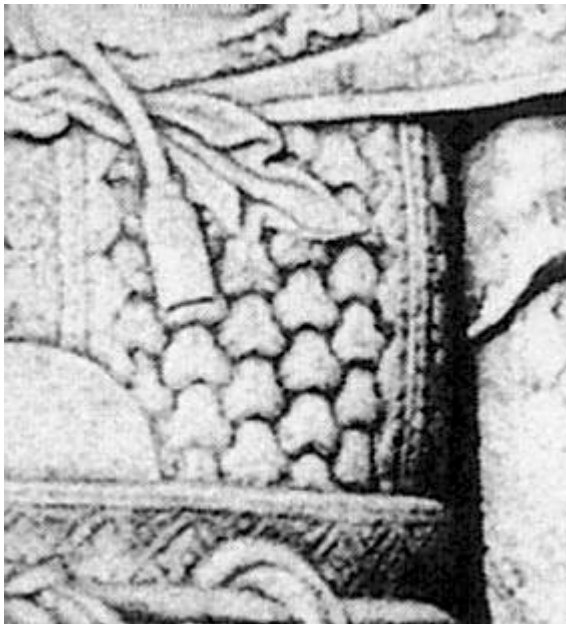


Construction of Chinese mountain pattern armour by Daniel Slone

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Shan wen kia, or “mountain pattern armour” was worn by high ranking officers in China from at least the Tang (618-907) through the Ming (1368-1644) dynasties. It was described by Robinson in Oriental Armour as a type of scale or lamellar with pointed heads (but otherwise normally constructed) similar to the Japanese *yamamichi-gashira*, or “mountain-path head” armour. Robinson made this description based on written records from the Tang dynasty, but I believe he never saw actual mountain pattern armour. I have found that mountain pattern armour is the same as the

armour sometimes known as “Chinese star scale”. There may not be any surviving pieces of this armour, but it is known from paintings, sculptures, and burial statues found in China. When worn, the armour appears to be composed of many interlocking hexagonal pieces. Panels of this armour are always surrounded by wide borders of

leather or fabric, and so the construction details of this are not known to western armourers.

The usual description of the scales is that they are three-sided, with pointed ends (Fig. 1). Construction is said to be accomplished by overlapping these scales and riveting the ends underneath the centers of the adjoining scales. Being interested in Chinese armour construction, I thought about this description, and came to the conclusion that it would be virtually impossible to do! In addition, the resulting armour would be heavy, and inflexible. This could not be the truth about *shan wen kia*. While researching clothing worn during the Ming dynasty, I was looking through a Chinese book on historical clothing called *Chung-kuo fu shih wu ch`ien nien* (5000 years of Chinese costumes). Here, I saw an example of mountain pattern armour, and found a short description of it. They did not name this armour, but described it as being made of plates like a mountain. Okay, well they do look a little like mountains, I guess. The truth became evident when I found a copy of the English version of this same book, and found not that the scales are shaped like mountains, but that the scales

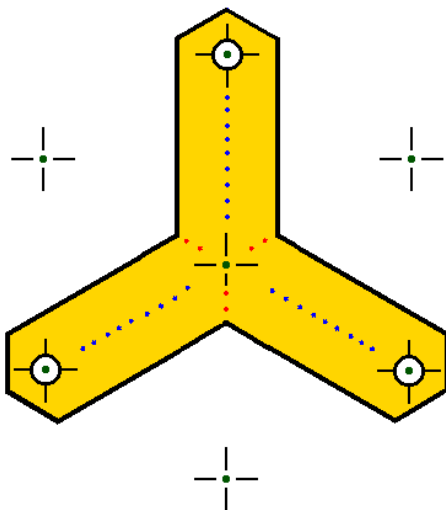


Figure 1: “Star scale” - conventional view of construction. Indicated are scale centers (green), rivet holes, and flute lines. Blue lines are ridges and red lines denote valleys.

are shaped like the *character* for mountain. Aha! I do not read Chinese, except to puzzle through the characters painfully, so I did not see this distinction myself. It all made sense in an instant. Up at the top of this document are the characters for my name. Part of my name is *shan*, which means mountain. By making a plate that looks like the character for *shan*, but bending the horizontal line down a bit, you come up with something like Figure 2. I came up with the fluting and rivet position after some experimentation. It is necessary for the scales to be “dimensional”, not flat – otherwise, they do not lay properly. I will show an example below.

Construction of panels is now a simple affair. Starting at the bottom with two rows of scales aligned on a leather or cloth backing as shown in figure 3, the first row of scales is riveted down. Then, the third row of scales is placed in position, and the

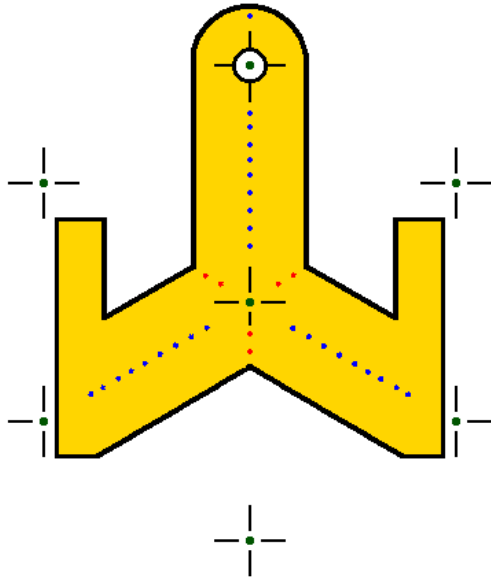
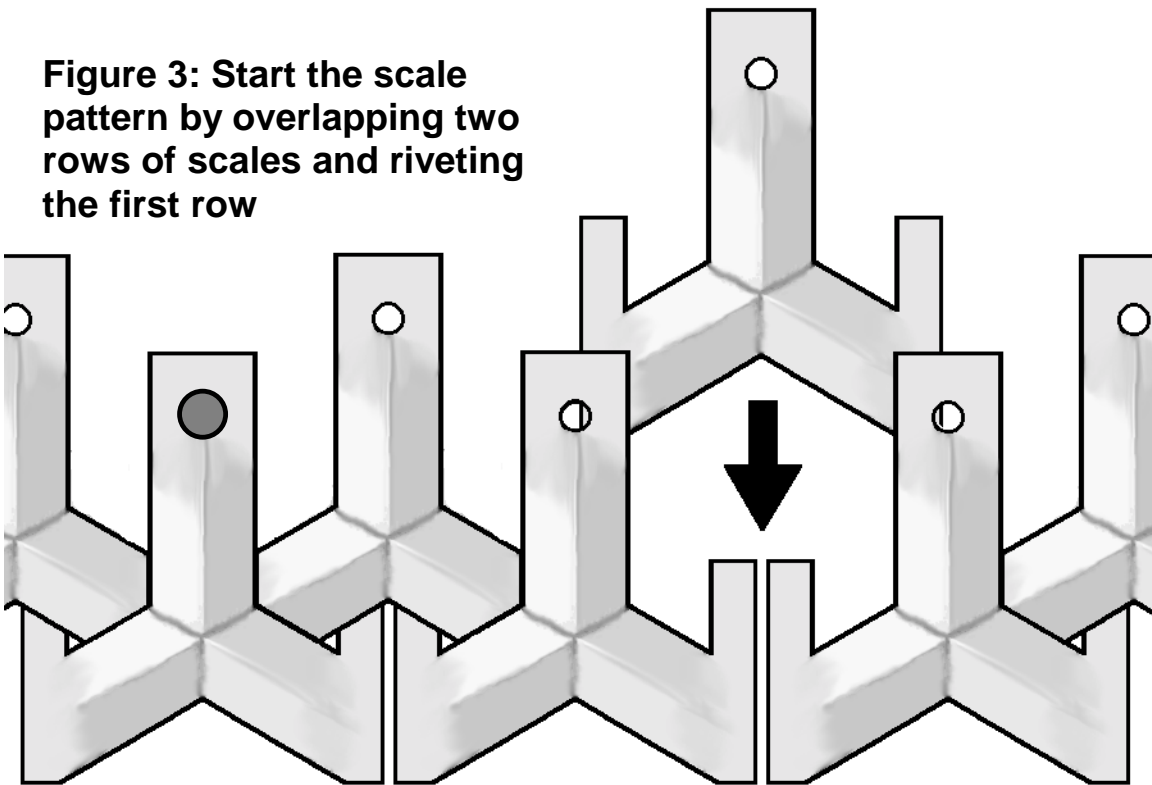


Figure 2: “Mountain pattern scale” – my idea of construction. As before, scale centers are green, blue lines are ridges and red lines are valleys. There is only one rivet hole in this design

second row is riveted down (Fig. 4). Following this pattern, the entire panel can be built up (Fig. 5). When it is of the desired size, a border is attached to cover the rough edges and to finish off the piece (Fig. 6).

Figure 3: Start the scale pattern by overlapping two rows of scales and riveting the first row



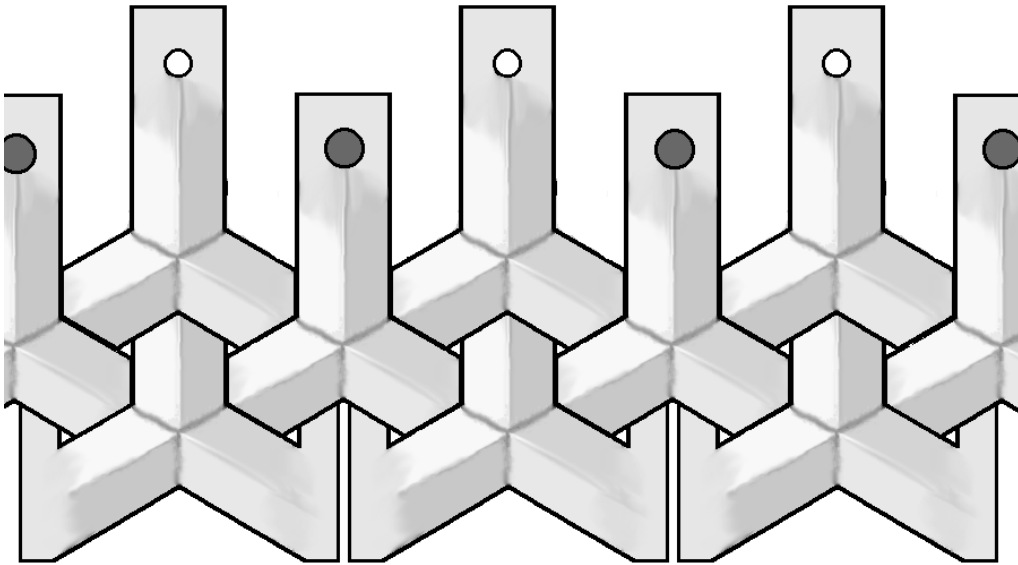


Figure 4: continue by inserting the third row and riveting the second row.

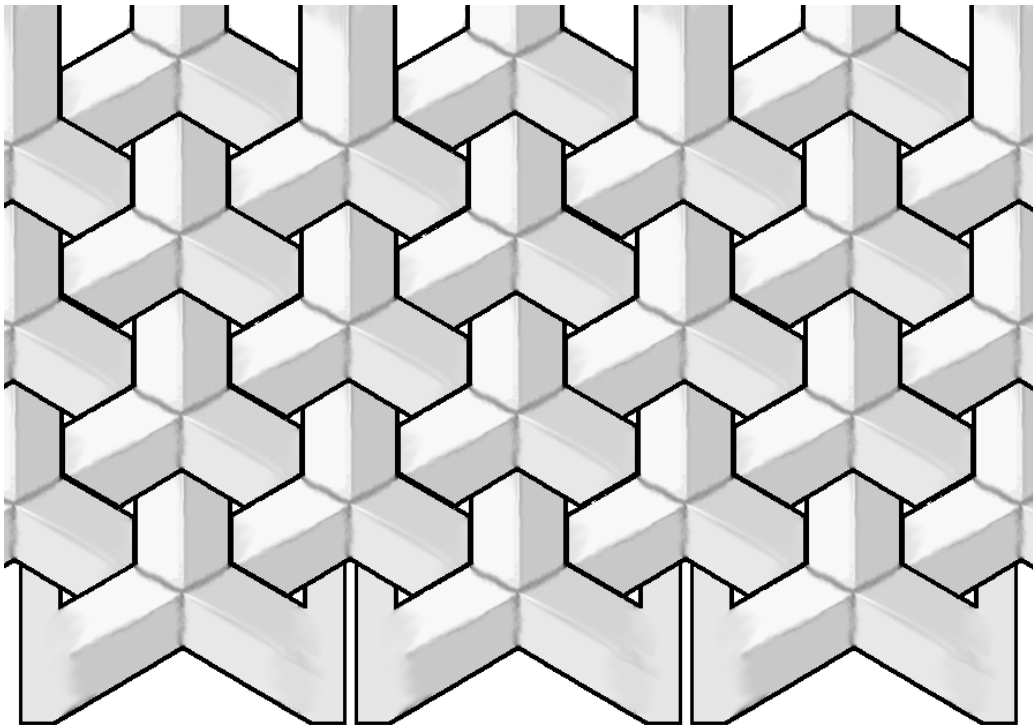


Figure 5: continue the pattern until the panel is constructed.

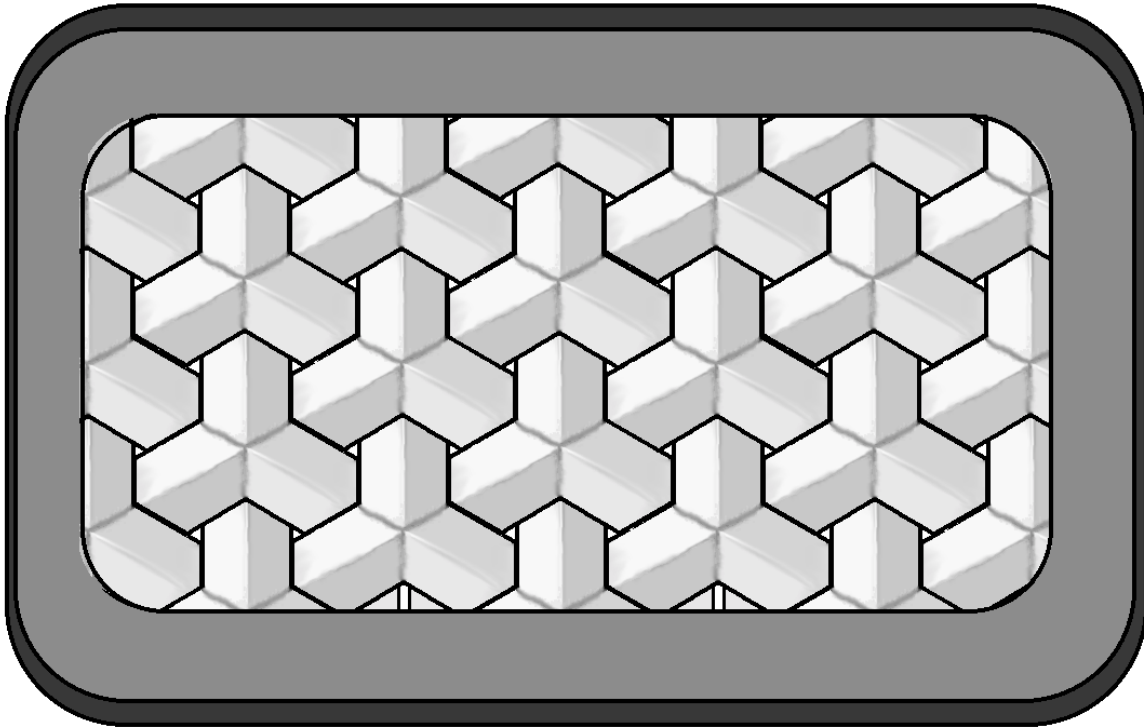
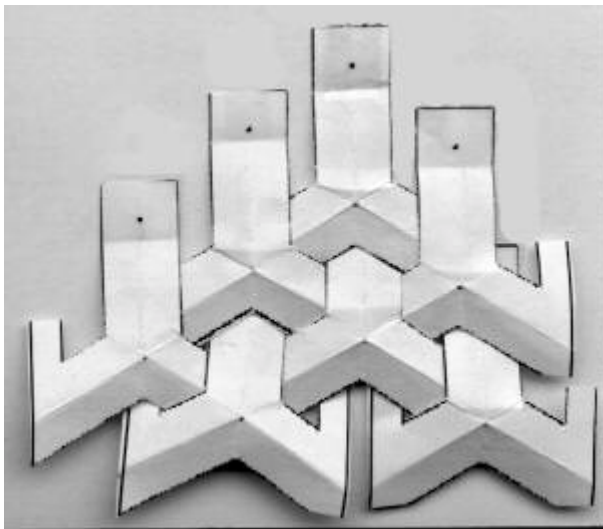


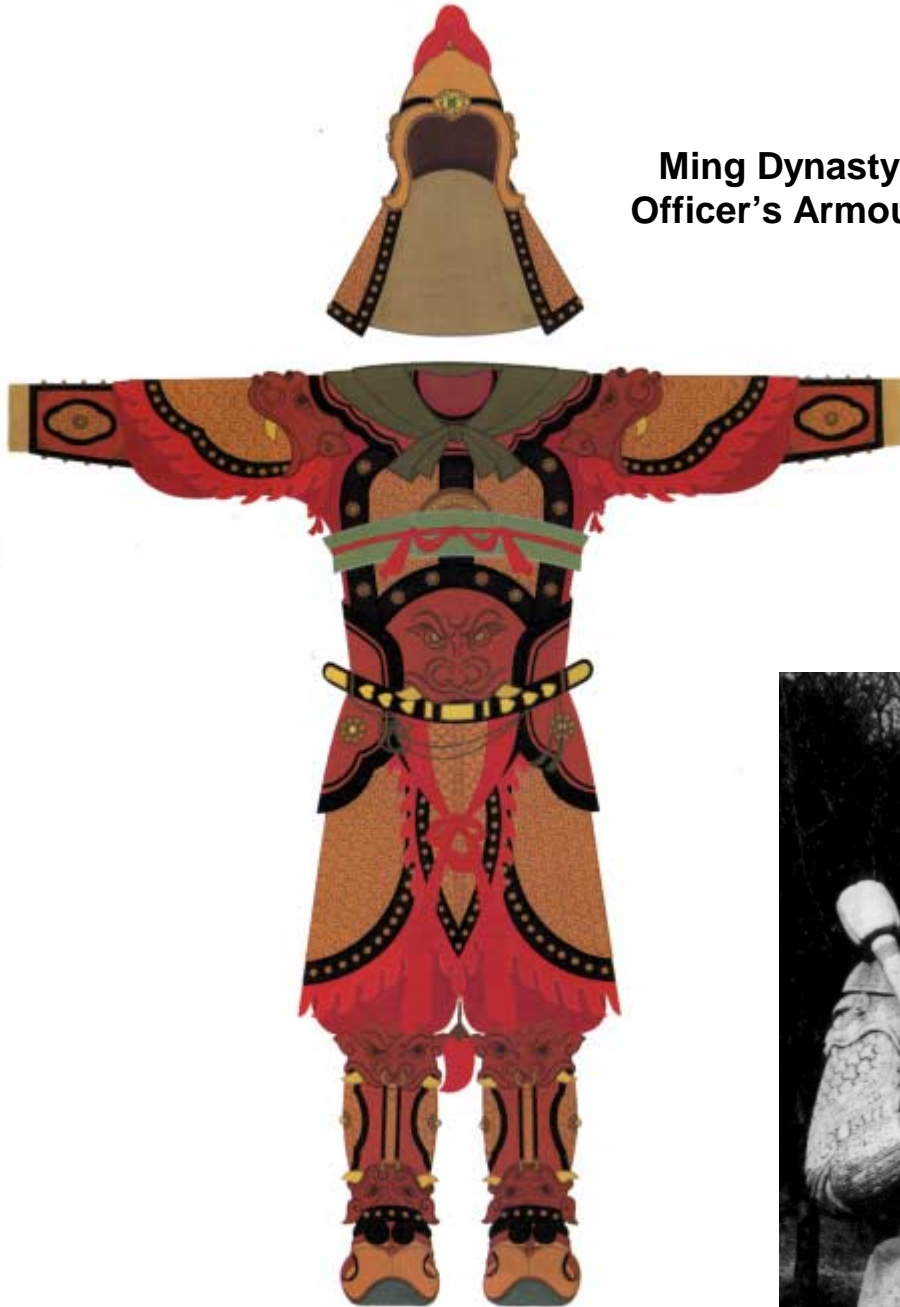
Figure 6: attach border of leather or cloth to finish up the panel

I have experimented with paper scales. The design seems to work well, and it looks right. The next step is to cut some real scales out and experiment with metal. According to historical documents, this armour was made of copper or iron scales.



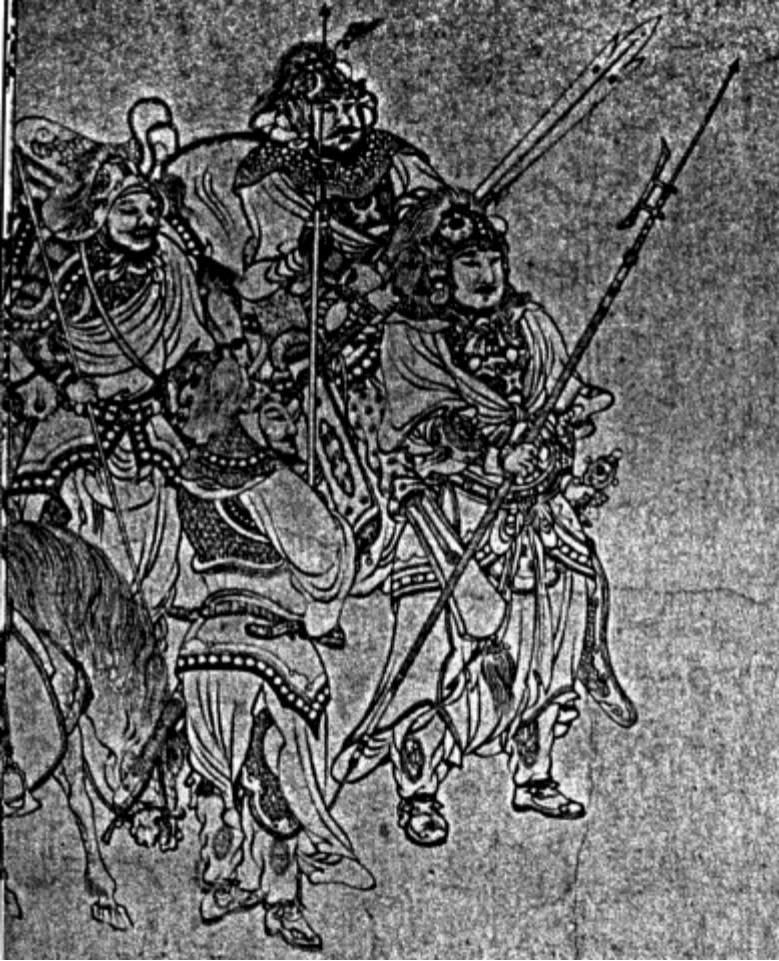
Paper scales

**Ming Dynasty
Officer's Armour**



Statue of Ming Dynasty general





Retinue of Tang General Kuo tzu-i. They all are wearing *shan wen kia*.



Uighur general paying tribute to general Kuo tzu-i. He wears *shan wen kia* as well.