T'ang.<sup>50</sup> Just like markets in China proper, trade associations (*hang* 行), were set up in Turfan, one for each commodity: grains, fruits, vegetables, and so on. Textiles were further divided by fiber and complexity: one each for silk tabby, hemp cloth, and colorful silks of more complex weave than the simple tabby. These trade associations also regulated the prices of each commodity according to three grades of quality: superior, medium, and inferior. For example, rough cotton cost much less than superior or fine cotton. The latter cost as much as silk tabby and nearly as much as the more complex silk twills. However, medium grades of silk tabby from Ho-nan, Shan-chou and Tzu-chou were sold for less, no doubt due to both superior skills and economies of scale gained in workshops that abounded in China proper.<sup>51</sup>

<sup>48</sup> An example of the Chang-family complex weaves is from Astana, tomb 206, excavated in 1973; Hsin-chiang Wei-wu-erh (zu-chih-ch'ü po-wu-kuan 新疆维吾尔自治区博物馆, "T'u-lu-fan A-su-t'a-na ku-mu-ch'ün fa-ch'üeh chien-pao" 吐魯番阿斯塔那古墓群發掘簡報, *WW* (1975-7), pp. 8-26. For references to luxury silks, wills, and contracts of senior monks, see Turfan documents 268 and 243 in Ikeda On, *Chugoku kodai sekichō kenkyū* 中國古代籍帳研究 (Tokyo: Tōkyō daigaku tōyō kenkyūjo, 1979), pp. 514-16, 538-60; Turfan documents 36 and 37 in Yamamoto and Ikeda, *Tun-huang and Turfan Documents*, and T'ang Ch'i-yü 唐啟宇, *Chung-kuo nung-shih kao* 中國農史稿 (Peking: Wen-wu, 1985), p. 531. For an analysis of the monastic hierarchy and finances, see Hsieh Ch'ung-kuang 謝重光, "Kuan-yü T'ang hou-ch'i chih Wu-tai chien Sha-chou ssu-yüan ching-chi te chi-ko wen-t'i" 關於唐後期至五代間沙州寺院經濟的幾個問題, in Han, *Ching-chi wen-shu*, pp. 449-513. For a related discussion on the society and the material culture of Tun-huang, see Eric Trombert, *La crédit à Dunhuang: Vie matérielle et société en Chine médiévale* (Paris: Collège de France, Institut des Hautes Etudes Chinoises, 1995).

<sup>49</sup> See Jacques Gernet, *Buddhism in Chinese Society: An Economic History from the Fifth to the Tenth Centuries*, trans. Franciscus Verellen (New York City: Columbia U.P., 1995), pp. 195-228.

<sup>50</sup> See Ikeda, "Sekichō kenkyū," pp. 447-53; also Hsü Po-fu 徐伯夫, "T'ang-tai hsi-yü Chiao-ho chin te shang-yeh" 唐代西域交河郡的商業, in *Hsin-chiang li-shih yen-chiu* 新疆歷史研究 (1985.1), p. 43, n. 1.

<sup>51</sup> These prices are listed in Turfan documents, Otani nos. 1210, 2373, 2828, 3057, 3073.

The existence of such associations reflects an active textile trade in the Turfan area and makes it difficult to believe that all weavers wove only for the local government. The royal elite who ruled the Kao-ch'ang kingdom and the senior monks who directed the Buddhist monasteries preferred complex Chinese silks. Commoners could not afford much beyond the simple silks. So, who then would have wanted these Group A silks that were simple in design but complex in technology? I will argue below that Central Asians did, and specifically, the Sogdians. Perhaps they did not want the Group A silks as the desired final products, but the Group A silks had to be woven before the final products could be made.

### SOGDIANS IN KAO-CH'ANG

With such frequent changes in ruling polity, Turfan saw various categories of Central Asians come and go. Prominent, though, were Sogdians, who were famous for business and trading acumen. In particular, they dominated the northern Silk Road along which is located Turfan. Excavated documents show that they set up colonies in strategic locations, such as Kizil and Kucha, both on the northern middle route, as well as Khotan on the southern route, and other Silk Road points between the fourth and the eighth centuries. Nine of their surnames are seen transliterated into Chinese in Turfan documents of the sixth and seventh centuries.<sup>52</sup> Similar to later Sogdians, who established their own community in the village (*hsiang*) of Ts'ung-hua 從化鄉 (literally, "following the Chinese") in Tun-huang in the eighth century, the earlier Sogdi-

3080, 3083, and 3824, see Chao Kang 趙剛, "T'ang-tai Hsi-chou te pu-chia ts'ung wu-chia k'an ku-tai Chung-kuo te fang-chih-yeh" 唐代西州的布價從物價看古代中國的紡織業, in *Yü-shih yüeh-k'an* 幼獅月刊 46.6 (1977), pp. 5-6. In T'ang China silk tabbies collected as tax payment were in fact divided into nine grades; Yen Keng-wang 嚴耕望, "T'ang-tai fang-chih kung-yeh te ti-li fen-pu" 唐代紡織工業的地理分布, in *Ta-lu tsa-chih* 大陸雜誌 13.11 (1963), pp. 341-44; Chao, *Su-ch'ou i-shu shih*, pp. 10-11; and Wang Chung-lo 王仲榮, "T'ang-tai Hsi-chou te tieh-pu" 唐代西州的絨布, *WW* (1976.1), pp. 85-88.

<sup>52</sup> On Sogdians and their colonies, see Frye, *Heritage of Central Asia*, pp. 156, 164; and Jung Hsin-chiang 榮新江, "Hsi-yü Su-t'e i-min k'ao" 西域粟特移民考, in Ma Ta-cheng 馬大正, ed., *Hsi-yü k'ao-ch'ü yü yen-chiu* 西域考察與研究 (Urumchi: Hsin-chiang jen-min, 1994), pp. 157-72. Sogdian surnames were: 1) K'ang 康 (from Samarqand); 2) An 安 (Bukhara); 3) Shih 石 (Tashkent); 4) Ts'ao 曹 (Kabudhan); 5) He 何 (Kushāniyah); 6) Mi 米 (Maymurgah); 7) Shih 史 (Kish); 8) He 賀 (Sogdia); and 9) Lo 羅 (Tokharistan). See Ikeda, "Sogudo jin shuraku," p. 61; and Jung Hsin-chiang, "Tun-huang T'u-lu-fan ch'u-t'u chung-ku I-lang-yü wen-hsien yen-chiu kai-shu" 敦煌吐魯番出土中古伊蘭語文獻研究概述, in Yeh I-liang 葉奕良, ed., *Chung-kuo I-lang hsüeh lun-wen chi* 中國伊蘭學論文集 (Peking: Peking U.P., 1993). Sogdian calligraphy was unusual and confirms their presence; Ma Yung, "T'u-lu-fan ch'u-t'u Kao-ch'ang-chün shih-ch'i wen-shu kai-shu" 吐魯番出土高昌郡時期文書概述, in his *Hsi-yü shih-ti wen-wu ts'ung-k'ao* 西域史地文物叢考 (Peking: Wen-wu, 1990), p. 118.

ans congregated in a Turfan village (*hsiang*) named Ch'ung-hua 崇化 (literally, "respecting the Chinese") and generally married among themselves.

These Sogdians were in effect immigrants on China's northwest frontier. Registered as agricultural households, they received land under the equal-field (*chün-t'ien* 均田) system, paid taxes, and had to render military service. Some became wealthy landowners.<sup>53</sup> This method of political indenture was not new, since they had long ago recognized dual rulership: local rulers and the centralized Persian state.<sup>54</sup>

Other Sogdians were poorer than the agricultural households: some had been soldiers previously but now functioned as guards. Others, thanks to their linguistic skills, earned a living as translators or worked in hotels.<sup>55</sup> Still others with special skills were hired as craftsmen (*chiang-jen* 匠人). Two Turfan documents reveal that many such craftsmen existed then: carpenters, tailors, iron-smiths, masons, leather-workers, butchers, painters, and probably weavers as well. A few tailors bore the surname Ts'ao, given to Sogdians from Kabudhan, and a carpenter was surnamed Shih, indicating that he was a Sogdian from Tashkent. Two bamboo artisans had Chinese names: Wu Wen-hu 吳文護 and Wu Chin-chün 進軍, meaning respectively "protect culture" and "advance the army." Tung Kuo-tung 凍國棟 astutely points out that no bamboo grew in Turfan and that the bamboo-craftsmen might have come from China's interior, perhaps near Szechwan.<sup>56</sup> I believe that these bamboo-craftsmen were loom builders and as such knew how to weave. This is because looms in general, but especially drawlooms – the kind traditionally used for warp-faced compound tabby, for example, the Ni-ya silk stocking, were made from bamboo in Szechwan. Szechwan and its weaving shops in Ch'eng-tu were known as a center of sericulture, and assumed great importance for international travelers wishing to avoid the risks associated with the northwest border during the politically chaotic period known as the North and South dynasties (420-589). Moreover, bamboo was not used significantly in tool-making but was in the construction

<sup>53</sup> On Sogdian society, see Chiang Po-ch'in 姜伯勤, *Tun-huang T'u-lu-fan wen-shu yü ssu-ch'ou chih lu* 敦煌吐魯番文書與絲綢之路 (Peking: Wen-wu, 1994), pp. 155-72; and Ch'ien Po-ch'üan 錢伯泉, "Ts'ung chi-pu wen-shu k'an Kao-ch'ang Ch'ü-shih wang-ch'ao shih-ch'i te yao-chiao chi Su-t'e chiu-hsing lu-jen" 從幾部文書看高昌麴氏王朝時期的佛教及粟特九姓胡人, in *Chung-kuo T'u-lu-fan hsüeh-hui ti-i-tz'u hsüeh-shu yen-t'ao hui lun-wen chi* 中國吐魯番學會第一次學術研討會論文集 (Turfan, 1991), pp. 19-34.

<sup>54</sup> Frye, *Heritage of Central Asia*, pp. 101-2.

<sup>55</sup> Chiang, "Wen-shu yü ssu-ch'ou," pp. 158-59, 188.

<sup>56</sup> The documents are 66TAM61:16a and 66TAM61:27a; see *CTWS* 6, pp. 466-69. See Tung Kuo-tung 凍國棟, "T'u-lu-fan ch'u-t'u wen-shu so-chien T'ang-tai ch'ien-ch'i te kung-chiang" 吐魯番出土文書所見唐代前期的工匠, in T'ang Chang-ju 唐長孺, ed., *Tun-huang T'u-lu-fan wen-shu ch'u-t'ian* 敦煌吐魯番文書切探 (Wu-han: Wu-han ta-hsüeh ch'u-pan-she, 1990) 2, pp. 306-10.

of complex looms.

Craftsmen worked for the local government, which controlled them tightly. Their social status was low, higher only than that of servants. They lived scattered among commoners; and brought their own tools and food along to their work places. (On some occasions, tools were assigned and food advanced in exchange for their work.) They were supervised by a head-craftsman (*chiang-t'ou* 匠頭) and sometimes performed work not in their specialty. Assuming, for a moment, that they did not report to the local government but worked on their own, they would still have been subjected to the local government's strict control and could not escape payment in kind.

Many less fortunate Sogdians were laborers (*tso-jen* 作人). They did not own land, but were themselves considered the property of their masters and could be passed on as inheritance. But in that they were not bought and sold, they were higher in status than slaves. They performed work in the following areas: local government public projects, farming for others, most often monasteries, transporting goods for merchants, manufacture of handicrafts, and household servants. They were not exempt from local tax payment. They were peculiar to Turfan in particular at this time. Some of these laborers worked for wealthy Sogdian masters.<sup>57</sup>

In contrast, Sogdian merchants who were expatriates enjoyed much higher status and commanded more resources than these Sogdian landed-immigrants.<sup>58</sup> First, the expatriates were treated differently by the law. Second, the only obligation of Sogdian expatriates to the Kao-ch'ang government was the payment of two commercial taxes: *ch'eng-chia ch'ien* 稱價錢, a kind of sales tax, and *tsang-ch'ien* 藏錢 a kind of storage tax (These laws and taxes possibly were those imposed by Chinese courts. But, since Turfan documents are written mostly in Chinese, yet some are on recycled paper from China's interior, we can assume here that Chinese laws and taxes would have been enforced in local ways.) They traded mostly in incense, raw silk, and woven silks; all highly valued commodities that traveled well on the Silk Road. By remaining expatriates and constantly on the move, these wealthy Sogdian merchants avoided the government's many other extractions, for example, work as tax payment and other public service. Again, this behavior paralleled the way in which the Sogdians dealt with the centralized Persian state.

<sup>57</sup> Chu Lei 朱雷, "Lun Ch'ü-shih Kao-ch'ang shih-ch'i te tso-jen" 論麴氏高昌時期的作人, in T'ang, *Tun-huang Tu-lu-fan* 1, pp. 32-65; and Ch'eng Hsi-lin 程喜霖, "T'ang-tai kuo-so wen-shu chung so-chien te tso-jen yü ku-chu" 唐代過所文書中所見的作人與雇主, in T'ang, *Tun-huang Tu-lu-fan* 2, pp. 440-62. On *tso-jen* who worked for the wealthy, see Chiang, *Wen-shu yü ssu-ch'ou*, pp. 157-58.

<sup>58</sup> Chiang, *Wen-shu yü ssu-ch'ou*, pp. 174-88; and Ch'ien, "Su-t'e chiu-hsing hu-jen."

Sogdian society was non-imperial, in contrast to the imperial Sasanians (Persians) to their west and Chinese to their east. Unlike Chinese political realities, in which the court elite looked down on merchants, these wealthy Sogdians were the ruling elite and dominated Sogdian farmers and artisans in terms of mercenary matters, as would be expected in such a society. I argue that it is these rich Sogdian expatriate merchants who were interested in such silks as those of Group A and who alone could have had the surplus capital to invest in technological innovation. Before substantiating this, however, it is critical first to review the Sogdians' background in order to shed some light on the unusual situation represented by the Group A silks.

#### THE BACKGROUND OF TURFAN-AREA SOGDIA NS

Sogdian traders and farmers lived on the northeast fringe of the Iranian empire.<sup>59</sup> Ancient Iran alternatively loosened and tightened its centralized control throughout its different periods, until the Arab conquest late in the seventh century; and as such it can be compared with ancient China, which expanded and shrunk in its capacity to dominate over its own northwestern frontier. Living between the lands occupied by these very large states, the Sogdians used their geographic advantage in order to develop long-distance trade. As they transported commodities to and fro they facilitated cultural exchange in unexpected ways that we are only now beginning to fully appreciate. Such exchange resulted from their efforts to maintain their own culture under different rulers.

Since antiquity, most Sogdians lived in what later came to be called "Sogdiana," that is, the southwestern part of Transoxiana. This comprises the area roughly bounded by the Amu Darya (Oxus) River on the west, the Syr Darya (Jaxartes) River on the east, the Aral Sea on the north – into which these rivers

<sup>59</sup> For this section, I draw heavily on *Cambridge History of Iran*, vols. 3.1 and 3.2. For a discussion on Sogdian and Central Asian art, see Azarpay, "Sogdian Painting"; O. M. Dalton, *The Treasures of Oxus: With Other Examples of Early Oriental Metal-work* (London: British Museum, 1964); Milos Hbras and Edgar Knobloch, *The Art of Central Asia* (London: Paul Hamlyn, 1965); Edgar Knobloch, *Beyond the Oxus: Art and Archaeology of Central Asia* (London: Ernest Berni Ltd., 1972); Roderick Whitfield, *The Art of Central Asia, Vol. 3: Textiles, Sculptures and Other Arts* (Tokyo: Kodansha Ltd. with the Trustees of the British Museum, 1985). In addition are exhibition catalogues: *Along the Ancient Silk Routes, Central Asian Art from the West Berlin Museums* (New York City: Metropolitan Museum of Art, 1982); H. Hartel and M. Yalde, eds., *Die Seidenstrasse: Malereien und Plastiken aus buddhistischen Höhlentempeln*, Aus der Sammlung des Museums für Indische Kunst Berlin (SMPK) (Berlin: Dietrich Reimer Verlag, 1987); *Central Asian Art from the Museum of Indian Art, Berlin, SMPK* (Tokyo: Asahi Shimbun, 1991); and Jacques Gies and Monique Cohen, eds., *Sérinde, terre de Bouddha: Dix siècles d'art sur la Route de la Soie* (Paris: Réunion des musées nationaux, 1995).

flow from, respectively, the Pamir and T'ien-shan Mountains (see map 2 in Hansen's Introduction). From the third century BC until late in the seventh, people in Transoxiana used three Middle Iranian languages: Choresmian (Khwarazmian) in the Khwarazm delta near the Aral Sea, Bactrian in Bactria (that is, Kushan, in Tukharistan) along both banks of the Amu Darya on its middle course, and Sogdian in Sogdiana: Zarafshan and Kashka Darya basins (in Tajikistan), north of the Hissar range. The use of these languages reflected the Sogdians' complex political and cultural history under different rulers until the Arabs' conquest.

The strong Hellenistic influence in Sogdian art can be attributed to Alexander the Great, who led his troops to Transoxiana early in the fourth century BC.<sup>60</sup> At that time Bactria (Tokharistan) and Sogdiana were both ruled together as a satrap of the Persian Achaemenid empire circa 400–300 BC. Whereas the Bactrians, anxious to protect their trade and farming, quickly submitted to Alexander, both the Sogdians who were also traders and farmers and the nomadic Sakas (Scythians) resisted. Nonetheless, Alexander took Marakanda (Samarkand), the Sogdian capital and the most important city in Transoxiana. Realizing that unlike elsewhere in the Achaemenid empire, here in Central Asia the local lords held real power, Alexander enlisted their support, and thus set up what has been termed a system of “double rule” – that of local Iranians and the invaders.<sup>61</sup>

After Alexander's death, those of his officers that became eastern satraps fought for power but were brought under control by Seleucus toward the beginning of the third century BC. Still, the Greeks of Bactria enjoyed more freedom and power than their counterparts in the western part of the Seleucid empire. Even after Seleucus died in 281 BC, Transoxiana still remained loyal and tried to maintain contact with the Mediterranean. Around 247 the nomadic Parni took over the satrapy of Parthia, among others, and began the Parthian rule known as the Arsacid period (247 BC–224 AD). However, the Parthians, by focusing their attention on their western regions, neglected Transoxiana and thus paved the way for the Greeks to take control.<sup>62</sup>

<sup>60</sup> Frye, *Heritage of Central Asia*, pp. 99–107.

<sup>61</sup> *Ibid.*, pp. 101–2; and A. D. H. Bivar, “The History of Iran,” in *Cambridge History of Iran* 3.1, pp. 181–231. Frye points out the significance of this “double rule of the Iranian bureaucracy (including local lords) and the foreigners, who retained control of the army and collection of taxes” in its foreshadowing the later Arab method of control. I would further suggest that this system of double-rule also gave the Sogdians a model of interaction with the Chinese later in Turfan, even though at this early time the Sogdians and the Chinese were only trading at long distance.

<sup>62</sup> Frye, *Heritage of Central Asia*, pp. 105–7.

Hence, during Parthian times some Sogdian oases such as Marakanda (Samarqand) were ruled by the Greco-Bactrian kings and came under Bactrian cultural influence as evident in numismatic finds from the third century BC.<sup>63</sup> From 130 to 20 BC Greco-Bactrians were increasingly forced to share power with various nomadic groups. Sometime in the early years of the new millennium, Kujula Kadphises, the prince of the Kushan people, founded the Kushan empire and then took over Kabul from the Parthians, reigning into the lands south of the Hindukush mountains.<sup>64</sup> Although Sogdian cities enjoyed relative independence from Kushan rule, they remained in close contact with Bactria – now called Kushan Tokharistan and could not altogether avoid Kushan cultural influence.

Hellenistic iconography lingered in the Sogdian minor arts such as coinage and pottery from the first to the fourth centuries AD. Indeed, we can credit Sogdians for having brought to China's northwestern frontier in the Han-dynasty era woolen tapestries that feature Greek deities. Such fragments have been unearthed from ancient sites in Lou-lan and Shan-p'u-la.<sup>65</sup> Similarly, we might attribute the Sogdians with having brought to the Tarim Basin cotton textiles with dyed patterns, a specialty of the Indo-Kushans who lived south of the Hindukush Mountains.<sup>66</sup> Similarly decorated cotton or wool textiles apparently vanished after this period of combined Greco-Bactrian and Kushan rule. Instead, Sasanian motifs appeared en masse.

The Sasanid period (224–651) is named after Sasan, a remote ancestor of Ardashir, who in 224 overthrew the Parthians and once again centralized Persia. The period ended when the Arabs killed the last Sasanid king, Yazdgerd III, in 651. During the powerful Sasanid period, because the rulers tried to regain all the territory established by their ancestors, the Achaemenians; they concentrated their vigilance, if not warfare, on the western front, namely the Romans then the Byzantines. This eventually led to the Sasanians' downfall. However, the Sasanians' grip on the eastern part of their empire was much looser than that exercised over the western empire. From 270 AD, when Sasanian governors replaced the Kushan rulers in Bactria (Tokharistan), the Ku-

<sup>63</sup> Azarpay, “Development of the Arts of Transoxiana,” in *Cambridge History of Iran* 3.2, p. 1141.

<sup>64</sup> Frye, *Heritage of Central Asia*, p. 134.

<sup>65</sup> *CH*, pl. 48–49.

<sup>66</sup> A cotton border fragment (either 1st or 2d c. AD) dyed in navy with simple decorative motifs of dots, circles, and curly waves has been unearthed from the burial sites of Shan-p'u-la (near Khotan). Another fragment of cotton, also dyed in indigo, but with much more complex Buddhist imagery achieved by the wax-resist method, was found in the burial sites of Ni-ya (2d c. AD); Mu Shun-ying 穆舜英, *Chung-kuo Hsin-chiang ku-tai i-shu* 中國新疆古代藝術 (Urumchi: Hsin-chiang mei-shu she-ying ch'u-pan-she, 1994), pl. 260 and 271. The provenance of these two pieces has hitherto been unknown. For a discussion of the general diffusion of cotton textiles, see Trombert, “La diffusion du coton.”

shano-Sasanians dominated Bactria and by extension, Sogdiana, but for about one century only. During the third and fourth centuries Sasanian culture spread quickly and pervasively here. The fact that the Sasanian language did not replace the local languages suggests the strength of thriving local cultures. However, by the fifth century, many city-states in Transoxiana formed alliances against nomadic incursions, especially that of the dominant Hephthalites (White Huns). Ironically, this afforded economically strong city-states such as Samarkand, Bukhara, and Ferghana local independence from the Sasanian central state. Sogdiana flourished both economically and culturally from the sixth to the eighth centuries AD. In fact, the city of Panjikent, sixty kilometers east of Samarkand (today known as Afrasiyab) on the left bank of the Zarafshan River, was large and splendid during the seventh and eighth centuries. A unified style of ceramics, and recognized weaving skills emerged throughout Sogdiana.<sup>67</sup>

Because of the “double-rule” situation, by then practiced by both the centralized Sasanian state and the local people in Transoxiana, Sogdian art absorbed many Sasanian elements without adopting everything wholesale. Whereas Sasanian art could globally be described as imperial and Indo-Kushan art as religious, Sogdian art was foremost secular. Again, Frye astutely points out the uniqueness of Central Asian civilization as neither provincial Sasanian nor Chinese but “independent in its own right.”<sup>68</sup> I suggest in this article that Sogdians owed their independent cultural development to both their way of submitting to double rule and to their prominent long-distance trade, which stimulated their imagination and the transference of their culture.

Early in this essay, I showed how rich expatriate Sogdian merchants could have commissioned Sogdian weavers to learn from Chinese weavers in Turfan and make new designs to their liking. In this section we have seen that during the sixth and seventh centuries Sogdians were in fact quite prosperous. They also enjoyed considerable independence from the Sasanian centralized state. Many settled in the colonies along the Silk Road, including Turfan. That they selectively adapted Sasanian culture becomes evident when we examine their textile designs. But, first let us discuss examples of art that combined both Sogdian and Chinese elements. I hope to establish if and how Chinese designs were altered or adapted to Sogdian taste. This in turn helps to distinguish Sogdian designs from those of either the Chinese or the Sasanian, and establishes

<sup>67</sup> Azarpay, “Development of the Arts of Transoxiana,” pp. 1144–45; Alexander M. Belenitskii and Boris Marshak, “L’art de Piandjikent à la lumière des dernières fouilles (1958–1968),” *Arts Asiatiques* 23 (1981), p. 17; and Ierusalimskaja, “Sogdian School of Artistic Silk Weaving,” pp. 5–46.

<sup>68</sup> Frye, *Heritage of Central Asia*, pp. 192–93.

the integrity of Sogdian designs, especially those in textiles.

#### ARTISTIC DIFFERENTIATION: CHINESE, SOGDIAN, AND SASANIAN

##### *Carved Works Showing Banquet Scenes with Musicians and Dancers*

While I have conjectured above that only rich Sogdian expatriate merchants could have commissioned Sogdian craftsmen to weave textiles to their liking, recent scholarship on a Chinese funerary couch (dated late-sixth to early-seventh century; housed in the new Miho Museum near Kyoto) for a deceased Sogdian confirms the possibility of precisely such a type of commission.<sup>69</sup> It is made of eleven marble panels and two gate towers – constituting the back and sides of the couch. The supporting base, also carved, is in another private collection.

The bas-reliefs carved on these Miho panels and gates depict scenes of hunting and feasting, processions and rituals. In particular, two reliefs show entertainers: a marriage feast on one panel and the heavenly and the mundane realms in a double panel. Both entertainers and entertainment reflect extensive cultural integration in the sixth and seventh centuries. On the first panel of a marriage feast, a male Central Asian is performing the popular “Sogdian swirl” 胡旋, accompanied by two groups of five standing musicians, also Central Asian men. On the right side of the second double panel showing the heavenly realm, a female Chinese is doing a Chinese “long-sleeve dance” 長袖舞 or “drum dance” 樂舞. Two groups of five musicians also flank her on either side: Central Asian men behind her right and Chinese women to her left. Instead of standing like musicians in the marriage-feast panel, these two orchestras are seated on mats. Altogether these four sets of quintets play both Central Asian and Chinese instruments. For example, the harp is played by Central Asians in both panels; the lute is played only by the Central Asian quintets in both panels; the Chinese mouth organ called *sheng* 笙 is played by a Chinese female musician only; and transverse pipes are played by both Central Asians and Chinese orchestras in both panels. In addition, some other instruments played by the celestial musicians in the panel of the heavenly realm can be traced to Gandharan (Kushan) origin.

Through painstaking identification, Annette Juliano and Judith Lerner show

<sup>69</sup> Annette L. Juliano and Judith Lerner, “Cultural Crossroad: Central Asian and Chinese Entertainers on the Miho Funerary Couch,” *Orientalism* 28.9 (1997), pp. 72–78.

that individual Chinese and Central Asian instruments are faithfully depicted with their musicians of appropriate cultural origin. I wish to emphasize that the uniqueness of these panels resides in the combined and simultaneous representation of motifs extracted from both Chinese (the long-sleeve dance) and Central Asian (the Sogdian swirl) cultures, while preserving the stylistic integrity of each motif. We should bear in mind this principle of integration when discussing textile designs.

The artistic program of these Miho bas-reliefs leaves little doubt that Sogdians were familiar with Chinese music and dance. Undistorted Chinese cultural elements are harmoniously integrated as motifs into Sogdian pictorial themes of banquets and religious veneration. The popular feasting or banqueting theme also appears as carved bas-relief on a slab of limestone, now housed in the Musée Guimet, Paris.<sup>70</sup> Dated to the mid-sixth century, it is said to have been made by Chinese artisans for a Sogdian merchant who had sojourned in An-yang, the ancient capital of Northern Ch'i (550–577 C.E.). In the central panel of this limestone slab is carved a figure, perhaps royal, riding on a horse; while on both side-panels are engraved elaborate banquet scenes with musicians playing their instruments. This artistic program celebrates possibly a courtly ritual, or possibly, the Sogdian New Year in the early summer.<sup>71</sup>

#### *Painted and Textile Works Showing the "Pearl-roundel" Motif*

Besides the carved representation discussed above, the banqueting theme appears prominently on wall paintings preserved at the three major Sogdian centers of art in the seventh century: Panjikent, Afrasiyab (Samarkand), and Varakhsha (near Bukhara).<sup>72</sup> Banquet scenes have also been discovered elsewhere: Bamiyan, Balalyk Tepe (to the northeast of Balkh), from which comes afore-mentioned tree-leaf motif on a banqueter's garment, and at other sites.<sup>73</sup>

<sup>70</sup> The limestone is dated to the Northern Ch'i era (6th c.); Musée Guimet EO2062; Gies and Cohen, *Sérinde*, pl. 25. It is a part of one funerary monument now dispersed in various museums: the dais and two cornices in the Freer Gallery of Art, Washington; the gates in the Museum für Ostasiatische Kunst, Cologne; two regular slabs in the Museum of Fine Arts, Boston; and finally the one under discussion, the third slab in the Musée Guimet, Paris. See Gustina Scaglia, "Central Asians on a Northern Ch'i Gate Shrine," *Artibus Asiae* 21 (1958), pp. 9–28. Also see Gies and Cohen, *Sérinde*, pp. 57–58 and Boris Marshak, "Le programme iconographique des peintures de la 'Salle des Ambassadeurs' a Afrasib (Samarkand)," *Arts Asiatiques* 49, pp. 5–20.

<sup>71</sup> On Sogdian religious festivals, see Mary Boyce, *Zoroastrians, Their Religious Beliefs and Practices* (London: Routledge and Kegan Paul, 1987).

<sup>72</sup> For a full discussion of these wall paintings, including such pictorial epics as the "Amazon Cycle," and "Rustam Cycle," see Azarpay, *Pictorial Epic in Oriental Art*, pp. 79–125.

<sup>73</sup> *Ibid.*, p. 88; Belenitskii and Marshak, "L'art de Piandjikent," p. 13; Bussagli, *Paintings of Central Asia*, p. 43; and Shepherd, "Sasanian Art," p. 1089.

Very popular among Sogdians, the banqueting theme exemplified genre depictions of the daily life of the urban elite.

The school of art at Panjikent practiced this genre to perfection in the late-sixth and early-seventh centuries. We recall that Panjikent experienced prosperous expansion at this time. Difficult to discern in the Miho marble bas-reliefs and in the Guimet limestone, but obviously visible on the wall paintings of Panjikent, are the costumes worn by the ruling elite, especially the textile designs. Most startling is the much discussed Sasanian motif of the pearl-roundel, here partially visible as trim on the clothing worn by the two seated figures, also appearing on the clothing worn by other seated banqueters in another painting, and elsewhere.<sup>74</sup> These Panjikent depictions date to roughly the seventh or early-eighth centuries.

The Sasanian pearl-roundel, similar in motif and date to the above Panjikent examples, can also be seen on the costumes of emissaries from Chaganiyan (Surkhan Darya valley) and Hephthalite lands at the Sogdian court at Afrasiyab (Samarqand) even on the clothing of some female participants.<sup>75</sup> Yet another important example is the depiction of Tokharian donors found in the Cave of Sixteen Sword Bearers at Kizil (near Kucha).<sup>76</sup> This painting is dated slightly earlier to 600–650 AD.

Sometimes these Sasanian pearl-roundels encircle stylized flora, such as those shown on the clothing worn by the Tokharian donors above. However, a heavenly music-making child with wings, dated to the seventh century, is also the encircled object on the sloped cover of a reliquary box from Kucha.<sup>77</sup>

<sup>74</sup> Azarpay, "Development of the Arts of Transoxiana," p. 1145. Also, see Meister, "Pearl Roundel." For seated figures wearing clothing with pearl-roundel motifs as trim at Panjikent, Sogdian wall painting on Reception Hall VI/1, 6th–7th c., see Belenitskii and Marshak, "L'art de Piandjikent," fig. 9. For seated figures wearing clothing with the pearl-roundel motif at Panjikent, Sogdian wall painting I:10, showing scenes of sacrifice at a fair altar and banquet, see Azarpay, *Pictorial Epic in Oriental Art*, p. 111, fig. 48. For seated figures wearing clothing with the pearl-roundel motif at Panjikent, Sogdian wall paintings XVI:10 showing a frieze of banquet-guests, even on the costumes of enthroned deities at Panjikent, Sogdian wall painting XXIV:2, 8th-c., see *ibid.*, p. 32, fig. 7, pl. 29. For a detailed discussion of Sasanian textiles, see Phyllis Ackerman, "Textiles through the Sasanian Period," in Arthur Pope and Phyllis Ackerman, eds., *A Survey of Persian Art from Prehistoric Times to the Present* (Tokyo: Meiji Shobo; London: Oxford U.P., and Tehran: Mahafzadeh Gp., 1964) 2, pp. 681–715; and Shepherd, "Sasanian Art," pp. 1107–12.

<sup>75</sup> For the costumes and saddle carpets with the pearl-roundel motif at Afrasiyab (Samarkand), Sogdian wall painting on south wall of Room 1, showing emissaries from Chaganiyan and Hephthalite, mid-7th c., see Azarpay, *Pictorial Epic in Oriental Art*, pl. 21, and fig. 50.

<sup>76</sup> *Central Asian Art from the Museum of Indian Art*, pl. 29, MIK III 842 abc.

<sup>77</sup> Tokyo National Museum TC 557; see Gies and Cohen, *Sérinde*, pp. 148–49, no. 99. This particular motif finds its origin in Persepolitan sculptures: a boy with a bird encased in a frame and a griffon encased in a square frame. Both were decorative motifs of Hellenistic origin and common to Sasanian art; Herzfeld, *Iran in Ancient East*, pp. 298–99, fig. 391.



Also adorning the round box are bands of encircled flora above a procession of figures who wear clothing similarly styled to those seen on the above-mentioned paintings. Even the head of Buddha is shown with such a roundel in place of the nimbus (or disc), painted on paper dated to the ninth to the tenth century and discovered in Turfan earlier this century by Grünwedel.<sup>78</sup>

These exceptions aside, most Sasanian roundels are famous for encircling either a bird as in the wall painting of Cave 60 at Kizil or a beast.<sup>79</sup> This bird is in fact a duck adorned with royal ribbons around the neck (*farn*) and holding a necklace in the beak.<sup>80</sup> Variations of the duck with the royal ribbons seem to have been especially popular.<sup>81</sup> The earliest imagery of an encircled duck adorns the garment worn by a figure carved as rock relief at Taq-i-Bustan, a grotto of Khusrau II, who reigned at the end of the sixth century.<sup>82</sup> Encircled animals vary; they include boar, deer, horse, peacock, and so on. Their composition has caused scholarly debate.<sup>83</sup> Indeed, despite its commonly acknowledged Sasanian origin, the roundel encircling flora, fauna, or other decoration can also be traced to the earlier designs of roof tile-ends in the Han era of China.<sup>84</sup>

Among silks excavated from Turfan, many feature similar pearl-roundels

<sup>78</sup> See Gies and Cohen, *Serinde*, pl. 142; MIK III 4952 b.

<sup>79</sup> *Central Asian Art from the Museum of Indian Art*, pl. 31; MIK III 8419.

<sup>80</sup> The ribbons can be traced to early-Sasanian depictions of the long floating ends of the taenia that encircled the crown worn by royalty; e. g., Shapur Papkan, the elder brother of Ardashir I (the founding emperor of the Sasanid dynasty) and their father, Papak in the graffiti at Persepolis. All representations of Sasanid royalty show similar head-dress of a diadem with long, flying ribbons. See Herzfeld, *Iran in Ancient East*, pp. 307–8, figs. 401–2 and pp. 320–21, pl. 121. In fact, a rock relief at Taq-i-Bustan clearly shows the investiture of king Ardashir II (379–83) where “the king (centre) is given a royal diadem by Ahuramazda, while Mithra stands behind the king in a supporting role”; John Curtis, *Ancient Persia* (Cambridge, Mass.: Harvard U.P., 1990), p. 64, pl. 76. A very similar motif has been found on a textile fragment (woven in the weft-faced compound twill) unearthed from Tu-lan, Ch’ing-hai province, in the early 1980s. See Hsü Hsing-kuo and Chao Feng “Silk Textiles Excavated at Dulan,” trans. Bruce Doar, *China Archaeology and Art Digest* 1.4 (1997), p. 15, fig. 4; textile field no. DRM1PM2: 160.

<sup>81</sup> See Amy Heller, “An Eighth Century Child’s Garment of Sogdian and Chinese Silks,” in Knight, ed., *Chinese and Central Asian Textiles*, pp. 220–22; and James C. Y. Watt and Anne Wardwell, *When Silk Was Gold: Central Asian and Chinese Textiles* (New York: The Metropolitan Museum of Art, 1997), cat. nos. 3 and 5.

<sup>82</sup> Shepherd, “Sasanian Art,” p. 1110 and fig. 111c. See also Domiyō Mihoko, “Late Sasanian Textile Designs in the Reliefs at Taq-i-Bustan,” in *Bulletin de Liaison du Centre International des Etudes des Textiles Anciens* 94 (1997), pp. 19–27.

<sup>83</sup> Shepherd, “Sasanian Art,” pp. 1109–12. A broad survey of this motif is in Elizabeth Owen, “A Stitch in Time: The Pearl-border Medallion, from Persia to Japan,” in the proceedings of the Third Silk Road Conference at Yale U., 1998.

<sup>84</sup> Liu Ch’ing-chu 劉慶柱, “Chan-kuo Ch’in-Han wa-tang yen-chiu” 戰國秦漢瓦當研究, in Chung-kuo she-hui k’o-hsieh yüan k’ao-ku yen-chiu-so 中國社會科學院考古研究所, ed., *Han Tang yü pien-chiang k’ao-ku yen-chiu* 漢唐與邊疆考古研究 (Peking: K’o-hsieh ch’u-pan-she, 1994), p. 1, pp. 1–30.

encircling flora or fauna. Quite a few are Chinese export silks with intricate designs. The most stunning is the fragment with a figure leading a camel labeled with the woven words “barbarian king” 胡王, dated to the sixth century.<sup>85</sup> With great economy, this motif summarizes the most important activity along the Silk Road: caravans bearing tribute to the ruling elite for the purposes of trade.

### *Chinese, Sogdian, or Sasanian Textiles?*

Among various studies of excavated Turfan silks, Po Hsiao-ying’s 薄小瑩 stylistic analysis of silks with the pearl-roundel motif stands out.<sup>86</sup> She has systematically tabulated fifty samples by criteria, such as the subject of the encircled motif, further embellishment of the encircled motif, if any, and the decoration in the background joining these roundels. Thus, significantly, she identifies twelve fragments – her Type II group (not the same as our Group A) – as different from both the Chinese and the Sasanian textiles that also feature the similar roundel motif. Relying further on the dating of her Type II group textiles as the mid-seventh to early-eight centuries, she suggests that they could have been made in Central Asia. This is an important attribution, but she did not provide all the necessary evidence. I propose to amend her analysis to show first how the Type II and our Group A textiles are related. This will then in turn confirm that her Type II textiles were indeed made in Central Asia and that they followed the innovation of our Group A textiles.

In studying textile fragments, it is quite important to use both stylistic and technological analyses. Po Hsiao-ying argues that her Type II fragments differ from the Chinese exported varieties for stylistic reasons. Whereas Chinese export silks show symmetric and balanced animal motifs, often with additional curvilinear vines and flowers; the Type II group displays single, asymmetric designs, such as a boar’s head, and usually without further background embellishment. Yet, to this must be added the observation that the stylistic distinction (for example, single rather than paired animals) of her Type II characterizes textiles woven in Turfan after weavers mastered new techniques by making the sorts of pattern used in the Group A silks.

Moreover, fragments of the Type II group that are woven in the warp-faced compound twill, with jagged teeth outlining the roundels, are less dense-

<sup>85</sup> Krishna Riboud, “Some Remarks on the Face-covers (*Fu-mien*) Discovered in the Tombs of Astana,” *Oriental Art* NS 23.4 (1977), p. 442, and Wu, “Shu-chin,” p. 71.

<sup>86</sup> See Po, “Lien-chu-wen,” pp. 311–40, table 1, which analyzes fifty samples by field number, main motif, weave structure, the author’s typology, date of other excavated artifacts, and publication source.

ly woven than the Chinese silks with similar pearl-roundels woven in the (older) warp-faced compound tabby. Evidently, both the sparseness and the jagged aspect indicate technical imperfection when compared to the smoother, finer curvilinear representation in Chinese export silks. This technical imperfection results from the critical transition from weaving warp-faced compound tabby, a technique the Chinese mastered in the Han, to that of the (newer) warp-faced compound twill. In fact, the latter technique is used in the “chess-board” piece of Group A, discussed above. There, the jagged teeth, because of the difficulty of the weave, is in fact an advancement over the warp-faced compound tabby of tree-leaves.

After a systematic comparison of the Type II group with Sasanian samples that also feature the pearl-roundel, Po Hsiao-ying claims that animal motifs prevalent among in Type II samples are missing among Sasanian textiles and vice versa. But this argument falters in the light of counter examples from other media. Even though the Type II large-horned deer is absent from the Sasanian repertoire, the deer is a prominent motif of the Sasanian deer-hunt theme represented on rock carvings at Taq-i-Bustan and on Sasanian silver ranging from the third to the fifth centuries. Furthermore, the ibex (related to the deer both visually and as object of hunt) has been woven in wool tapestry and additionally, the boar and the horse have also been woven as silk west-faced compound twill.<sup>87</sup>

Po Hsiao-ying further argues that whereas true Sasanian pearl-roundels often feature the *senmurv*, it is conspicuously absent among her Type II samples. The *senmurv* is a mythical creature with a dog's head, leonine paws, a peacock's tail, and a palmette on the neck. Vesta Sarkhosh Curtis traces the *senmurv* (Simurgh) to the earlier legendary bird Saena (Pahlavi *Senmurv*), a great falcon: “It sits on top of the Tree of All Seeds and causes the seeds to scatter by beating her wings.”<sup>88</sup> According to Boris Marshak, the *senmurv* symbolizes *farn*, special royal luck, of the Kayanids, a legendary dynasty regarded as the ancestor of the Sasanids.<sup>89</sup> Contrary to Po Hsiao-ying's categorical deni-

<sup>87</sup> On the “deer” rock-carvings, see Po, “Lien-chu-wen,” p. 330; Herzfeld, *Iran in Ancient East*, pp. 332–37; fig. 419 and pl. 129; and Prudence Harper, “Sasanian Silver,” in *Cambridge History of Iran*, 3.2, pl. 116, 117, and 120. The woven ibex is kept at The Art Gallery of Yale University, accession no. 1937.4604. For the boar and horse, see Shepherd, “Sasanian Art,” pl. 110b-c, and 112a-b.

<sup>88</sup> Vesta Sarkhosh Curtis, *Persian Myths* (London: British Museum, 1993), pp. 21–22.

<sup>89</sup> Marshak's notes concerning a silver dish decorated with a scene of Prince Varahran hunting, and a silver ewer with *senmurvs*, in Vitaly Suslov, ed., *Great Art Treasures of the State Hermitage Museum, St. Petersburg* (St. Petersburg: Harry N. Abrams, 1994) 2, p. 412, no. 397; accession no. S-24, and pp. 414–15, no. 400; acc. no. S-6.

al, this important Sasanian motif does show up in Sogdian painting on the west wall of Room One at Afrasiyab (Samarkand) dated to the mid-seventh century. The robe worn by Vargoman, ruler of Samarqand (identified by inscription), prominently features the *senmurv* as a repeated pattern.<sup>90</sup> The *senmurv* is equally visible on a man's emerald green silk caftan excavated from Moshchevaia Balka, a northern Caucasian burial ground (on the upper reaches of the Bolshaya Laba River) dated to the eighth and ninth centuries.<sup>91</sup> In fact, the painted robe resembles the real caftan in both tailoring and textile design. If the painter could have depicted the weave structure, no doubt it would have been the west-faced compound tabby or twill.

Rather than dismissing the possibility of Sogdians borrowing Sasanian motifs, I argue that Sogdians adopted motifs like the *senmurv* or the boar's head from the Sasanians but used them differently. My reasoning follows the persuasive evidence in their respective art. Even though both Sasanian rock reliefs and Sogdian wall paintings show similarities in subject matter (heroes and deities), they differ significantly in form. Besides the different media used, in contrast to the Sasanian artists who portrayed heroes and deities in non-narrative tableaux, Sogdian artists represented similar subject matter in continuous pictorial epics.<sup>91</sup> It is the same for other subject matter. Let us here briefly recall that both Chinese and Central Asian musical instruments are faithfully depicted on the Miho marble bas-reliefs. They show that the Sogdian artistic uniqueness lies in the simultaneous representation of different cultural motifs. If Chinese elements (such as the long-sleeved female dancer) can be extracted from a purely Chinese context and then integrated into a Sogdian context (a marriage feast), so too can Sasanian artistic elements such as the *senmurv*, the deer, the boar, and so forth be integrated into a Sogdian context.

Just as the Chinese export silks are more densely woven than those of the Type II group, Po claims similarly that this holds true for the Sasanian weaves. However, she recognizes the counter example in the textile with a boar's head.<sup>92</sup> Indeed the latter has a warp count of 36 per cm (three series of warps) when that of fragments showing the deer is around 24 per cm (also three).<sup>93</sup>

My explanation is that better experienced weavers would produce textiles of higher warp count (for example, the boar's head) while novices would

<sup>90</sup> On Vargoman's robe, see Azarpay, *Pictorial Epic in Oriental Art*, p. 119, fig. 51.

<sup>91</sup> For the robe excavated from Moshchevaia Balka, see Suslov, ed., *Hermitage*, pp. 464–69, no. 488, inv. no. K3-6584. Another silk robe (Yüan era), with a roundel encircling paired birds, was excavated in 1953 at Alar, in Jo-chiang county, Sinkiang, and kept in the Palace Museum in Peking; see *CH*, p. 179, pl. 132.

<sup>92</sup> Po, “Lien-chu-wen,” pp. 331, 338, n. 19.

<sup>93</sup> Wu, “Han-T'ang ssu-chih-p'in,” table 1, items 26, 27, 31.

begin by weaving textiles of lower warp count (the deer). Despite discrepancy in the warp count, which I have reconciled above, Po Hsiao-ying considers them Central Asian and not Sasanian by means of her dating scheme. We recall that precisely during this time period Sogdiana experienced prosperous expansion, and that Sogdians traveled extensively and settled at strategic oases along the Silk Road. Thus, Sogdian merchants who bought and sold raw silk yarn and woven Chinese silks also spread them. Not familiar with textile technology, Po Hsiao-ying has overlooked the critical factor of the inner warp and that of the inner weft. We recall that the warp-faced silk stocking of Ni-ya made in the second century already contained an inner weft whose twisting is barely visible, that is, ruled silk. It must now be emphasized that most traditional Chinese silks are woven with barely twisted silk yarn as warp and weft.

In examining several groups of Sasanian silks, Phyllis Ackerman detected variations of the inner warp. Dorothy G. Shepherd further pursued this point exhaustively.<sup>94</sup> What is the significance of an inner warp here? In that the securely identified Sasanian silks are weft-faced (*wei chin* 緯錦), their weave structure differs fundamentally from the warp-faced (*ching chin* 經錦) Ni-ya silk stocking (as well as that of the similarly structured Group A tree-leaves). Whereas the inner weft is used for patterning in the warp-faced compound tabby as in the Ni-ya silk stocking and Group A silks, it is the inner warp that is used only for patterning in the weft-faced compound tabby or twill as in the Sasanian silks.<sup>95</sup> In particular, Ackerman first noticed that the group with the boar's head has "less heavy interior warps" than those of other groups. But, these "less heavy inner warps" resemble those found on four pieces from Transoxiana (encompassing the Sogdian homeland): "single, and instead of being rather thick and heavily sized, are almost hair-fine and soft."<sup>96</sup>

This kind of silk yarn is what characterized ancient Chinese silk weaving. Although one could argue that western Asian weavers could simply use unspun Chinese silk as warp in their weaving and achieve this result, this is improbable, as shown by other Sasanian silks that contain heavier double or even triple, twisted silk yarn as warps. Only weavers who had seen Chinese

<sup>94</sup> Ackerman, "Textiles," pp. 694–701. Dorothy G. Shepherd, "Zandaniji Identified?" in Richard Ettinghausen, ed., *Aus der Welt der islamischen Kunst: Festschrift für Ernest Kühnel zum 75 Geburtstag am 26.10.1957* (Berlin: 1959), pp. 15–40; idem, "Medieval Persian Silks in Fact and Fancy: A Refutation of the Riggisberg Report," *Bulletin de Liaison du Centre International d'Etudes des Textiles Anciens* 39–40 (1974); idem, "Zandaniji Revisited," in Mechtild Flury-Lemberg and Karen Stolleis, eds., *Documenta Textilia: Festschrift für Sigrd Müller-Christensen* (Munich, 1981), pp. 105–22; and idem, "Sasanian Art." Both James C. Y. Watt and Anne E. Wardwell, *When Silk Was Gold*, pp. 22–23, support Shepherd's differentiation between twisted and untwisted warps and its significance.

<sup>95</sup> Hsia, "Ku-tai ssu-chib-p'in," p. 92.

<sup>96</sup> Ackerman, "Textiles," pp. 703 and 705.

artisans using "hair-fine" silk for the warp of their splendid, complex silks, for example the tree-leaves fragments, would have had the confidence to produce the same. That is, they had probably seen a loom technology (horizontal loom with drawing mechanisms) in operation that differed from their own (warp-weighted vertical looms). The immigrant Sogdian weavers who lived and worked with the Chinese in Turfan had this chance.<sup>97</sup> Assume that they learned to make the red-and-white "chess-board" using the traditional Chinese warp-faced compound tabby structure. After mastering this technique, they then experimented with the warp-faced compound twill and wove the navy-and-white "chess-board" fragment. From there they would have gone on to weave the hexagons in the weft-faced compound tabby. Later examples of Sogdian textiles woven in the weft-faced twill can only follow in this logical progression.<sup>98</sup>

If technologically, the existence of hair-fine, untwisted inner warp indicates Sogdian weaving in Turfan, stylistically too, the boar's head (as opposed to the Sasanian boar-hunt motif) points to the Sogdians. They might well have used this motif as a metonymical device representing a minister's honesty. According to a Sogdian myth (and such myths probably synthesized stories and rituals from numerous sources), the Georgian king sent a boar's head to his chief minister at the New Year's banquet. As in a ritual, the minister had to eat part of the boar's head before making his New Year's call on the sovereign. The practice was sometimes extended to other important members of the court, perhaps rich merchants. Anthropologically, this explanation would make perfect sense. Also current among the Sogdians was the myth that when the deity, Verethraghna, went to earth to punish liars, he assumed the form of a boar among other things.<sup>99</sup> Perhaps a bit of boar's meat would encourage honesty in an official. The woven boar's head within a pearl-roundel is preceded by its sculpted representation at Taq-i-Bustan and painted version among Group D paintings at Bamiyan.<sup>100</sup>

<sup>97</sup> In fact, they were not the only ones. Chinese weavers were purportedly seen in Persia around this time; Watt and Wardwell, *When Silk Was Gold*, pp. 23–24. However, little material evidence survives to show any contribution to weaving developments.

<sup>98</sup> *Ibid.*, cat. nos. 1–5.

<sup>99</sup> Curtis, *Persian Myths*, p. 13. For anthropological models of analysis to understand the active meaning of symbols, see Marshall David Sahlins, *Historical Metaphors and Mythical Realities: Structure in the Early History on the Sandwich Islands Kingdom* (Ann Arbor: U. of Michigan P., 1981). Particularly with regard to textiles, see Ruth Barnes, "Textile Design in Southern Lombok: Tradition and Change," in Jeremy Coote and Anthony Sheldon, eds., *Anthropology, Art, and Aesthetics* (Oxford: Clarendon Press, 1992), pp. 160–78, and with regard to food (butter), see Dan Sperber, *Le symbolisme en général* (Paris: Hermann, 1974).

<sup>100</sup> Benjamin Rowland, *The Art and Architecture of India* (Penguin, 1977[1953]), p. 197; also Owen, "Stitch in Time."

Given the importance of the banquet theme (as shown above), one can well appreciate the economy of the boar's head as a metonymical device in a textile. Indeed, in the same painting showing Vargoman, king of Samarkand, we see a third person wearing a robe with pearl-roundels encircling a single boar's head. A textile fragment with such a motif authenticates the depiction.<sup>101</sup> There might have indeed existed a hierarchy of animals, with the *senmurv* reserved for the king, the boar for his minister, and possibly, the duck for the wealthy expatriate merchants. For example, in addition to the royal aspect of the *senmurv* (originally the king of birds) that the Sasanians clearly valued, the Sogdians could have also equally cherished the *senmurv's* capacity to scatter the seeds of the legendary Tree. Indeed, the Sogdians scattered themselves along the Silk Road and saw the sprouting of their communities that spread their culture.

With such evidence in hand, it is possible to assert that Po Hsiao-ying's Type II silk fragments were made in Central Asia and by Sogdians in Turfan in the seventh century. They could not have been either Sasanian or Chinese. Furthermore, her Type II samples developmentally follow the Group A silk fragments. The more difficult motifs (the boar's head) cannot have been woven before the simpler motifs (the "chess-board") were mastered in the new weaving techniques.

A final piece of evidence corroborating Sogdian manufacture is a warp-faced compound-twill silk fragment with columns of crescent moons and a foreign script within them. Brought back to Japan by the Ōtani Mission in 1912, it is now kept in the Ryūkyō University 龍谷大學 Library in Kyoto.<sup>102</sup> Wu Min notes that this textile was not excavated from the graves of Astana but from a Buddhist site (possibly the Thousand Buddha Cave) of Turfan. Its dating is either sometime between the ninth and tenth centuries or sometime between the eleventh and twelfth centuries. The script is either Uighur or Arabic.<sup>103</sup> This would correspond with the Uighurs' taking of Turfan from the Chinese after 903 AD. Yet, because of the Sogdians' ability to both survive foreign domination and absorb foreign cultures, they often incorporated new motifs as the case here would suggest. The style is totally foreign to Chinese designs. Even though the foreign script needs deciphering,<sup>104</sup> the crescent-

moon motif can be understood as a metonymical representation of the lunar divinity usually shown with the hero Makh in Panjikent genre paintings of heroic exploits. Stylistically, the simple moon shape (woven in warp-faced compound tabby) is the middle step bridging curvilinear motifs such as the roundel (also woven in the same structure) and angular hexagons (woven in weft-faced compound tabby) and, a logical sequence of increasing technical difficulty. Moreover, technologically, the warp-faced compound twill of this crescent-moon piece is the transitional structure from that of the warp-faced compound tabby to that of the weft-faced compound twills (as in Sasanian silks). Above all, this crescent-moon textile has a barely twisted inner warp in silk,<sup>105</sup> the salient feature of the Chinese *chin* that we have encountered back in the Han dynasty.

Already in the second century Sogdians had come to northwest China. An ancient letter of unclear date shows that they came to sell fine linen and wool carpets in Tun-huang and Chin-ch'eng. West Asians were making beautiful woolen fabrics at this time, as significant finds of this period can attest. Moreover, such woolens greatly impressed the Han court as tribute.<sup>106</sup> However, we have no evidence that the Sogdians actually settled down as migrants as they did later in the sixth and the seventh centuries. This would account for both why Chinese weavers in Han China proper wove textiles, such as the Niyā silk stocking for export (and other excavated items in, for example, Palmyra and Antioch that bear Chinese words), and why the unusual silks (Group A) did not appear until after the Sogdians began to settle and live beside the Chinese.

## CONCLUSION

We can now reconstruct what had happened. Owing to the unique circumstances that brought Sogdians en masse to Turfan, wealthy Sogdian merchants who escaped Chinese state extractions had the surplus capital to finance the weaving of new patterns. At the same time, Sogdian craftsmen and laborers, who lived and worked alongside the Chinese, learned how to weave a peculiarly Chinese weave, the warp-faced compound tabby. For example, one

<sup>101</sup> Shepherd, "Sasanian Art," pl. 110 a, and 110b, *Art*, I, 5, 03.

<sup>102</sup> Tatsumura Ken 龍村謙, "Ōtani tanken dai shorai no kodai kinryō rui" 大谷探險隊將來の古代錦綾類, in *Saiki bunka kenkyū* 西域文化研究 6 (1963), p. 26, pl. 1, and fig. 5.

<sup>103</sup> Personal communication from Wu Min, November 28, 1997.

<sup>104</sup> Chao Feng mentions a similar textile, apparently embroidered with ancient Arabic script that Ch'en Ta-sheng has translated as "the sole victor (*farid fath*)," written in the ancient Kufic style of calligraphy of the first century of Islam; Chao Feng, "Foreign Deities in Wei-T'ang Wo-

ven Silks," trans. Bruce Doar, *China Archaeology and Art Digest* 1.4 (1997), p. 10. Sakamoto Kazuko 坂本知子, "Senroku shiryō ni tsuite" 織染資料について, in *Ōtani tanken dai shūshū saiki bunka shiryō to kanren shiryō* 大谷探險隊収集西域文化資料と關聯資料 (Kyoto: Ryūkyō U., 1996) 5.

<sup>105</sup> Tatsumura, "Ōtani tanken dai," p. 26.

<sup>106</sup> T'ang, *Chung-kuo nung-shih kao*, p. 304. Harmatta's translation of the letter says "hemp," but it is more likely linen from Egypt; "Sogdian Sources," pp. 158-59.

can easily imagine Chinese weavers setting up looms for weaving the denser *chin* of tree-leaves, while Sogdian weavers tried out the same technique on looms dressed for the less dense *chin* of the red-and-white “chess-board” patterns. Indeed one tattered document shows that it took three years of learning before one became a weaving craftsman.<sup>107</sup> As the Sogdian weavers improved, they moved on to weaving the structurally much more complex warp-faced compound twill as in the navy-and-white “chess-board” fragment. Having succeeded at this, using the same structure, they next wove the more complex motifs of pearl-roundels with either the boar’s head or the deer within it. They also experimented with the structurally still more complex weft-faced compound tabby by making simple hexagons at first. Before long, they wove weft-faced compound twill. Again, initially, they could only manage stiff representations of simple geometric patterns and then slightly more complex design of ducks, and still more difficult motifs of hunters and so on as well as those with elaborate roundel motifs.<sup>108</sup> This was, of course, only one side of the story. Chinese weavers, as further research might establish, also learned from the Central Asians, in particular, weft-patterning techniques.

The identification of Sogdian weavers as the innovators of unusual silks prompts us also to ponder the role that indigenous Chinese may have played in advancing textile technology. Located on the northwest frontier, Turfan witnessed the intermingling of Han Chinese and Central Asian cultures. Buddhist art of the seventh century shows that both the Chinese and the Indo-Iranian (Kushano-Sasanian) styles flourished together in historic Turfan, that is, Kao-ch’ang.<sup>109</sup> This should facilitate the identification of hybrid possibilities or, in the case of textiles, other developments in technology. Undoubtedly, as commercialization in China proper grew, Chinese craftsmen who had Chinese financial backers might also have experimented. However, their products, designed for the Chinese market, cannot be as easily detected as are textiles made by and for Sogdians that feature distinct, non-Chinese cultural references. A social profile of indigenous textile innovators in China proper awaits the required research.

<sup>107</sup> Wu, “Shu chin,” p. 99.

<sup>108</sup> For textiles with the hunter motif, etc., see Watt and Wardwell, *When Silk Was Gold*, in the order of increasing stylistic complexity, cat. nos. 4, 3, 5, 1 and 2. For textiles with elaborate roundels, see those in Po Hsiao-ying’s Type II group.

<sup>109</sup> See Chhaya Bhattacharya, *Art of Central Asia: With Special Reference to Wooden Objects from the Northern Silk Route* (Delhi: Agam Prasad, 1977).

#### APPENDIX: Categorization of the Group A Fragments

The term *chin* refers to polychrome silk, but not specifically to its weave structure. The earliest *chin* was woven in warp-faced compound tabby. Both the warp-faced compound tabby and the warp-faced compound twill are strictly speaking *ching chin* (warp-faced *chin*), to highlight the patterning in the warp. When the patterning was made in the weft, as in the still more complex weft-faced compound tabby and weft-faced compound twill, they are called *wei-chin* (weft-faced *chin*). The Chinese term *chin* is usually mistakenly translated as “brocade” rather than “brocaded silk,” which technically means silk with patterning in the weft. This wrong translation hardly matters when one is simply describing a colorful silk. However, when analyzing textile style and technology it is best to use the transliteration “*chin*” and indicate the precise weave structure where necessary.

#### List of Technical Terms in Weaving

2/1 (or 3/1) etc. left is the no. of weft picks over which warp end is passed; right is the no. of picks warp end goes under

<i>chang</i> 張	sheet of textile
<i>ch’i</i> 綺	weft-faced 3/1 twill
<i>chi-t’ou</i> 機頭	loom-head, first part of textile woven on loom
<i>chia-wei</i> 夾緯	inner weft
<i>chih-ch’eng</i> 織成	silk tapestry weave; coarser than another such weave called <i>k’o-ssu</i>
<i>chin</i> 錦	silk weave; warp-faced or weft-faced compound tabby or twill
<i>ching-chin</i> 經錦	silk weave; warp-faced compound tabby or twill
<i>ching-hsi-wen</i> 經細紋	silk weave; compound warp rep
<i>chuan</i> 絹	silk tabby
<i>li-chi</i> 立機	vertical loom
<i>li-ching</i> 裡經	inner warp
<i>lien</i> 練	cooked but undyed silk tabby
<i>lien-chu-wen</i> 連珠紋	pearl-roundel motif
<i>ling</i> 綾	silk twill
<i>lo</i> 羅	silk gauze
<i>p’i</i> 匹	bolt of textile (about 12 m)
<i>p’ing-wen</i> 平紋	tabby
<i>pu</i> 布	cloth woven with plant fibers like hemp or cotton
<i>se-ssu</i> 色絲	dyed silk yarn
<i>sheng-ssu</i> 生絲	raw silk yarn
<i>shuang-mien chin</i> 雙面錦	silk double-weave
<i>t’i</i> 縐	silk of thick tabby
<i>tuan</i> 緞	silk satin
<i>wei-chin</i> 緯錦	silk weave; weft-faced compound tabby or twill

The Group A polychrome silks (*chin*) under discussion can be subdivided into three types of motif.

6th-7th-c. fragments of simple geometric shapes (e.g., hexagons), woven in weft-faced compound tabby

1. *Chin* silk with the *chi* 吉 (auspicious) motif, l=19.3; w=12 cm; Turfan Museum: 72 TAM 169; source: *Turfan Museum* (Urumchi: Sinkiang Fine Arts and Photo Publishing House, 1992), p. 73, pl. 142;
2. *Chin* silk with the combined turtle and *wang* 王 (king) motif; l=30.5; w=31.5; excavated with tomb epitaph dated T'ang-dynasty Yung-hui reign-year 6 (655 AD), Sinkiang Museum: 66 TAM 44: 25; source: *SCCL*, pl. 31; and
3. *Chin* silk with elliptic loops and the combined turtle and *chi* (auspicious) motif; l=19.5; w=25-58; Sinkiang Museum: 72 TAM 169: 28 (see fig. 1, below); source: *Hsin-chiang ch'u-t'u wen-wu*, p. 52, pl. 81. Altogether eight similar pieces have been unearthed from the Kao-ch'ang area.

6th-7th-c. fragments of "chess-board" (*ch'i-chü* 棋局) design

4. Navy and white fragment; l=23; w=13.4 cm; excavated with a contract dated to the 7th c., woven in warp-faced compound 2/1 twill; Sinkiang Museum: 69 TAM 139: 1 (see fig. 2, below); source: *SCCL*, pl. 30;
5. Red and white fragment; l=15; w=8 cm; excavated with a document dated to Kao-ch'ang Yen-ch'ang year 28 (588 AD), woven in warp-faced compound tabby; Sinkiang Museum: 59 TAM 308: 029; source: Wu, "Han-T'ang ssu-chih-p'in," pp. 63-72; and
6. Fragment of white and pink patterns on navy ground, Ast. ix.02; l=26; w=7 cm; weave and date uncertain; source: Stein, *Innermost Asia* 5, pl. LXXIII, and 2, p. 705.

6th-7th-c. fragments of tree-leaves (totaling 8); Astana tombs 169, 170, in warp-faced compound tabby

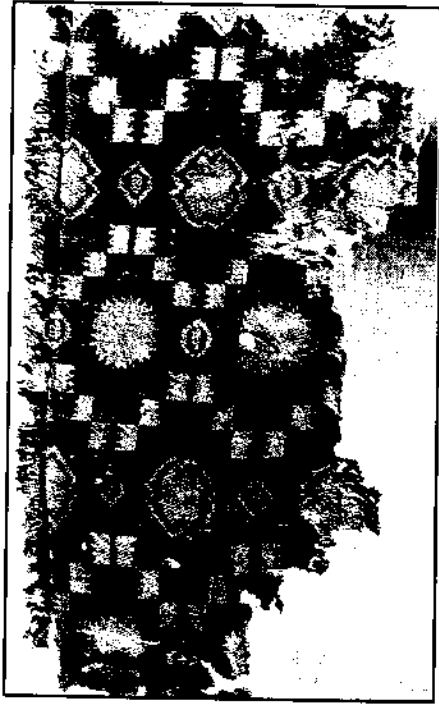
7. Face-cover (*fu-mien* 覆面) with tree-leaf motif; l=22.4; w=14.3 cm; excavated with tomb epitaph dated Kao-ch'ang Chang-ho year 13 (543); Sinkiang Museum: 72 TAM 170: 38; source: *CH*, p. 103, pl. 65;
8. Fragment with tree-leaf motif; l=22; w=21 cm; excavated with tomb epitaph dated Kao-ch'ang Ho-p'ing year 1 (551); Sinkiang Museum: 59 TAM 303: 15 (see fig. 3, below); source: *CH*, p. 104, pl. 66, reconstructed drawing;
9. Face-cover (*fu-mien*) with tree-leaf motif; l=27; w=16 cm; Turfan Museum: 72 TAM 169; source: *Turfan Museum*, p. 72, pl. 138; and
10. Fragment with tree-leaf motif; l=6.8; w=20 cm; Sinkiang Museum: 59 TAM 303: 2; source: *SCCL*, pl. 23.

#### LIST OF ABBREVIATIONS

CH	Wu Min 武敏, <i>Chih-hsiu</i> 織繡
CTWS	<i>T'u-lu-fan ch'u-t'u wen-shu</i> 吐魯番出土文書
HCKKSSN	<i>Hsin-chiang k'ao-ku san-shih-nien</i> 新疆考古三十年
SCCL	<i>Ssu-ch'ou chih lu Han T'ang chih-wu</i> 絲綢之路漢唐織物
TAM	T'u-lu-fan A-ssu-t'a-na mu-tsang 吐魯番阿斯塔那墓葬; prefix is yr. of excavation; suffix is tomb no.; after colon is item no.

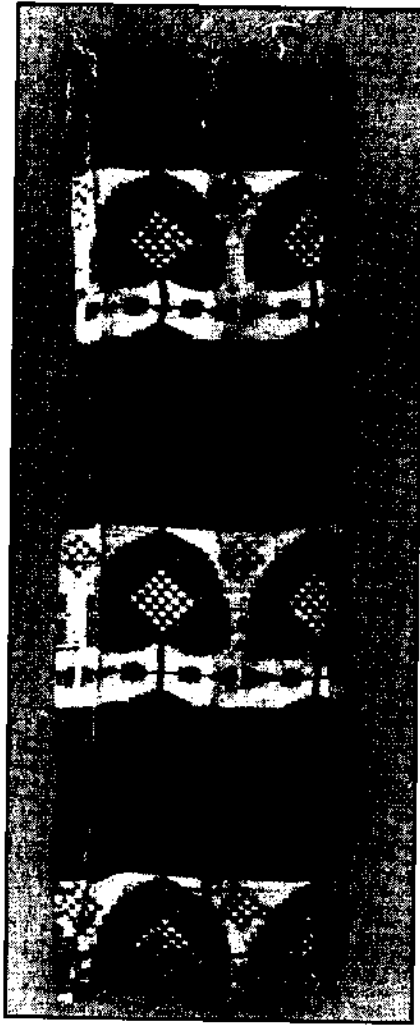


Figure 1. Detail of frag. with word "chi," loops, and turtle (in hexagons). Astana Tomb 169, Turfan (Uighur Aut. Region of Sinkiang). Excavated with tomb epitaph dated as Kao-ch'ang, Chien-ch'ang 4 (558). *Chin* silk; weft-faced compound tabby; l=19.5 cm; w=25-28; Sinkiang Museum, 72 TAM 169:28; after *Hsin-chiang ch'u-t'u wen-wu*, pl. 81.



*Figure 2.*

Textile frag. with "chessboard" motif. Astana Tomb 139, Turfan (Uighur Aut. Region of Sinkiang). Excavated with employment contract datable to 7th c. *Chin* silk; warp-faced compound twill; l=25 cm; w=13; Sinkiang Museum, 69TAM 139:1; after *SCCL*, pl. 30.



*Figure 3.*

Textile frag. with tree-leaf motif. Astana Tomb 303, Turfan (Uighur Aut. Region of Sinkiang). Excavated with tomb epitaph contract dated Kao-ch'ang, He-p'ing 1 (551). *Chin* silk; warp-faced compound tabby; l=20 cm; w=6.5; Sinkiang Museum, 59TAM 303:15; after *SCCL*, pl. 23.