

**A bowl from Iran – probably late 12th century**



The interestingly-shaped bowl (18 cm wide) in the photo above is made of fritware coated with a turquoise alkaline glaze. Over much of the pot the turquoise colour is not visible because it lies on top of a black layer. The turquoise of the glaze can be seen where a design was carved through the black to reveal the white body underneath. The idea of using black and white areas underneath a glaze to create a design had been used long before this pot was made, but the type of pot shown here, known as silhouette ware and made in Iran in the final decades of the twelfth century, was the first to adopt this technique with a turquoise alkaline glaze, and this combination has been a favourite of Iranian potters ever since.

Fritware (or stonepaste as it is sometimes called) was a completely new type of pottery material, developed in Egypt and Syria in the 11<sup>th</sup> century, which had hardly any clay in it. It was made from ground quartz powder pre-fired (fritted) with an alkaline flux and mixed with a small amount of clay to make it workable. To the potters of the time the great benefit of this new material was that it was an almost pure white colour, providing a good ground for a brightly coloured glaze and surface

decoration. Until then the only way they had managed to get a white surface was by mixing a lead glaze with large amounts of tin oxide, which was expensive.

Because this new body material mainly consisted of quartz it had a big thermal contraction when it cooled after firing and alkaline glazes (using sodium as a flux) were a better fit for this new body than the old lead glazes, so the switch from clay-based pottery to fritware was accompanied by a change from lead glaze to alkaline glaze. The different chemical composition of alkaline glazes means that they respond differently to additions of colourants. For example, copper ions dissolved in a lead-based glaze will produce a green colour, but the same ions in an alkaline glaze give a rather glorious turquoise. Potters in the Middle East from the 12<sup>th</sup> century onwards have relished these intense turquoise colours and used them often.

Silhouette ware is also significant because it was a key step in developing possibly the first wholly successful use of colour pigments to paint designs underneath a glaze. Almost since glazes were first developed, potters have been looking for ways to put transparent glazes on top of painted designs on the surface of a pot. One of the main problems was that chemicals in the glaze (particularly the flux) tend to attack the colour pigment of the painting, causing it to dissolve and spread in the glaze, smudging the design. If the glaze actually flows on the pot surface during the firing it can move the colour from the design with it, creating streaks. For centuries the solution to this had been to mix the colour pigment with a clay slip (i.e. thick liquid clay) and paint the design using this slip. The pigment is bound in the slip and so is less likely to move into the surrounding glaze. However, painting with coloured slip is limiting as it is thick and tends to result in rather coarse designs.

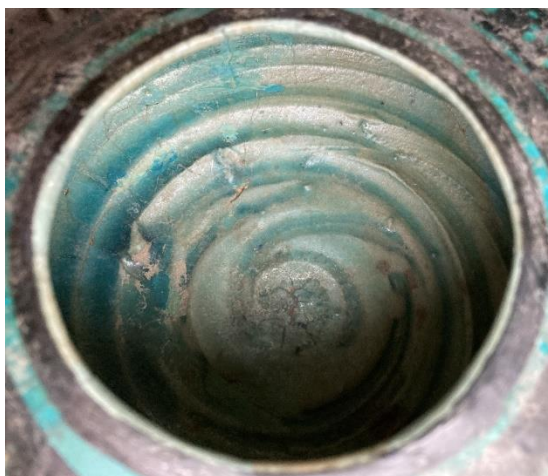
In silhouette ware the design is still made using a slip, though one not made using clay but instead a quartz paste to match the fritware body. The whole pot has been coated with black slip and then the design was cut away. However, the potters of that time also started experimenting in making very similar black and turquoise designs using a painted black pigment instead of a slip. It is difficult to know how much experimentation was required, but the result was that they found a combination of pigments and glaze which resulted in crisp designs with no smudging. This was particularly so for their black pigment, which was completely stable under the alkaline glaze. This led, early in the 13<sup>th</sup> century, to a flourishing of fine, flowing and detailed painted underglaze designs on pots, with the potters clearly relishing being able to paint with an intense fluid pigment rather than a gloopy slip (see below, black and cobalt blue design under a turquoise glaze, early 13<sup>th</sup> century. Image taken from Watson, *Ceramics of Iran*).



The chemical interactions between pigment and glaze can be quite complex, but it seems likely that the Iranian potters success with underglaze pigments was partly due to the use of alkaline glaze, where the flux is fritted with the powdered quartz and is therefore less reactive when it comes into contact with the pigment. It has also been suggested that the potters' use of the mineral chromite (a mixture of chromium and iron oxides) for their black pigment may have helped. Careful processing and purification of the pigment was probably also an important factor.

As you can see in the image on the previous page, the medieval Iranian potters also used cobalt blue decoration under the glaze, which is a bit more smudgy than the black. It has been suggested that Iranian pots decorated with painted underglaze designs may have been the stimulus for the Chinese development of their famous blue and white pottery in the 13<sup>th</sup> century. However, the Chinese were not painting on fritware but porcelain, which is fired at a higher temperature, with different glazes and a different set of technical challenges to be overcome.

Fritware body material was not as plastic or workable as clay and it was common for bowls to be thrown with the help of a bowl-shaped mould. This is probably how the lower half of my bowl was made, though it was definitely pushed into this mould on a turning wheel as there are pronounced spiralling marks on the inside (see photo below).



On the lower half of the pot the decoration carved into the black slip consists of vertical lines, and on the upper half it looks like Arabic script (see photo at top of note). I can't read Arabic, but it is quite possible that this isn't actual Arabic lettering, as it was common for potters of that time, who were possibly illiterate, to use designs that simulate script.

Like almost all pots of this age from the Islamic world, this bowl has been reassembled from broken pieces. From the far east ancient intact pots have often come from tombs, but the Islamic world had no tradition of interring pottery with their dead and pots were simply used until they broke and then discarded. On close study, it is clear that some of the pieces which make up my reconstructed bowl are not original, and the black and turquoise parts of those pieces are simply painted on (see photo on next page). This was not necessarily intended to deceive – in the early part of the 20<sup>th</sup> century this was a widely accepted means of restoration. I admit I quite like this approach as long as the touching-up is restricted to the new replacement pieces and the original pieces are not altered. On close study it is clear which parts are original and which aren't and yet, when looked at more casually, you still get the impression of what the original bowl would have looked like. However, this

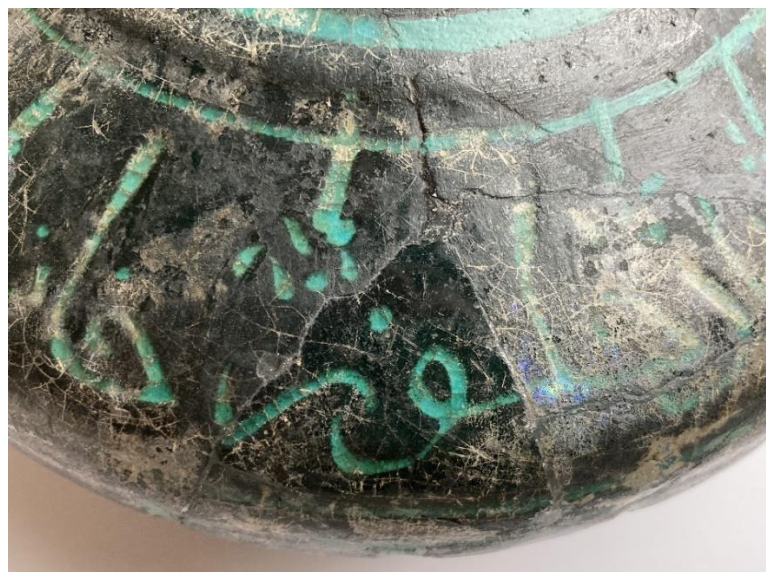
would be frowned on nowadays and museums restoring a pot like this now would replace the missing pieces with uncoloured undecorated segments, so that it is absolutely clear which parts are original and which aren't.



*An area of repair where an infill material has been used and the turquoise bands painted on*

On much of my pot the glaze has a fine network of cracks, and in many areas it has completely lost its shine and acquired a milky appearance. This is a common phenomenon in old Middle Eastern pots and ancient glassware in general, called iridescence, because in glassware in particular it can lead to a variety of rainbow-like colours. It happens when the pots are sitting in slightly acidic water (or damp ground) for a long period. The alkalis in the surface of the glass leach out in the acidic water to create fine flaky layers of glaze, a thousandth of a millimetre thick or less. Because this thickness is similar to the wavelength of visible light the reflections off the different layers of glaze can interfere with each other to create different colours.

In a few areas of my pot you can see what the surface would have looked like before the iridescence developed – a glossy surface with a deep black background and a strong turquoise blue design. Presumably those pieces somehow remained dry during their hundreds of years in a waste tip. The image below shows the contrast between one of those pieces and its neighbouring iridised pieces.



Initially I was puzzled what the original use of my bowl might have been. The shape doesn't look convenient for food. Recently though I discovered that these shapes are described as 'money bowls'. The in-curving sides and small opening make it difficult for a thief to grab any money inside and make it less likely that the contents would be spilled if the bowl is knocked.

Kevin Akhurst

April 2024. Revised September 2024