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## Salon du Tapis d'Orient

The Salon du Tapis d'Orient is a moderated discussion group in the manner of the 19th century salon devoted to oriental rugs and textiles and all aspects of their appreciation. Please include your full name and e-mail address in your posting.

### Rugs pictured in 5th to 14th century Asian palace-murals and manuscrit paintings.

by Pierre Galafassi

Most of the earliest examples of rug pictures are found in central asian murals from the 5th to the 12th century CE and in 12th-14th century Chinese manuscripts describing nomads. Some pictures show credible ancestors of much later extant rugs, while other pictured rugs died without descent.

While the sedentary Han- and Tan'g Empires did not have much use, nor interest for rugs (1) (2), for their northern- and western nomad neighbors of indo-european and turko-mongol stock, felt- and pile carpets were esencial in daily life. They also played an important social role, as the 5th century BCE Pazyryk rug demonstrated.

Some nomad ethnic groups, (like the 7th century BCE Persa tribes which created the Achaemenid empire, or some Turko-Mongol nomad confederations which, after the 8th century CE, conquered large settled kingdoms west of the Pamir- and Hindu-kush ranges) did keep their rug-making traditions even when they became partially settled.

Logically, rugs were probably also appreciated and produced in some commercial hub-cities situated near nomad territories.

Xuanzang, a buddhist monk who traveled to India in search of sacred texts, wrote an interesting report of his journey, mentioning carpet-weaving cities (4):

He left Tan'g-ruled China in 629 CE, took the northern branch of the silk road (southern piedmont of the Tian Shan range), went through the territory of the Göktürk Khanate, turned south, crossing Sogdia near Samarkand, then through the Hindukush and Afghanistan and reached India, where he stayed until 643 CE visiting Buddhist monasteries, before walking back to China, this time via Kashgar and the southern branch of the silk road.

FIG 1. Timeline of central-asian civilizations

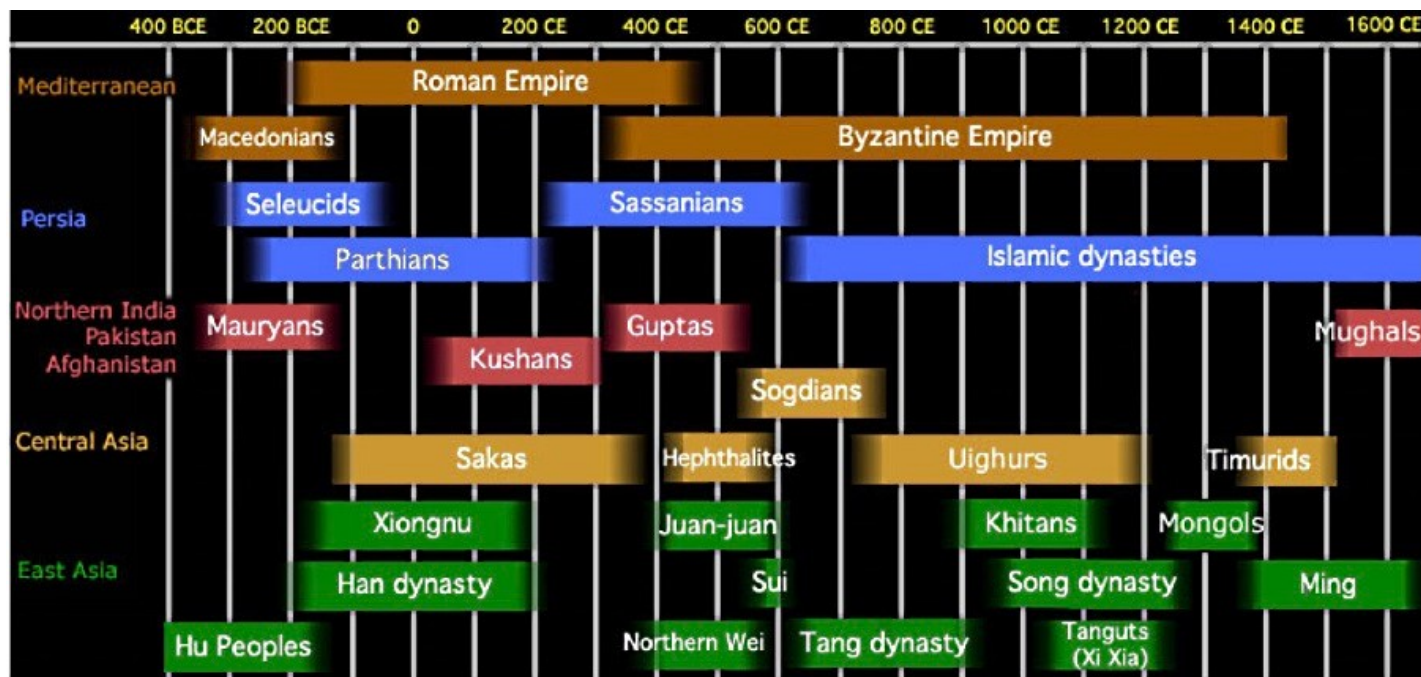
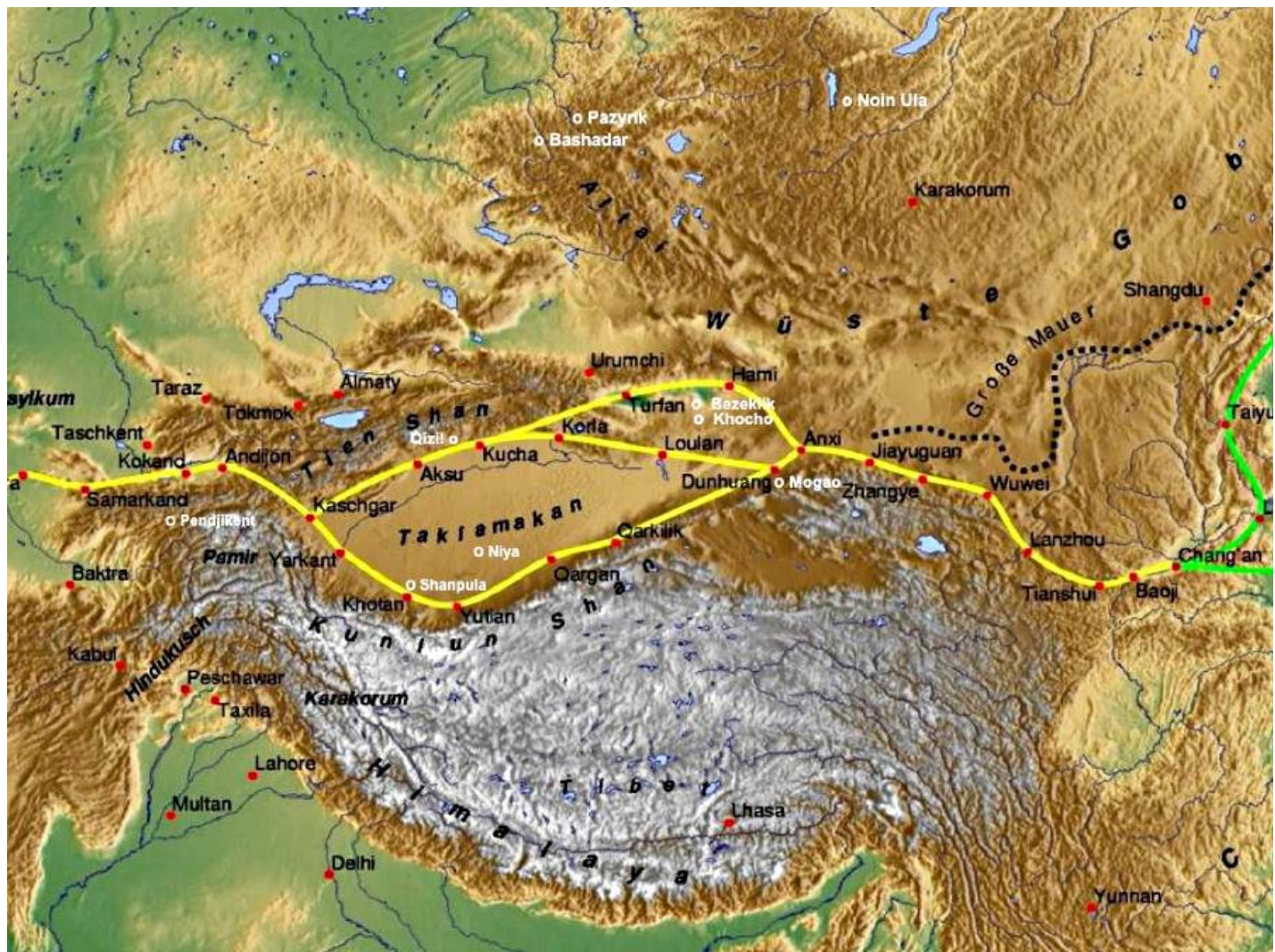


FIG 2. Map of the central asian part of the silk road



During his long journey the monk mentioned rugs twice: He warmly praised the carpets of the important city of Kashgar ‘.. carpets of a fine texture and skillfully woven ..’. At the time Kashgar was still mainly populated by ‘green-eyed barbarians’, (most probably Sogdians and Tokharians), and was a vassal state of the Gökturks.

His longest stop on his way back to the Chinese Tan’g capital Chang’an, was at Khotan, well known since centuries by the Chinese Court for its supply of precious jade, and where again Xuanzang mentioned beautiful woolen rugs and felts, as well as fine silk textiles.

Archeology has found clear proofs of important production of wool pile rugs in several city-states situated on the southern- and northern branches of the silk-road, in the Tarim basin.

For example at Niya (east of Khotan), 3rd-4th century CE documents contain references to valuable carpets traded for vineyards or slaves. (5)

At Shanpula, near Khotan, an intact wool pile rug from the 1st century CE (fig 3) and two others from the 5th-6th CE, in pretty good shape too, (fig 4) have been discovered.

FIG 3. Shanpula, Khotan. 1st BCE-1st CE. Han dynasty. Xinjiang Museum





FIG 4. Shanpula, Khotan. 5-6th CE. Figurative, 265x150cm!



FIG 5. Shanpula, Khotan. 5-6th CE. Rather psychedelic rug, inscribed in khotanese.





Btw. the rugs in fig 4 & 5 own their shrieking colors much more to photoshop than to natural dyes. We must try to imagine them a bit less flashy.

At both Niya and Loulan, a large number of wooden carpet-beaters from 1st to 3rd century CE have been discovered, as well as fragments of sophisticated pile carpets from the 2nd to 4th century CE) (7).

FIG 6. Carpet Beaters. Niya. 1st to 3rd CE. V&A Museum, Aurel Stein coll. London

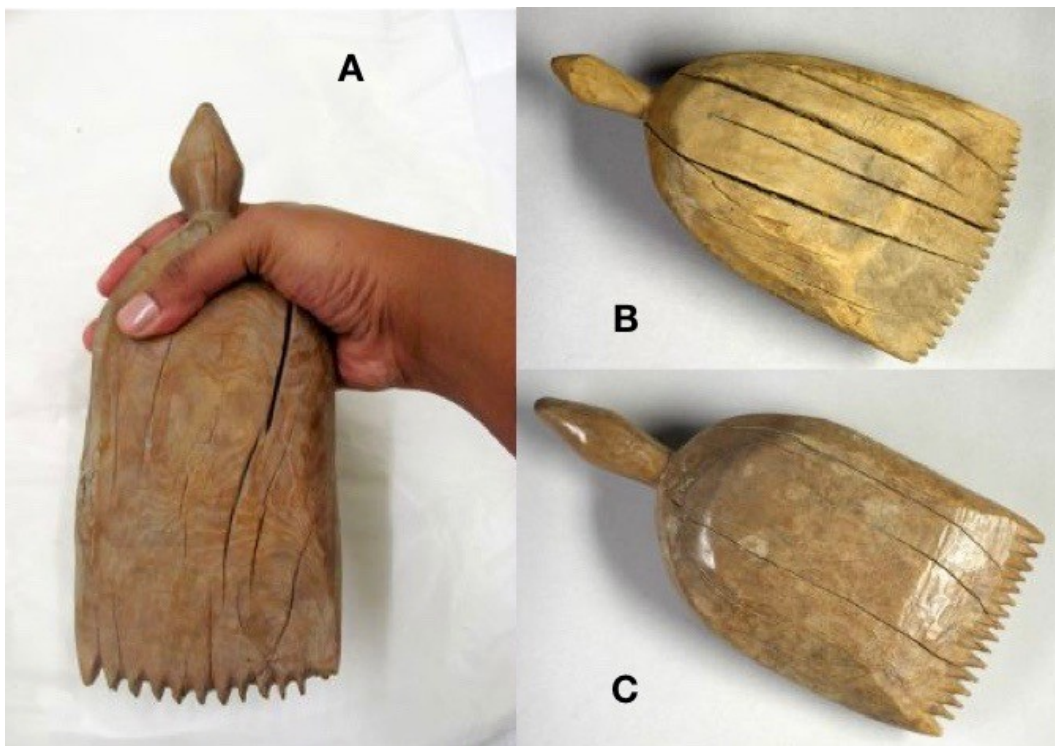


FIG 7. Loulan Yinpang tomb. Crouching lion. 3rd-4rd CE.

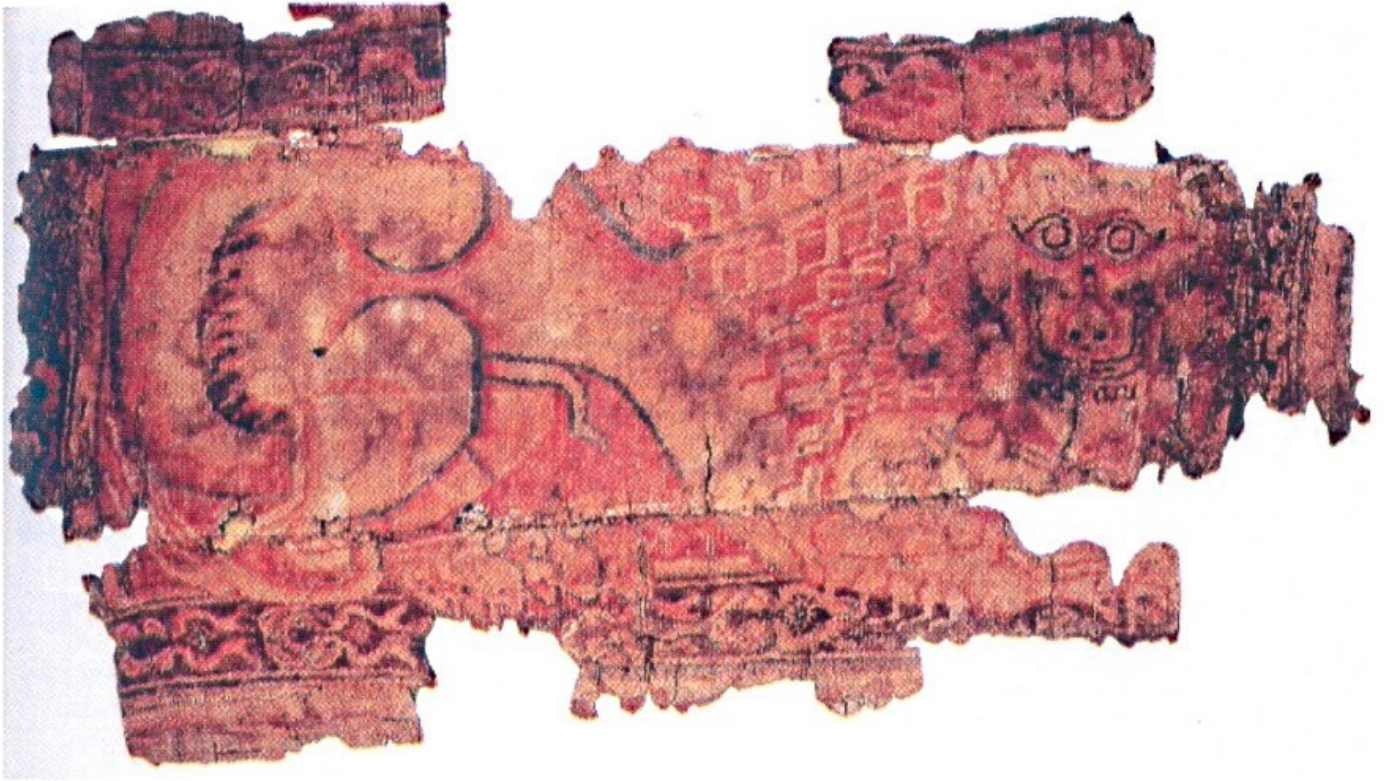


FIG 8. Loulan. Pile rugs fragments. 2nd-4th CE. V&A Museum, Aurel Stein coll. London





The dyers knew their job too: The fragment 8A features 8 colors!

The chemical analysis of Niya- and Loulan fragments identified a large number of good natural dyes, for example red dyes extracted from *Rubia tinctorum*, *Rubia cordifolia* (manjeet), and from eastern varieties of Cochineal and Lac!

There can be little doubt therefore that the inhabitants of the tiny city-states at the periphery of the Takla Makan were very active and competent carpet- and textile weavers (8).

This essay is not the best place for another lively discussion (9) about the ethnic origin of the weavers of the two oldest extant rugs known, the famous 5th BCE Pazyryk carpet, and the lesser known 6th BCE Bashadar fragment (10), both discovered in the Altai range, just north of the Takla Makan, but, imho, there is no serious reason for not adding Tarim Basin people to the list of their potential weavers.

At the time of Xuangzang's journey, Sogdia, (west of the Pamir), was called home by the most active business people in central- and eastern Asia. The Sogdians were well known in China. Large and successful colonies of expats lived in the capital Xi'an / Chang'an, in other large cities of the Empire and even in some lost northern outposts close to the Turko-Mongol steppe. Sogdians and other 'western barbarians' were usually pictured sitting on rugs by Han ceramists and painters. Rugs were as much a marker for 'western barbarians', as big hooked noses, bushy beards, protuberant eyes or red hair. Rugs were also a traditional marker for all those truly annoying Turko-Mongol horsemen of the North.

FIG 9. 9A: Sogdian camel driver. Ceramic. 5-6th CE. Northern Wei dynasty. Cernuschi Mus.

9B: Barbarian band. Ceramic. 7-9th Tan'g dynasty. Nat. Mus. of China. Beijing.





FIG 10. 10A. Sogdian horseman. Ceramic. 7-9th CE. Tan'g Dynasty. Musée Guimet.

10B. Sogdian. 7th CE. Mural. Afrasiab (Samarkand) Sogdia. Zoroastrian procession.





FIG 11. Sogdian. 7th-8th CE. Pendjikent, Sogdia. Fallen warrior.



FIG 12. Sogdian. 7th-8th CE. Pendjikent, Sogdia.





Not surprisingly, Sogdian rugs often featured the Sassanian / Sogdian 'Pearl and Roundel' motif, or at least pearl borders.

The large extant fragment from the 6th or 7th CE, in fig 13, is generally attributed to Sogdian- or Tokharian (11) weavers too.

FIG 13. Sogdia or Tokharistan 6-7th CE. Extant rug fragment. Kuwait Nat. Museum.





An Jia, a very successful Sogdian expat in Xi'an, China, has left a sumptuous, painted funerary couch featuring about a dozen rugs. A leader of the Sogdian business community in Xi'an during the fleeting Northern Zhou dynasty (second half of 6th CE), An Jia was as well an employee of the Chinese 'foreign office', responsible for taking care of ambassadors and envoys. The sculpted and painted stone panels show him lavishly entertaining several Turk envoys, either in a Yurt in the steppe or in his city residence.

Although frustratingly little is visible of each rug and the sculptor did not indulge in details, one can see a border of pearls ( Sogdian marker) and saturated red grounds scattered with stylized floral patterns. Not all rugs have a red ground though. In fig 14 B, a merry Sogdian is sitting on a rug with yellow ground. In fig 15 B, a Turk and a Sogdian are playing dices, seated on a rug which has lost most of its original color. It may have been blue though (12).

FIG 14 Sogdian. Funerary couch of An Jia. Xi'an. Northern Zhou dynasty. 6th CE

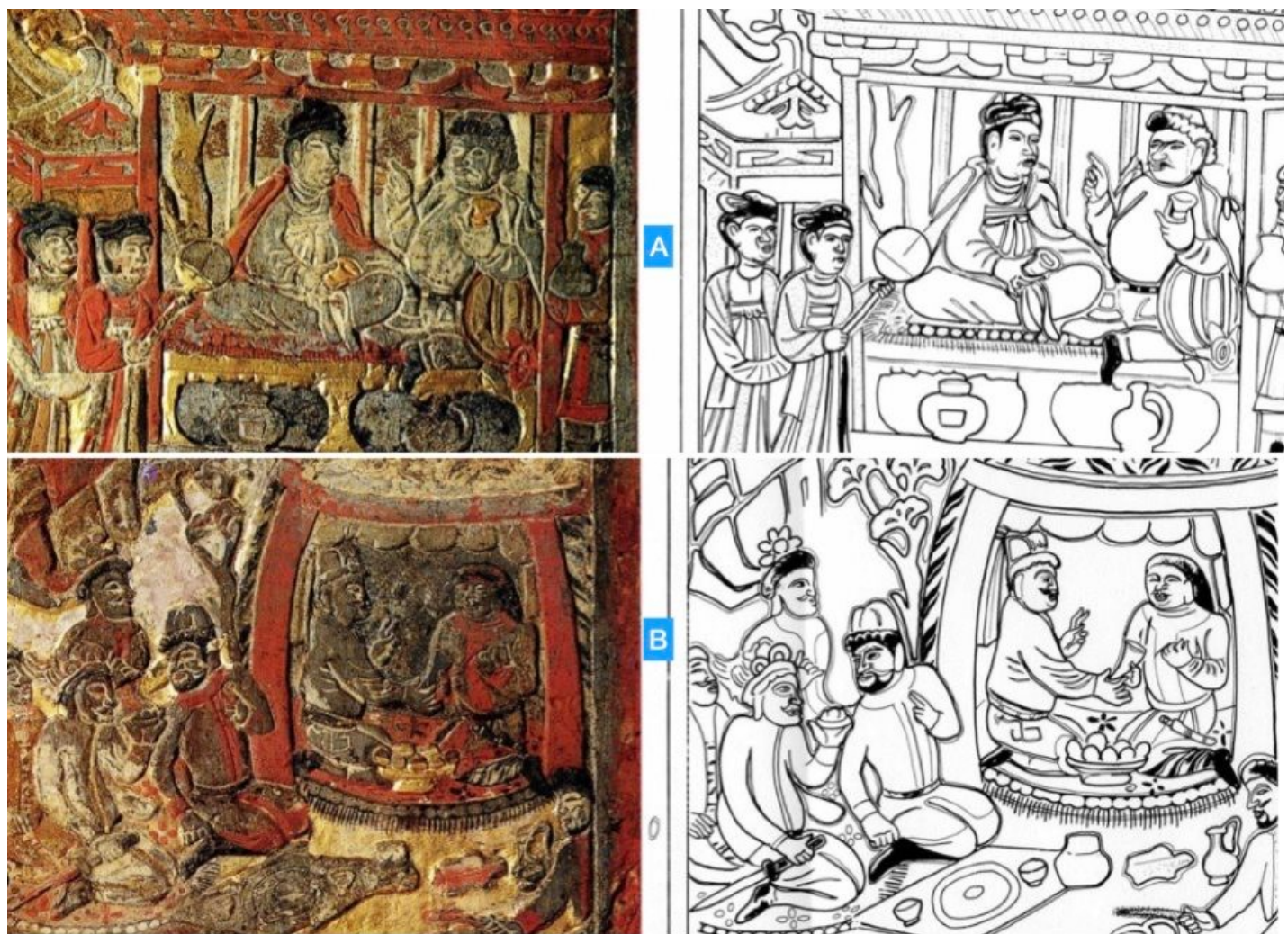
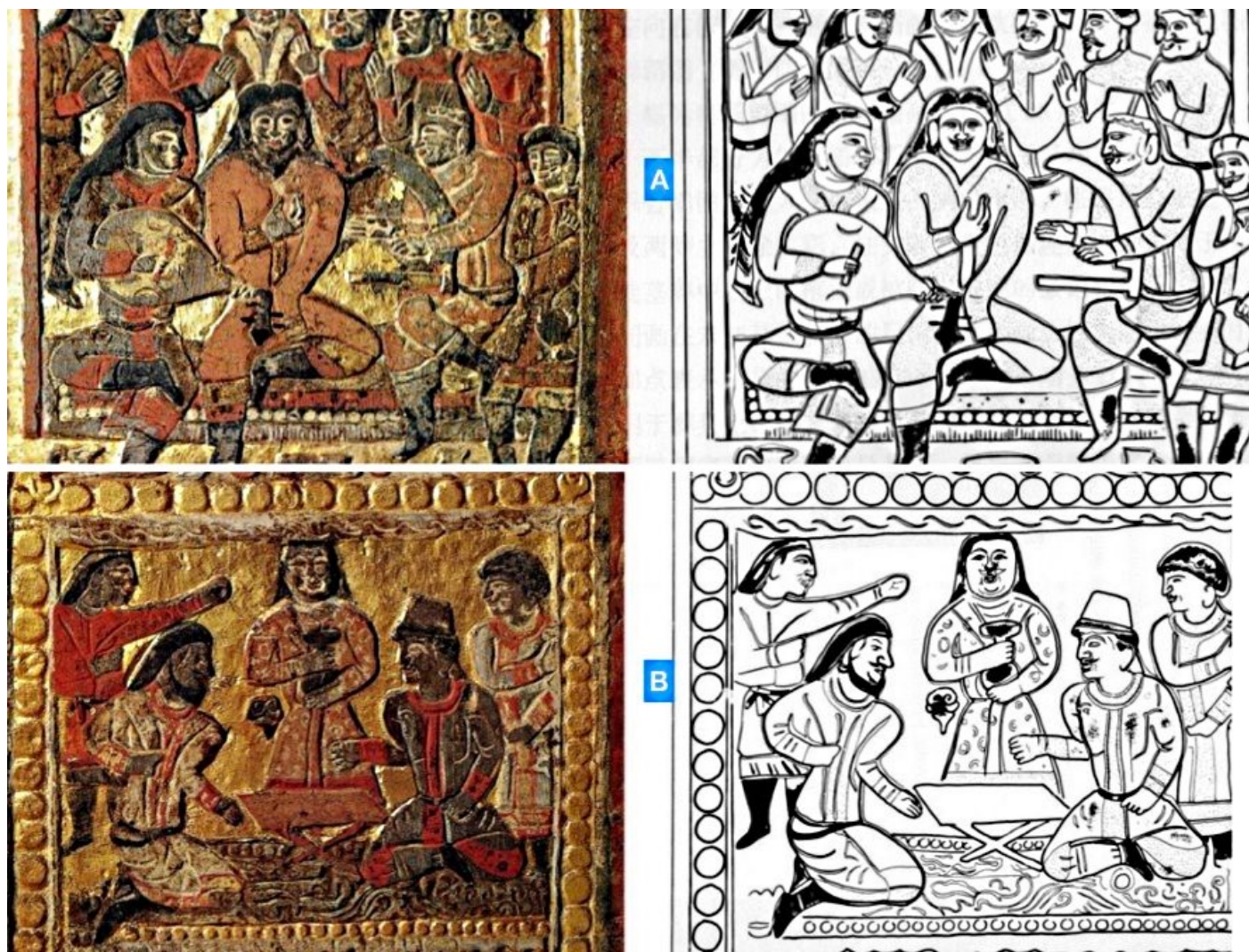


FIG 15 Sogdian. Funerary couch of An Jia. Xi'an. Northern Zhou dynasty. 6th CE





On the northeastern side of the Takla Makan, the buddhist Qizil caves/temples contain wall paintings with obvious stylistic influence from India, but also with a number of rugs which own nothing at all to India:

Some with a lattice of green hexagons (each containing a tiny boteh-like motif) and a red main border are reminiscent of rugs featured in some Timurid miniatures. Others show a lattice of either lozenges or spirals on a saturated blue ground and red border. These motifs do not match well with the so-called SerIndian style of the cave paintings, thus one can suppose that the painters did reproduce local weavings.

**Well, this could be the right place for a warning:**

We should not take it as granted that the colors of the rugs illustrated in these wall paintings, perfectly match those of real rugs.

There is of course the possibility that the painter made sometimes use of his right for inventing them, but I am especially alluding here to the fact that the number of pigments suitable for wall-painting was very limited at the time and that they had, at least, two major drawbacks:

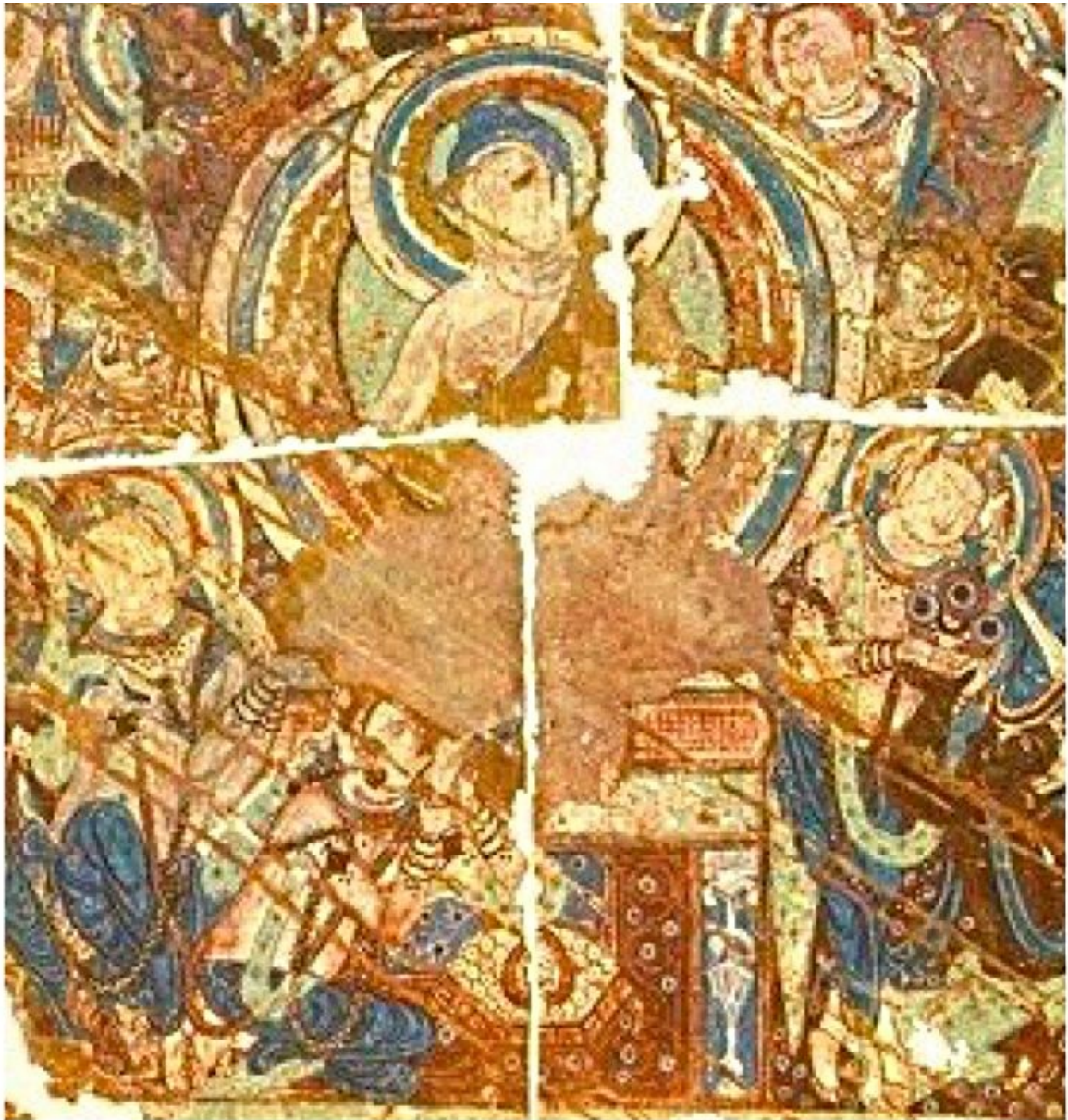
- Due to the limited number of colors offered by these mineral pigments, the painter found it difficult to match exactly the real shades of wool rugs (made possible by the large number of good plant- and insect dyes available).
- Nearly all these mineral pigments were chemically unstable, and their color was therefore quite susceptible to change significantly over time. (12)

FIG 16, FIG 17, FIG 18, FIG 19. Qizil caves. 7th-9th CE Tan'g dynasty. MIK. Berlin.





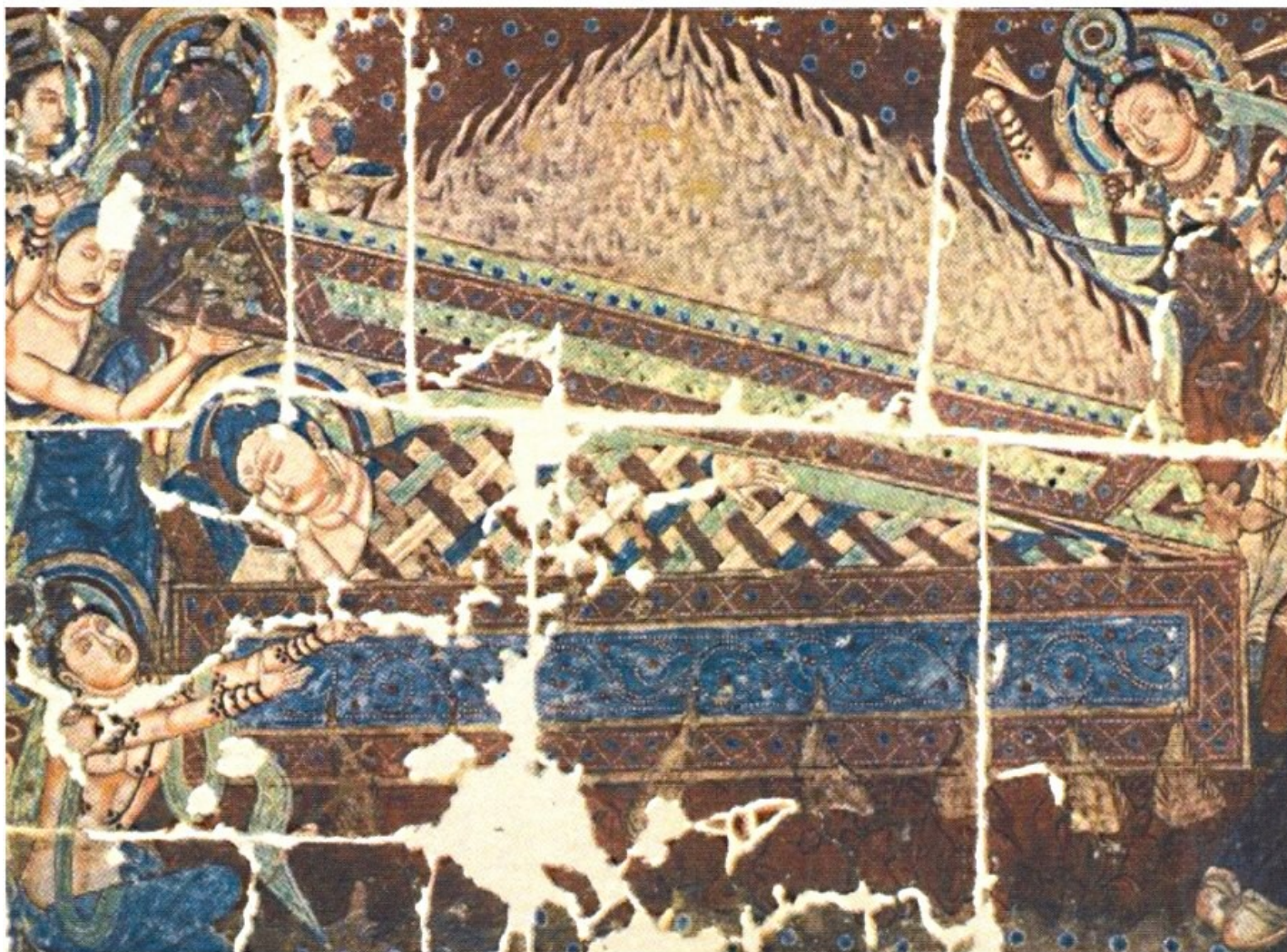












Rugs with a saturated blue ground and a red main border can be seen in murals of the Mogao buddhist caves too. Other Mogao rugs show rows of small pearl motifs, green on a very pale-green field.

FIG 20. Mogao, Dunhuang caves. Tan'g dynasty 7th-9th CE.





FIG 21. Mogao, Dunhuang caves. Tan'g dynasty 7th-9th CE.



A different style of rug appears on the 10-11th CE painting below.

FIG 22. Mogao, Dunhuang Caves. Northern Song dynasty. 10-11 CE. Khotanese Buddhist donor.

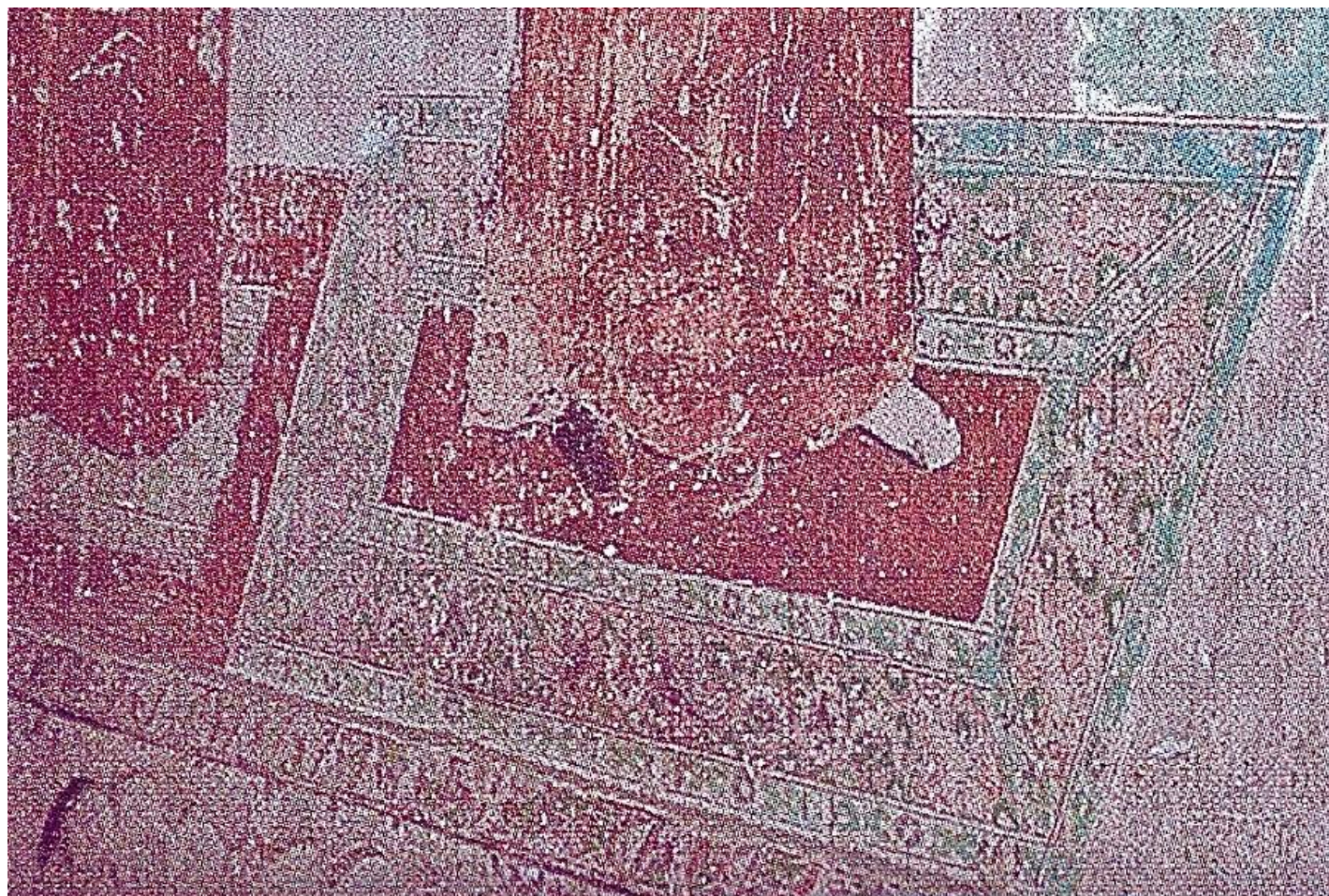




Different again, in fig 23, a donor stands on a rug with a plain red ground and a very large main border with palmetto motif and a rare corner solution. Does it look a bit familiar to you too? A trifle '17th-18th century Ottoman' perhaps?

FIG 23. Mogao, Dunhuang caves. 10th CE. Ruler of Duanhang. Glanz der Himmelssöhne p.11.





At Turfan, Manichean scrolls from the 9th CE show a number of very different styles:

A field with a 'peacock feather' motif, another filled with greenish hexagons and a large red border, another with large and rather plain indigo ground, a square central motif and a narrow, red and gold, geometric border.

In fig 25 we see a rug with very pale yellow background and orange motifs ( peonies?) of a type apparently very popular in the Tarim basin.

FIG 24. Turfan 9th CE Manichean orants BIK. Berlin.





FIG 25. Turfan 9th CE Manichean scroll 1. BIK. Berlin.





FIG 26. Turfan 9th CE Manichean scroll 2. BIK. Berlin.



FIG 27. Turfan 10th CE Donors. State Hermitage. Saint Petersburg.





At Bezeklik caves, murals feature three Uyghur princes, walking on a rug with small and spare orange flowers on a very pale yellow background. On another mural, two princesses stand on a rug with an orange 'peacock-feather' motif, again on pale yellow background. On yet another mural, a procession of ranking Uyghur donors progresses on a rug with a lattice of small orange 'waves', again on that peculiar pale yellow background.

FIG 28. Bezeklik caves 9th-10th CE. Uyghur princes. MIK Berlin.





FIG 29. Bezeklik caves 9th-10th CE. Uygur princesses. MIK Berlin.





(C)NII/Toyobunko

FIG 30. Bezeklik caves 9th-10th CE. Uygur donor's procession. MIK Berlin.





The same « peacock » motif is featured again on a saddle rug in a 9th CE wall painting at Khocho caves .

It is perhaps only a case of independent invention, but a cultural gold vessel from the Scythian civilization (fig 32 A) and a ( felt-appliqué) horse-cover from Pazyrik ( fig 32 B) both feature the, otherwise quite rare, peacock motif too.

FIG 31. Khocho caves 9-10th CE. Saddle rug.





FIG 32. A. Scythian. Cultural gold vessel . 6-7th BCE  
B. Pazyryk. 4-5th BCE. Felt horse-cover. Hermitage Museum



**A****B**

The very pale yellow background and pale orange motif in Bezeklik paintings are perhaps due to a degradation of the pigment. (12).

From Khocho comes as well a Manichean scroll with musicians sitting on an original rug (pile or appliqué felt?) featuring an impressive green motif on grey background. (Perhaps the stylized head of a local caprid, the argali, said to be associated with the spiritual worlds?).

FIG 33. Khocho. 10th CE. Manichean manuscript. MIK. Berlin.





Neither the palettes nor the motifs of most rugs seem to be very consistent with Turko- Mongol taste as we usually imagine it. Therefore one could suppose that the rugs used by the cave painters as props were woven in the oasis-cities bordering the Takla Makan, in a multi-ethnic environment, with various dosages of Tokharian-, Sogdian, Indian-, Persian, Turko-Mongol and Chinese influences. If so, it would suggest that whenever nomad empires annexed these small but active city-states (and the nearby caves/temples full of Buddhist - or Manichean monks; all enjoying a direct line to their own gods), they cleverly refrained from imposing their own taste to their new subjects. Let's not disturb the golden-egg laying hens or irritate the gods.

A very popular Chinese legend, describes the abduction of the Han-Era poetess Cai Yan (Wenji) by a party of marauding Xiongnu (a strong confederation of Turko-Mongol tribes) around 190 AD, her life as wife of a Xiongnu 'Leader of the Left Aisle' and her return to China, against ransom, twelve years later.

This story was used by Liu Shang, a Tan'g-Era poet, as the basis for the 'Eighteen Songs of a Nomad Flute', of which several superbly illustrated versions were later produced, initially perhaps at the initiative of Gaozong, the first Southern Song Emperor, who is said to have also lost a member of his own family, abducted by another Turko-Mongol confederation, the Jurched Jin.

These illustrated versions of the poem, of which some fragments are extant, describe quite accurately nomad encampments, their attire and, fortunately, quite a number of rugs too.

The costumes and rugs are not Xiongnu's, but those of Khitan tribesmen, responsible for another traumatic Turko-Mongol invasion of China during the 9th century. They created the Liao dynasty which ruled the northeastern steppe and in northern China for a while (9th to 11th century CE).

The rug palette (with its dominant usage of saturated red and blue) and the geometric motifs are quite familiar to modern ruggies. IMHO it makes them credible ancestors for the much later Kazakh-, Kirghiz- and Turkmen rugs, of which we don't know extant pieces older than the 18th century.

FIG 34. A. Eighteen Songs of a Nomad Flute. 12th -13th CE. MFA Boston





FIG 34. B. Eighteen Songs of a Nomad Flute. 12th -13th CE. MFA Boston



FIG 35. Eighteen Songs of a Nomad Flute. 12th -13th CE. MFA Boston





FIG 36. Eighteen Songs of a Nomad Flute. 12th -13th CE Nat. Palace Taipei Taiwan





FIG 37. Eighteen Songs of a Nomad Flute. 12th -13th CE MET 213006



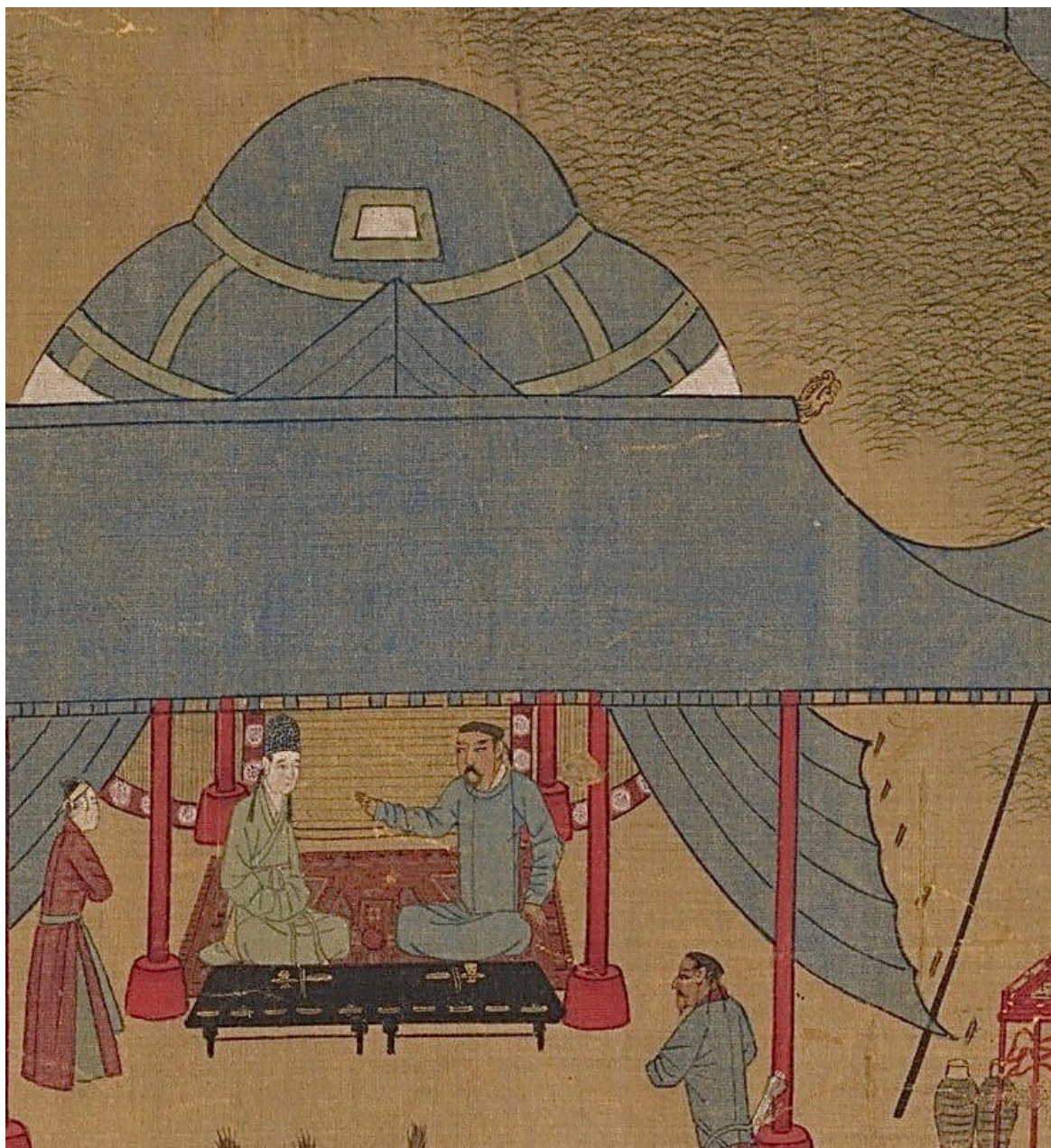


FIG 38. Eighteen Songs of a Nomad Flute. 12th -13th CE MET 213008





FIG 39. Eighteen Songs of a Nomad Flute. 12th -13th CE MET 213014





FIG 40. Eighteen Songs of a Nomad Flute. 12th -13th CE MET 213015





FIG 41. Eighteen Songs of a Nomad Flute. 12th -13th CE MET 213017





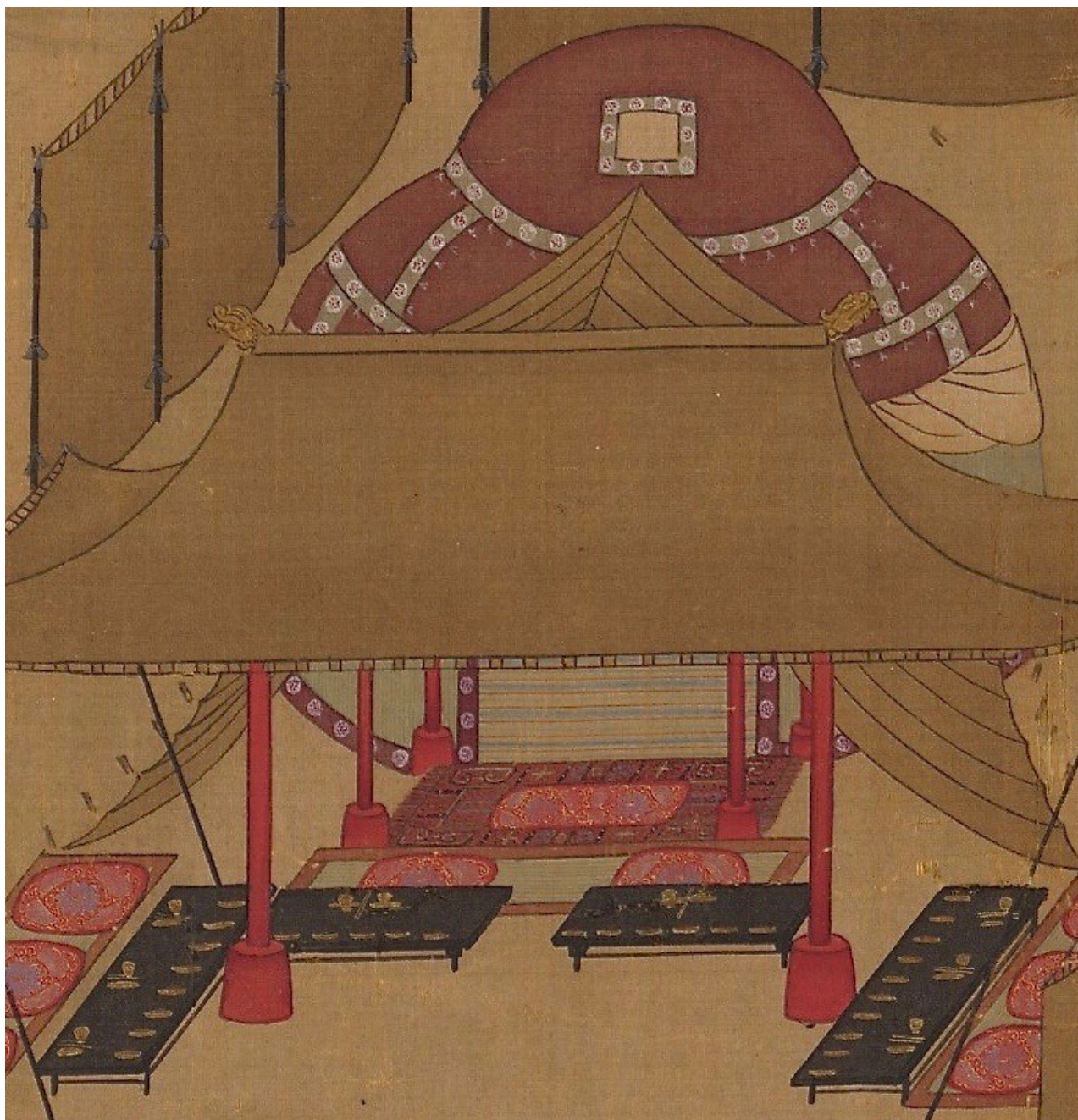
FIG 42. Eighteen Songs of a Nomad Flute. 12th -13th CE MET 213019 a





FIG 43. Eighteen Songs of a Nomad Flute. 12th -13th CE MET 213019 b





The Khitan favored motifs with rows of squares, compartmented fields, central hexagonal - or octogonal « guls » occasionally filed with a cross motif.

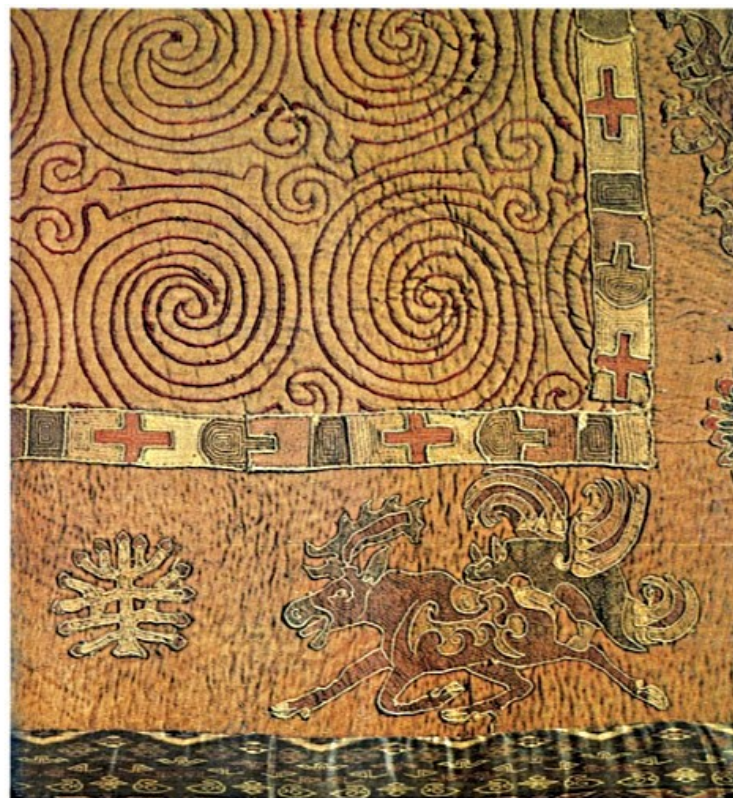
I am particularly impressed by the rug in fig 36, with its proud Tamga-like central motif and by the superb saddle rug in fig. 35.

The cross motifs in fig. 40, 41, 42 have been seen by a pious Ganzthorn's disciple as a proof for a strong Christian influence in the Khitan confederation and a further proof of the prevalent role of Christian weavers in Rugdom. IMHO this enthusiasm could be (again) a bit premature, since similar cross motifs were already in use in the region before the first century CE, as shown for example in a Xiung Nu felt & appliqué rug found in a Noin Ula barrow (fig 44). Besides Marla Mallet has explained, on Turkotek and in her seminal book 'Woven Structures' (13), the weaver's logic behind the frequent use of cruciform motifs on rugs.

Rather safe than sorry, I nevertheless checked also with the Red Cross in Geneva, they did confirm that they had no team working in Mongolia during the first century BCE.

FIG 44. Noin Ula. Barrow 6. Felt & appliqué rug. Xiung Nu. 1st CE-1st BCE. State Hermitage Mus.





'A propos' wishful thinking: I do wonder whether the indistinct form woven in the central medallion, fig 34A and 34B, could be a totemic animal.

## Notes

1. Painted scrolls of the Han-, Tan'g-, Song and Southern Song dynasties very rarely indeed show any rug in people's daily life or at the Emperors' Court (the illustration fig. 45 is the only one which I was able to retrieve, so far), and never in their enthroned ruler's official pictures before the Ming Emperor Hongwu (1488-1505) (fig. 46).

The superb silk carpet in fig. 47, which was obviously woven for the Imperial palace, is one of the oldest genuinely Chinese rugs which I am aware of, together with the Davison silk rug fig. 48, both being dated from the 16th century.

FIG 45. Rare rug in 13th CE Chinese genre-painting. 'World of Kubillay Khan', p. 44.





FIG 46. Ming Emperor Hongwu's State Portrait. 15th CE. *Glanz der Himmelssöhne*. p.19.





FIG 47. Ming silk rug. C14 date 1490-1690. *Glanz der Himmelssöhne*. p. 60





FIG 48. Ming silk rug. 16th CE. *Glanz der Himmelssöhne*. p. 32





2. In his documented 2003 paper 'Chinese Carpets. Art of the Steppe', Thomas Cole (3) convincingly argues that '...the apparent absence in Han Chinese culture of a tribal- or village weaving tradition, and of wool as anything but a commodity imported from the 'barbarians' to the north and west, precludes the possibility that the design pool of 'Chinese' rugs from the northern workshops represents a weaving language passed down through the centuries, the criterion by which one may define a true tradition.

Given these strictures, I contend that Han China never had a real (rug-) weaving tradition...'

Historians have frequently mentioned the remarkable power of assimilation of the prestigious Chinese civilization. While one would have expected that after each conquest of the Empire, nomad invaders would require their new sedentary subjects to adopt at least some of their most important cultural norms, this has never been the case in China, quite the contrary has been true: the Turko-Mongol conquerors always quickly adopted their subject's language, art, religion, attire and administrative methods and apparently did little for promoting the use of rugs in homes of the Chinese upper-classes. The first Yuan Emperor, Kubilay Khan, may be a rare exception, if we believe Marco Polo who claims to have participated to well carpeted parties at the Palace (17), but the Venetian never makes any other mention of carpets, while quite verbose about every artifact or product of commercial value met during his stay in China.

According to Cole (3), the first mention of Chinese rug production, (in Shanxi and Ningxia, two northern provinces bordering Mongolia, both with sizable Tibeto-Mongol or Turko-Mongol populations), was made by Europeans during the early Qing dynasty, mid 17th century

Hendrik Antoon Lorentz (4) wonders why ' Chinese literature, so eloquent in other fields so far, is silent about them, their (rugs-) origin is obscure.'

Hans Bidder (6) makes his opinion very clear that neither China nor India had any rug tradition, nor any influence on rug-making in eastern Turkestan before the 12th century CE. He concedes however that '...with the highly developed religious art and intensive monastic life which buddhism introduced, many art and crafts must have flourished in its service..'

Bidder's personal experience in 1920-1930 China also convinced him '...of a total lack of innate appreciation in the Chinese for the carpet as a work of art, as well as a practical understanding of it as an element in domestic habitation... '.

Of course, this' ruggie's emotional statement can't be taken as proof for a similar situation during the Han-, Tan'g- or Song periods.

3. Chinese Carpets - Art of the Steppe. Thomas Cole. <http://www.iran-carpet.com/en/blog/detail/3260>

4. H.A. Lorentz. 'A view of Chinese rugs from the seventeenth to the twentieth century ».

5. S. Whitfield. *The Silk Road: Trade, Travel, War and Faith* pages 154, 176

6. H. Bidder 'Carpets from Eastern Turkestan'

7. Sally Wriggins. 'The Silk Road Journey With Xuanzang'

8. Swati Venkatraman Iyer. 'A weft-beater from Niya: making the case for the local production of carpets in ancient Cadhota (End to mid 4th century AD)'. *V&A Online Journal*. N°7. 2015.

The author claims that '...textiles, especially rugs, formed a substantial portion of revenue in Cadhota (Niya)' and supports the view that



they where produced at home, by a large fraction of the population.

Rugs even served as a kind of money for commercial transactions and were also used for paying taxes.

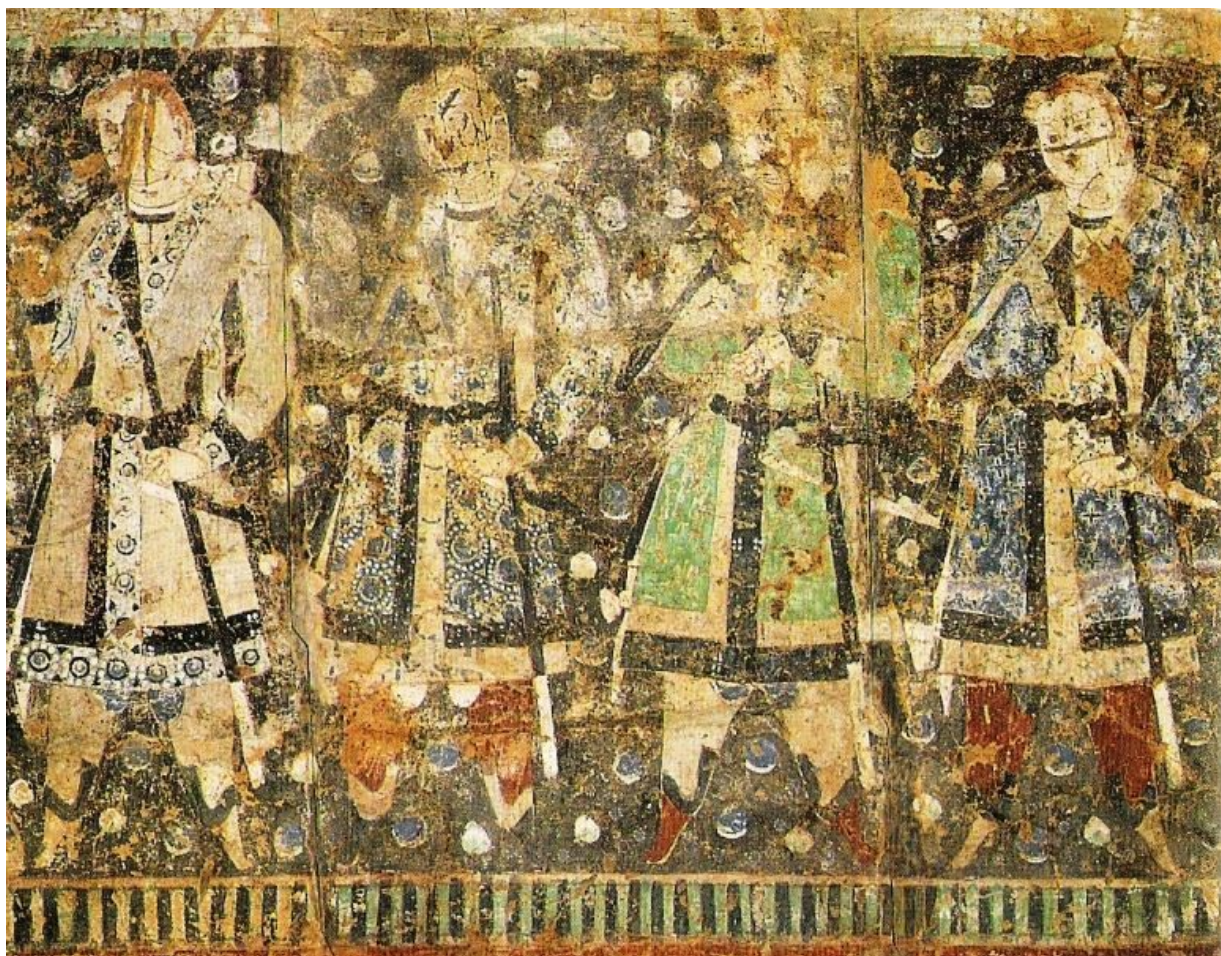
9. For a lively debate about the possible identity of the Pazyryk rug weavers, see Turkotek Archives: 'Pazyryk Rug and felts'.  
[http://www.turkotek.com/misc\\_00141/Pazyryk.html](http://www.turkotek.com/misc_00141/Pazyryk.html)

10. Kurgan 2 at Bashadar, (about a century older than kurgan 5 at Pazyryk), contained a small fragment of pile carpet. At 6000 asymmetrical knots / dm<sup>2</sup>, it was about twice as densely woven as the, already impressive, Pazyryk rug, (which was woven with symmetrical knot btw.). See L. Barkova Hali #107 /1999, page 59.

Besides, discoveries at Kara Kala ( An oasis of the northern foot hills of the Kopet Dagh and bordering the Qara qul desert in Turkmenistan) of carpet-weaving tools seem to push back the introduction of this technology in Central Asia to at least the 14th century BCE, (nearly a millenary before weaving of the Pazyryk- and Bashadar rugs!) (16).

11. Today, the origin of the 'Tokharians' is still disputed among experts. They may descent from several migrations of indo-european people who arrived from the West and /or from the North into the Tarim basin well before 2000 BCE, bringing with them a good knowledge of agriculture, of animal husbandry and of textile weaving. By the 2nd century BCE, these settlements had become more multiethnic (probably owing to the fact that their cities were situated on the only reasonable routes between China and the western Empires and to their military weakness). They spoke and wrote three different Tokharian dialects and often fought for regional dominance with each other. However they never were a match for any of their neighbors, starting with the Chinese Empire. They were initially bordered to the north by strong Saka- (Scythian) nomads, later increasingly by Turko-Mongol nomad-confederations in the process of convincing the Sakas nomads to get lost, or to join their own tribal alliances. During their best periods the Han-, Tan'g- and Song Chinese dynasties kept garrisons and governors in most cities. At other times the cities were vassals of one or the other successive Turko-Mongol Khanates (Uyghur, Gökturks, Kitans, Mongols) or of the Tibetan Empire, but they still remained multicultural melting pots.

FIG 49. Qizil caves. 5th-6th CE. Tokharian donors.



12. We should keep in mind that the colors of the rugs represented on the mural paintings are hardly identical **today** with the colors of the real rugs which the painters took as models more than ten centuries ago.

We know, from analysis of textiles and rugs found at archeological sites, that Central Asian dyers and textile weavers ( in particular those living along the silk road), already used a large number of very good natural wool dyes, including, at least, the following ones:



*Dyes for yellow and yellowish orange:*

*An unidentified plant, perhaps Populus pruinosa, which yields a lightfast flavonoid yellow as good as weld (Reseda luteola), the main plant used for yellow shades in Europe,*

*Delphinium Zalil.*

*Sophora Japonica.*

*Phellodendron chinensis and several varieties of Berberis*

*A large number of other plants also yield reasonably good yellow- and beige shades on wool.*

*Dyes for red and reddish orange:*

*Rubia tinctorum*

*Rubia cordifolia*

*Kerria chinensis and Kerria lacca (Lac)*

*Probably Rubia sikkimensis and Rubia peregrina, both indigenous to central Asia*

*Dyes for red and bluish red :*

*Porphyrophora hamelii and / or Porphyrophora sophorae (15)*

*Lithospermum erithrorhizon (gromwell)*

*Dye for Blue:*

*Indigo*

*Good green- and purple shades where obtained with indigo and a yellow, respectively with indigo and a red.*

*The painters of cave murals and of silk scrolls had a much more limited choice of natural (mineral) pigments at their disposal (14). Organic dyes, especially indigo, were sometimes misused, with very poor results, as pigment for wall painting.*

*Orpiment yellow (Arsenic sulfide)*

*Massicot orange (Lead oxide)*

*Ochre brownish yellow (Iron oxide-containing clay)*

*Cinnabar red (Mercury sulfide)*

*Minium orange and red (Lead oxide)*

*Ochre brownish red (Iron oxide-containing clay)*

*Azurite blue (Copper carbonate)*

*Atacamite green (Copper chloride hydroxide)*

*Malachite green (Copper carbonate hydroxide)*

*Lapis Lazuli blue (its main component is a complex aluminium silicate)*

*Except good qualities / high purities- of Lapis-lazuli, all these pigments are susceptible to important color shifts and/or saturation losses, due to exposure to either light, fumes from torches, moisture, mineral salts oozing from the cave walls, lichen and fungi, poor chemical compatibility between pigments in mixtures, or simply air.*

*Orpiment yellow easily oxidizes, turning white. It is also incompatible with some other mineral pigments,*

*Cinnabar red can turn duller or even brown,*

*Minium red and orange, as well as massicot orange can turn black or grey,*

*Azurite blue easily turns green and weaker. It can even disappear completely.*

*Atacamite- and Malachite greens can turn weaker.*

*Indigo, when applied as a pigment in painting has very poor light-fastness. (while being very light-fast as a wool dye),*

*It is therefore quite possible that some very pale green rugs (for example fig 21) where initially blue or of a more saturated green, and that the very pale yellow grounds (as in rugs in fig 28, 29, 30, ...) were initially of a much more saturated and prestigious golden yellow.*

13. Marla Mallett. *Woven Structures. A guide to Oriental rug and Textiles Analysis.*

14. Riederer, J. (1977) *Technik und Farbstoffe der frühmittelalterlichen Wandmalereien Ostturkistans.*

15. Dominique Cardon. *Natural dyes. Pages 652-653.*

16. Khlopina I.N. Hali 1982. Vol 5, #2. *The manufacture of pile carpets in Bronze Age Central Asia.*

17. Marco Polo. *Le Devisement du Monde et Le Livre des Merveilles Chapter LXXXVI: Polo mentions that when Emperor Kubilay gives a party, his sons, his wives and the highest ranking guests are seated on chairs, but many guests of lesser rank eat seated on rugs. (As Kubilay had the financial means for buying any number of chairs he wished, this fact could more reasonably be explained by the fact that most of the guests were of recent nomad origin and still more used to sit on rugs than on chinese chairs. Marco does not say whether these are pile-rugs, felts or kilims.*

*Chapter CV: Polo mentions that the room in which the Emperor gives audience is carpeted with 'beautiful rugs of silk, gold and other*



*colors (sic)' and that the courtiers must put on clean white slippers before entering the room.*

*Alas, Marco Polo was not much of a ruggie. Only once more in his memories (Chapter XXI ) does he mention rugs, when he praises the beautiful ones woven in the Seldjuk Beylik (which he calls 'Turkomania'). At the time of his visit (ca. 1273) this Beylik was but a small remnant of the Seljuk of Rum Sultanate, only including the cities of Konia, Kayseri and Sivas and was a vassal state of the mongol Il Khan ). Marco precises that the weavers were 'Greeks' and Armenians, thus the indigenous population of this central part of Anatolia and tells us that nomad turkic tribes were the other large ethnic group present in the region. (Among them most probably the Oghuz clans which had created the much larger Seldjuk of Rum Sultanate, two centuries before and were routed in 1243 by the Mongols). The city boy Marco Polo did not bother to visit these hill-billies in their encampments and thus can't tell us whether they also wove rugs.*

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