

Imitation and inspiration: the ceramic trade from China to Basra and back.

Jessica Hallett¹

Oxford University

Introduction

With the decline in the overland Silk Routes in the fifth century AD, traders from West Asia looked increasingly to the sea for alternative routes to China, and the silk they so highly valued. By the seventh century, with new advances in rigging technology and celestial navigation, they had successfully mastered long seaborne journeys, establishing the transoceanic sailing route from East Africa to China. During this Golden Age of Muslim sailing, Arab and Persian merchants dominated commerce with China, exchanging, among other things, African ivory and Arabian incense for Chinese silk and porcelain.

With the ascendance of maritime archaeological research in Southeast Asia, China, and Japan in the last decade, a dramatic picture of the scope of the Islamic contribution to international trade at this time is emerging. A study of three of the most important early Islamic pottery types reveals a distribution pattern of contemporaneous artifacts as far west as the Atlantic Ocean, and as far east as the South China Sea. The first type, the typical turquoise glazed storage jar with relief decoration, dating from the eighth through tenth centuries, has been found along the entire length of the Indian Ocean littoral from Madagascar to the southern coast of China, and even as far east as the site of Dazaifu on the southern Japanese island of Kyushu. Early Islamic blue-and-white wares from the first half of the ninth century have been found as far west as Aqaba on the Red Sea, and as far east as Quanzhou; while, the lusterwares produced slightly later have been found as far east as Thailand, and as far west as the Islamic fort of Silves in Portugal.

The Question of Provenance

The place of manufacture and centre of distribution of these pottery types has long been a topic of great interest, and has generated considerable debate. For nearly seventy years, the study of early Islamic pottery has been dominated by the Abbasid palace city of Samarra, the temporary capital of the Abbasid dynasty, when they fled the increasing insecurity and overpopulation of Baghdad from AD 836-883. The luster and blue-and-white pottery found in

¹ All correspondence should be addressed to St. Antony's College, Oxford, U.K. OX2 6JF; Fax: 44-865-54465. Travel funding to deliver this paper was generously provided by the British School for Archaeology in Iraq; Cha Fund for Asian Studies; Raymond Carr Fund (St. Antony's); Faculty of Oriental Studies; Oxford University.

abundance at the site, quickly became associated with it, and is still referred to today as Samarra ware. Both of these wares are easily distinguished by their characteristic cream-colored clay bodies and opaque white glazes combining lead and tin, and are well-known as spatial and temporal indicators for the early Islamic period.

As the great imperial centers of the early Islamic Empire, Samarra and Baghdad have long been favourites as possible centers of their production, and have taken pride of place in various theories about the origin and dissemination of the newly invented tin glaze, and especially, of the lustre technique. Scientific analysis, in the 1970s, of the clay fabric of the lustre wares, reinforced scholarly opinion that they were of Iraqi manufacture.² More recently, Robert Mason's petrographic analysis of shreds and kiln furniture collected from a kiln site at Old Basra has further clarified the picture.³ Although a number of different clay fabrics, or *petrofabric*s, were identified within the broad class of *Samarra-style* pottery, white wares decorated in cobalt blue or lustre painting were determined to be geologically comparable to the Basran kiln material. The study also revealed Basra to be one of the main centres of production for the ubiquitous turquoise glazed storage jars, so widely distributed in the Indian Ocean. Last year, I reanalyzed the same kiln material, and a larger assemblage of Samarra-style pottery from other West Asian sites, using an alternative technique of chemical analysis, neutron activation (INAA).⁴ The preliminary results of this study reinforced Mason's proposed Basran provenance, and revealed a second possible centre of lustre production at Samarra, which must have been very short-lived.

Basra's fame as a center of pottery production is well-attested in contemporary Arabic sources, but the town has been overlooked consistently, as a result of the prevailing attitude that the great moments in the history of Islamic Art were inspired by imperial patronage of the ruling court. Jahiz writing in the ninth century describes a pottery center located on the Sayhan canal, southwest of Basra, and Yaqut, possibly citing an earlier source, mentions another to the north on the Nahr al-Dayr. Indeed, the potters of Basra, along with those from Kufa, were so highly regarded they were included among the artisans brought by the Caliph Mutasim to assist in furnishing his newly constructed palace-city at Samarra. When Dr. Ralph Solecki briefly surveyed the site of Old Basra in 1953, he found "potsherds as thick as shells

² H. Michel, J. Friernnan, and F. Asaro, "Chemical composition patterns of ceramics from Fustat," *Archaeometry*, 18.1 (1976), 85-92; *Ibid.* "The Provenance of Early Islamic Lustre Wares," *Ars Orientalis*, xi (1979), 111-126.

³ Robert B. Mason and Edward J. Keall, "The 'Abbasid glazed wares of Siraf and the Basra connection: petrographic analysis," *Iran*, 29 (1991), 51-66

⁴ This study was supervised by Dr. James Blackman of the Conservation and Analytical Laboratory (Smithsonian Institution), and used the experimental reactor facilities at the National Institute of Science and Technology.

on a beach," and Iraqi excavations in the late 1960's discovered nine kilns, but unfortunately nothing more than a short note about this work has ever appeared in the literature.

Imitation

The implications of these recent scientific provenance studies are considerable, suggesting exclusive and centralized production at Basra of the finest luxury wares of the time. It now seems clear that it was precisely at the place where the highly esteemed Tang stoneware and porcelain were first off-loaded from the Indian Ocean trading ships, that favourable economic conditions arose to encourage the local potters to experiment with their reproduction.

Recreating the highly esteemed qualities of Chinese porcelain, its sheer whiteness, strength, and translucency, presented a formidable challenge. Neither the essential raw materials, nor the firing technology, were locally available. Deposits of *kaolin* necessary for the Chinese body composition were absent, and only low firing yellowish clay was accessible. Thus, the potters' sole option was to recreate the visual effect, "the whiteness and shape of the original porcelain, so as to satisfy the eye".⁵ Their efforts lead to the invention of an opaque white glaze that masked the yellow clay of southern Iraq, and to finely potted hemispherical bowls that were to change the function and status of pottery in West Asia irreversibly. Previous studies of this remarkable period of technological innovation have focused primarily on the invention of the opaque white glaze. Recently, a more wide-ranging scientific study at the Smithsonian Institution has revealed that the impact of this first wave of Chinese influence was even more extensive, affecting every step of the pottery production process, from the processing and shaping of the raw clay, to the glazing and firing of finished vessels.⁶

a) Shaping

The differences in the chemical properties of the clays of China and Mesopotamia had considerable impact on the technology that evolved to use their local resources to their best advantage. The high plasticity of Mesopotamian clays meant that forming by hand, and on the wheel, were the dominant methods of pottery manufacture in Pre-Islamic times. The typology of ancient pottery shapes reflects this, primarily vessels with spherical, cylindrical, or

⁵ Y Crowe, "Early Islamic Pottery and China", *Transactions of the Oriental Ceramic Society*, 41 (1975-77), 263ff.

⁶ This study was conducted as part of a Predoctoral Fellowship at the Smithsonian Institution during the 1992-93 academic year, and was supervised by Dr. John Winter, Head Conservation Scientist at the Freer Gallery of Art, to whom I owe a great debt of thanks. Dr. Pamela Vandiver and Dr. Charles Tamosa of the Conservation and Analytical Laboratory contributed their expertise to the xero-radiography and firing replication studies.

biconical proportions, such as jugs, jars, and plates. By contrast, the aplasticity of the Chinese clays gave rise to the development of a variety of shaping techniques. The wheel was used, but the potters' hands were frequently aided by molds, templates, and cutting tools. Furthermore, the very stiffness of the clay lent itself to modeling and the Chinese, unlike their western counterparts, developed three-dimensional ceramic statuary as a fine art.

The wheel continued to be used in Basra to manufacture cylindrical vessels, such as the famous lustre jar in the Freer Gallery of Art (Washington, DC). In the case of the Basran bowls, the forming method used is not obvious to the naked eye, as there are no signs of rilling indicative of throwing, nor of seams indicative of molding. Xero-radiographs of a blue-and-white bowl in the Freer, however, revealed some unusual and unexpected marks on the interior surface. Four lines at right angles radiate from the center of the bowl. They are raised ridges on the interior surface, concealed beneath the thick white glaze, and are the impressions of incised lines originally on the exterior of a convex mold.

Convex molds, or drape molds, were widely used in China, and this is how the common Chinese petal-shaped bowl was given its form. The standard method involved throwing a bowl of approximate dimensions and then inverting it over a convex mold, which gave the interior surface its shape and supported the vessel so that the exterior could be trimmed to size. The xeroradiography of the Islamic blue-and-white bowl shows precisely the same features: diagonal particle orientation indicative of throwing, evidence of molding on the interior, and a series of horizontal ridges left from trimming the exterior.

b) Glaze technology

Having given the bowl shape, the next step was to conceal the yellow colour of the clay under an opaque white glaze, with lead as one of its major constituents and tin added as an opacifier. The combination of the two techniques, of lead glazing and tin opacification, appears to be a Basran achievement. Traditionally, the glazes of ancient Mesopotamia were alkali, while those of the lands of the Eastern Mediterranean were lead. Tin opacification also originated in the west; it was first discovered by the ancient Egyptians, and later adopted by the Roman glass industry. With the rise of Islam, both techniques appear to have been transmitted from west to east, suggesting that migrant artists from the Mediterranean may have brought the technology with them. However, analysis of these early glazes using the new X-ray

fluorescence (XRF) spectrometer at the Freer shows that a glaze recipe combining tin and lead was not transmitted intact, and that considerable experimentation occurred in Basra.

The opaque white glaze of the Basran blue-and-white wares exhibits tremendous compositional variation. This can be explained, in part, by the use of different glazes on the interior and exterior of the bowls. The interior surface, which has the greatest visual impact, is usually whiter and more opaque than the exterior and has a higher concentration of lead. However, although this distinction is not observed in individual objects, the interior nor the exterior glazes of this group share a common formula. By contrast, the glazes of the polychrome lustrewares made slightly later, and of the monochrome lustrewares that followed them, are more consistent, suggesting the Basran potters had finally hit upon a successful and reproducible recipe.

c) Firing

Not only did the introduction of Chinese pottery into the Islamic world bring about changes in forming techniques and glaze recipes, it also appears to have had an impact on kiln technology. Typically, ancient Mesopotamian pottery was fired at 700-800°C. By contrast, firing replication studies using scanning electron microscopy (SEM) show that the clay body of the Basran wares was fired significantly higher, at nearly 1000°C.

Inspiration

The extraordinary similarities between the Abbasid bowls and the Chinese ones suggests that the Basran potters made very careful observation of the wares they were imitating, and may even have had first or second-hand knowledge of Chinese techniques. In addition to inventing an opaque-white tin glaze to recreate the visual effect of the imported porcelain, the Basran potters imitated Chinese shapes, adopted Chinese molding techniques, and raised their kiln temperatures by 200°C. We know that Muslim merchants were present at pottery workshops in China, as two fragments of Dusun storage jars recovered from Siraf have Arabic names incised beneath the glaze, suggesting direct Muslim contact with their place of manufacture, probably one of the great South China port cities. Thus, it seems likely that Basran merchants trading with the Far East facilitated the transmission of Chinese manufacturing practices, either by importing Chinese potters to Basra, or more likely, through describing what they observed there.

The pure white surface achieved with the newly invented tin glaze provided an ideal venue for colourful two dimensional design, and soon cobalt blue decoration was being added, creating the affect of "ink on snow." It was these early Islamic blue-and-white wares, which subsequently made their way to China with the Muslim merchants that probably inspired the Chinese potters to make their first tentative experiments with this spectacular colour combination. Indeed, the earliest Chinese blue-and-white wares recently excavated at Quanzhou reveal an undeniable debt to early Islamic concepts of abstract design seen in the Basran wares.

Conclusion

The dynamic two-way exchange of artistic ideas between East and West at this time had long-term consequences for the history of Art. The tin glaze invented to imitate Chinese porcelain revolutionized ceramic art by making the surface of earthenware pottery a white canvas for the painter. The recipe was eventually transmitted from Basra west to Egypt, and from there across the Mediterranean to Renaissance Europe. It was this technology that gave rise to the great European Majolica tradition, and that, with the sixteenth century discoveries, was transferred to the New World. In the Far East, although porcelain continued to be considered of superior quality to tin glazed earthenware, the trade in the earliest Basran wares decorated with cobalt blue inspired the Chinese to experiment with the spectacular combination of blue and white. It would not be until five hundred years later, however, in the fourteenth century, that they would overcome the technological problems of using cobalt blue in their high-firing kilns, and Chinese Blue and White would make its triumphant and long-lived entrance onto the scene.