A Beautiful Octagonal Longquan Vase
Yuan to Early Ming Dynasty

By Lucian Filler

Octagonal vase with tall tapering neck and flared lip. Fine pale-grey porcelain body with luminous pea-green glaze. Modeled after archaic bronze ware. Longquan ware. Late Yuan or early Ming dynasties 13th-14th centuries. H. 9.0 in. (22.86 cm.), mouth dia. – 3.3 in. (7.8 cm.), body dia. – 5.6 in. (8.3 cm.), foot dia. – 3.6 in. (9.1 cm.)

Longquan Kilns and Wares

Preface

This project started with an investigation of the background and construction of the Longquan Yuan-Ming octagonal vase featured in this article. As the project proceeded, it became immediately apparent that the informational body related to Longquan celadons is vast, and this article would only scratch the surface of the knowledge base that has been generated by others on the topic. As such, in order to limit the scope of this investigation, this writing will focus primarily on Longquan wares from the Five Dynasties period to the Ming Dynasty. This topic will be revisited as other Longquan wares are studied, to expand this work into a more complete history of Longquan wares, the technologies that were employed to make them, and the supporting industries used to facilitate their production.

Overview

Named after Longquan (Wade-Giles: Lung-ch'üan) County, located in Zhejiang (Wade-Giles: Chekiang) province, Longquan kilns have been in existence since the Three Kingdoms period (220-265 AD) that followed the breakdown of the Han Dynasty in 220 A.D.[1] But the true area that these kiln sites cover is extensive, and that to date, there have been over 500 "Longquan" kilns discovered that are distributed over 13 Zhejiang counties, and the dates of operations range from the third century AD to the Qing.[2]

Longquan ceramics have become known as one of the great ceramic wares of the Song Dynasties.[3] But the Longquan kilns did not rise to eminence until around the beginning of the Northern Song Dynasty (960-1126 AD), with their zenith in the late 13th to 14th centuries.[4] This is

[1] Rotondo-McCord, *Heaven and Earth Seen Within*, 26.
[2] Krahl, Pierson (Editor), Song Ceramics – Art History, Archaeology and Technology (Colloquies on Art and Archaeology in Asia No. 2), Section 1, Chapter 4 Famous Brands and Counterfeits: Problems of Terminology and Classification of Song Ceramics, 71; Kerr, Song Dynasty Ceramics, 89-90.
[3] Tregear, Mary, Song Ceramics
[4] Wood, Nigel, Chinese Glazes: Their Origins, Chemistry and Re-creation,

noted in Gompertz's writings in *Chinese Celadon Wares*: "By far the largest number of Chinese celadons were made during the latter part of the Sung period, through the Yüan and on into the Ming, at the extensive potteries near Lung-ch'uan in the south-western corner of Chekiang province."[5] In fact, the production and distribution of Longquan wares was so great that it became one the most famous and most produced celadon wares, which caused many of the earlier types of celadons, to have been relegate "and almost lost to memory."[6]

Longquan ceramics were initially overshadowed by the Yue kiln's premier celadon wares (celadon is any of several Chinese porcelains having a translucent, pale green glaze resembling jade) during the later Tang Dynasty (618-906 AD) and Five Dynasties (907-979 AD).[7] Earlier pieces of Longquan wares from the Five Dynasties and earlier Northern Song were prone to yellowing, and had thinner glazes, that were given to crazing.[8] Longquan kilns earlier on frequently mimicked both Yue wares' glaze and stylistic form into the early Northern Song. This resulted in many of these earlier Northern Song Longquan pieces having yellow-green glazes and designs that closely resembled Yue wares of the late Five Dynasties period.[9] But as the quality of Yue continued to decline into the Northern Song (possibly due to shortages of raw materials and deforestation), Longquan wares gained imperial favor during the Northern Song imperial court and came to replace Yue wares for imperial use by the Southern Song.[10]

By the 11th and 12th centuries, Longquan glaze colors had darkened to an olive hue and carved decorations became more vigorous. It was also during the later Northern Song that the Longquan ceramics began their meteoric rise in popularity.[11] This was also facilitated to a large extent in the late 12th and into the 13th centuries when the Imperial Court of the Northern Song was defeated by the Jurchen Tartars (Jin Dynasty 1115-1279 AD) in the north, and retreated from Kaifeng (1126 AD) and eventually relocated to Hangzhou (1138 AD) to reestablish itself as the Southern Song Dynasty (1127-1279 AD).[12] This placed the Imperial court, along with a "new

[5] Gompertz, Chinese Celadon Wares – 2nd revised ed., 147
[6] Ibid, 147.
[7] Kerr, Song Dynasty Ceramics, 89-90.
[8] Gompertz, Chinese Celadon Wares – 2nd revised ed., 160
[9] Tregear, Song Ceramics, 169-170.
[10] Wood, Chinese Glazes: Their Origins, Chemistry and Re-creation,76-77; Kerr, Song Dynasty Ceramics, 84.
[11] Medley, The Chinese Potter, 145.
[12] Kerr, Song Dynasty Ceramics, 84; Medley, The Chinese Potter, 145.

metropolitan patronage," who now relied on the southern kilns to supply ceramics to fulfill their ritual and daily needs, within close proximity of the Longquan kilns.[13]

Along with this new patronage, also came the foreign trade associated with the newly established capitol of the Southern Song empire. The new dynasty realized the need for increasing revenues to pay for the war in the north and for covering the cost of building a new capitol, and so encouraged trade with foreign merchants. Foremost amongst this foreign trade was a heavy demand on the "potteries for Chinese ceramic wares," which by far, surpassed ceramics production anywhere else.[14]

As a result, Longquan ceramics went on to become what we would call today "world class" and were in high demand by peoples and nations across the known world at that time. The distribution network for Longquan ceramics was vast and encompassed major trade routes at the time; with ceramic fragments being found in Central Asia, Persia, India, the East Indies, the Persian Gulf, Arabia, and down the east African coast of Kenya and Tanganyika; with numerous intact pieces located in India, Egypt, Persia, Turkey, and in Europe. Huge quantities were also exported to Japan, with thousands of sherds being found on beaches at Kamakura and Hakata Bay, and it many other historical locations inland.[15] In fact, Longquan pieces were, and still currently are, highly valued by the Japanese, and have created something of a cult of Longquan celadons that has given rise to a whole set of descriptive terms, some of which are used world-wide.[16]

Kiln and Firing Methods

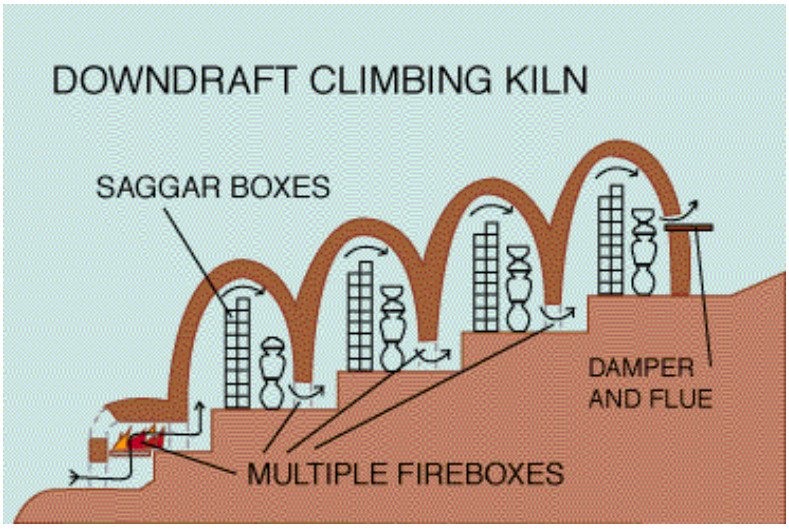
Longquan kilns were built on hillside inclines between 10-to-16-degree slopes to fire them more efficiently and resembled a "giant dragon slithering down a hillside," and were referred to as "dragon kilns" but are also known as step kilns due to their steplike construction of the firing chambers on the hillslope.[17] During the Northern Song, Longquan kilns incorporated fewer firing

[13] Ibid, 145; Kerr, Song Dynasty Ceramics, 95.
[14] Ibid 145.
[15] Gompertz, Chinese Celadon Wares – 2nd revised ed., 148.
[16] Ibid, 148.
[17] Gompertz, Chinese Celadon Wares – 2nd revised ed., 172; Zhiyan, Li, Bower, Virginia, L., Li, He, Sensabauh, Ake (Preface), Chinese Ceramics: From the Paleolithic Period Through the Qing Dynasty, 298.

chambers. In the 13th century, during the Southern Song, kiln technologies improved, and the use of multi-chambered climbing (step) kilns were incorporated, which allowed for better temperature control of the kilns during firing.[18]

Wood materials were burned as fuels to fire the Longquan kilns, which aided in creating a reduction atmosphere during firing. These kilns also employed downdraft technology, which uses an exhaust vent at the bottom of the firing chamber that was then eventually discharged to a chimney (Figure 1). This mechanism allowed for the kilns to be heated more evenly with the first firing chamber being stoked to temperature, then with the heat rising up through the chamber and exhausted out the bottom, to be recirculated to the next firing chamber, which was then stoked after the previous chamber came to temperature.

Figure 1 – Downdraft Climbing Kiln[19]



The number of firing chambers could vary depending on the space allotted (kilns at the Dayao site appeared to have between 10 and 12 chambers). The fire box and main stoke hole was located at the bottom of the kiln with, additional stoke holes placed at intervals along one side of

[18] Ibid, 172.
[19] Glendale Community College, Advanced Ceramics Handbuilding – Art 191, Internet, http://www-01.glendale.edu/ceramics/kilns191.html

the kiln, with peep holes located on the opposite side.[20] The firing temperature was between 2156°F (1,180°C) to 2,336°F (1,280°C), with the greener pieces usually fired at the upper end between 2,282°F (1,250°C) and 2,336°F (1,280°C).[21] These kilns were massive, which during the Northern Song were sized up to 164 ft. (50 m.) in length, by 6.5 ft. (2 m.) wide, and could be stacked 8 saggars high throughout, and for the kilns excavated at Dayao, have been estimated to be capable of firing between 20,000 to 25,000 pieces at a time.[22] But larger step kilns have also been located elsewhere. For example, a Jian ware kiln discovered at Jianyang, measures upwards to 405.5 ft. (123.6 m.), and is estimated to have produce 100,000 pieces at a single firing.[23] Additionally, each kiln location could be in operation of multiple kilns (e.g., 23 kilns at Dayao and 16 at Jincun). The quantities produced by these kilns was astounding, as they were operated around the clock, seven days a week.

This said, the step kiln design has both its advantages and disadvantages in that the reduction atmosphere was more easily controlled, but that the pieces produced in the lower chambers were of poorer quality than those at the top due to the faster rise in temperature, where the heating period was longer and more even. Based on this information, one can speculate that the featured Yuan-Ming octagonal vase may have been fired in one of the upper chambers due to its fine glaze and body finish.[24]

Clay Type and Characteristics

Longquan ceramics are considered to be true porcelain and not stoneware.[25] The compositional structure of the clays used at Longquan kilns are almost identical in physical properties of the white porcelain clays use at Jingdezhen, in that they are high-alkali, high-silica, with only a slightly higher iron and titanium content, with a little higher potassia ratio over soda.[26] This made for light

[20] Medley, The Chinese Potter, 147.
[21] Ibid, 147.
[22] Tregear, Song Ceramics, 170.
[23] Kerr, Song Dynasty Ceramics, 116-117.
[24] Medley, The Chinese Potter, 147-148.
[25] Wood, Chinese Glazes: Their Origins, Chemistry and Re-creation,75.
[26] Ibid, 75.

but extremely strong, durable, high quality wares, that were suited to everyday use, while being ascetically appealing.[27]

Jingdezhen chose to use unadulterated white porcelain clays for their wares, which did not match well with the translucency of the celadon glaze types and decided on a different glaze formulation to better match the pure white porcelain clay bodies.[28] Longquan decided to improve and carry on the local greenware tradition instead. As the translucency of the Longquan glazes would not facilitate the white of the pure porcelain clay, which would not allow for the deep, rich, blue-green, jade-like, colors that are the signature of the finest Longquan pieces, the Longquan potters chose to deliberately alter the white porcelain clays by adding iron-rich clays, which created a pale-gray porcelain body.[29] This pale-grey clay body was very important to the production of the Longquan ceramics, and the resulting ceramic body was considered a substantial technical achievement that allowed for the production of thin, strong, wares that did not warp easily at high temperatures.[30]

In addition, the exceptional strength of the Longquan body clay allowed the potters to expand their repertoire of forms for their wares. During the Song Dynasty, and especially during the Southern Song, potters begin to mimic archaic bronzes and jade pieces. The Yuan-Ming octagonal vase pictured above is a representative example of wares based on late Bronze Age prototypes.[31]

But since most ceramics at this time were fashioned on the wheel rather than pieced together on a mold, this vase would require a different treatment and a more difficult construction than wheel thrown wares. This octagonal vase was likely constructed by individually thrown horizontal sections, which then had to be carefully cut into shape when leather-hard, then reconstructed into the existing angular form by luting the individual pieces together prior to firing.[32] Indeed, observations made to the interior of the vase with an endoscope, clearly show

[27] Ibid, 88.
[28] Ibid, 76
[29] Wood, Chinese Glazes: Their Origins, Chemistry and Re-creation, 76-78
[30] Kerr, Song Dynasty Ceramics, 91-92.
[31] Sotheby's auction, Guan from a Japanese Collection, octagonal vase, Lot 1, April 7, 2015, online catalogue - https://www.sothebys.com/en/auctions/ecatalogue/2015/guan-from-a-japanese-collection-hk0573/lot.1.html.
[32] Ibid, Online catalogue.

the luting of vertical seams connecting the angular panels. However, no observation was made during this examination regarding joining of different horizontal sections (e.g., between the vase neck and body), which may infer that the vase's vertical panels are constructed of one-piece vertical strips.

Glaze Type and Characteristics

Longquan ceramics used feldspathic glaze that were mainly lime-alkali in composition, which provides a characteristic bluish or greyish-green tone, but given various factors of the glaze and body clay composition and firing temperature, it can produce various color shades ranging from light green, pea green, sea green, blue green, duck-egg blue to olive or dove grey.[33] Colors and hues can vary significantly depending on the ratio of titanium and iron oxide in the raw materials. Porcelain stone and limestone were the main ingredients, much the same as at Jingdezhen, but also added wood ash on occasion to improve the glazes refractive quality.[34] The use of porcelain stone in the glazes lowered their iron oxide and titanium composition, and also raised the quantity of potassium oxide, which helped the glazes to fire bluer and created the "unctuous and jade-like qualities" that has been long admired in Longquan celadons.[35]

The best quality Longquan celadon of the finest quality glaze and clay emerged in the late 12th and 13th centuries and were probably made at the Dayao kiln site. These exemplary pieces have become known in Japan and elsewhere as *di* (younger brother), or as *kinuta* (named after a famous bluish glazed paper-beater mallet shaped vase that is located in Bishamon-do Temple in Kyoto, Japan). These Dayao kiln ware used glazes that were very low in titanium oxide, and which helped the iron-blue colors to present themselves, and also minimized the grey tones caused by the body clay due the high translucency of the glaze.[36]

[33] Gompertz, Chinese Celadon Wares – 2nd revised ed., 22; Wood, Chinese Glazes: Their Origins, Chemistry and Re-creation, 77.
[34] Wood, Chinese Glazes, 77-78.
[35] Kerr, Song Dynasty Ceramics, 92.
[36] Wood, Chinese Glazes: Their Origins, Chemistry and Re-creation, 78.

As time progressed, the alkali and titanium levels tended to increase in the latter period of the kilns history, making Longquan pieces look greener and glassier.[37] This fact could account for the pea-green and somewhat glassier textured glaze of the Yuan-Ming Dynasty octagonal vase featured in this article.

Longquan celadons are renowned for their glaze thickness. This is in part due the lime-alkali composition of the glaze which prevented running and large bubbles occurring during the firing process. The process also required that multiple coats (as many as five) of glaze be applied, and fired at low biscuit temperatures, with a final firing to full heat of between 2,246-2,354°F (1,230-1,290°C).[38] Adding to this visual effect, as referenced earlier, Longquan glazes were higher in potassium and soda content, which was responsible for their high translucency that enable them to refract and scatter light. This effect was what gives Longquan celadons their jade-like qualities. [39]

Adding to this effect of light, is the softening of the Longquan glaze texture, which became much appreciated by the time of the Southern Song. This softening was accomplished by the presence of a multitude of minute bubbles and other particles (possibly from the addition of wood ash) that can be observed in the glaze under magnification. These small bubbles further aid in the refraction of light particles throughout the glaze to create an opacity, which also adds to the jade-like effect that Longquan celadons is noted for.[40]

Physical and Aesthetic Characteristics of the Yuan-Ming Octagonal Vase

During this examination, research done on this piece confirm it to be Longquan ware from the late Yuan or early Ming dynasties (13th-14th centuries) due to the distinctive clay type, an apparent high-temperature reduced atmosphere firing method associated with the period's step kilns, and high-quality glaze texture of pea-green color. This is an octagonal vase with an octagonal

[37] Ibid,78.
[38] Gray, Basil, Sung Porcelain and Stoneware, 182; Wood, Chinese Glazes: Their Origins, Chemistry and Re-creation, 80.
[39] Gray, Basil, Sung Porcelain and Stoneware, 182.
[40] Gompertz, Chinese Celadon Wares – 2nd revised ed., 163-164.

flared lip, leading to a tall neck, which expands into the main body that rests on an octagonal foot ring. The pale-grey porcelain clay body is covered with beautifully luminous pea-green glaze. Modeled after archaic bronze wares the height is 9.0 in. (22.9 cm.), flared mouth diameter is 3.26 in. (7.83 cm.), with a main body diameter of 0.6 in. (8.3 cm.), and a foot ring diameter of 3.6 in. (9.1 cm.).

Indeed, the vase featured in this article is a remarkably well-preserved specimen of Longquan celadon being produced during this time, and it is as a tribute to the centuries of accumulated knowledge and technical application used to create it. Construction methodology for this vase, used as a model the representative characteristics exhibited by archaic bronze vessels ("Zun" type examples pictured below), and though while probably not attributable to any particular one of the archaic bronze types, are clearly reflected in the multiplicity of hard angles observed in this piece.

Bronze Vessel (Zun Type),
Western Zhou Dynasty (1046-771 BCE)
Photo credit: The Metropolitan Museum of Art

Bronze Vessel (Zun Type),
Shang Dynasty (1400-1300 BCE)
Photo credit: The Nezu Musem,
Tokyo, Japan

One can see from the bronze vessels pictured, their influence on the vase's flaring mouth, the angular lines of the vertical bodies, banded separation of the horizontal planes, and a larger main body resting on the foot. The dimensions of this Yuan-Ming vase vertical panels which were used

to create the eight angular vertical planes in the finished piece, are all uniform in size. Panel widths start at approximately 0.8 in. (2.0 cm.) at the top of the neck, expand to 2.0 in. (5.0 cm.) at the mid-body, and were then continued down to the octagonally formed foot that was probably molded and attached separately. The vertical spacing of the horizontal bands, which are reminiscent of those also found on bamboo neck vases, are from top to bottom; 1.6 in. (4 cm.) from the flared mouth to the first band, 1.6 in. (4 cm.) to the second band, gently widening to 2.0 in. (5.0 cm.) to the band at mid-body and continuing down to the foot. The angle of the slope of the top shoulder and bottom of the main body are 18 and 47 degrees, respectively.

The vase is a master work of dimensional form, which were expertly brought together to create a superb perfection of proportionality that evokes a quiet solitude for the mind, while at the same time entrancing the eye to study every detailed angle of its puzzle like construction. One can only marvel at the creativity and craftsmanship that went into making this vase, especially when considering the Longquan kiln's massive productive output of the time.

Along with the angular form chosen for the vase, from the glaze color and thickness, and good quality glaze fit (i.e., the glaze and clay shrink together proportionally during the final stages of cooling to reduce or eliminate cracking, which is also called crazing) with the dove grey body, and slight warping of the neck due to the final high firing temperatures, all come together to form a masterpiece of form and color bringing to mind a smooth, cool, piece of angularly cut jade.[41] When viewed, the glaze depth and translucency captivate the viewer like a crystal ball, with the power to calm the mind and sooth the soul.

During technical observations, when viewed under 120x magnification, the myriad of microscopic green bubbles and small suspended particles (mentioned by many authors in the source materials used for this writing) became readily visible. It is these bubbles along with the glaze chemistry that help to provide the luminosity and translucency of the glaze due to their prismatic light reflective properties. And as mentioned earlier, interior endoscopic inspection of the vase confirms that eight individual leather hard clay panels, with multiple complex angles, were joined together separately by luting, to create a captivating geometrically symmetrical form.

[41] Wood, Chinese Glazes: Their Origins, Chemistry and Re-creation, 80.

Interior observation also revealed smoke-residue from the kilns on the inner body clay, which itself is testimony to the kiln technology where this piece was birthed.

Conclusion

While one could go on to list all the technical properties of the clay, glaze, and kiln technology used to manufacture this splendid octagonal vase, it would only serve to inform about the physical characteristics of the vase but could never truly describe the visual and physical dynamics this piece imparts to an appreciative observer. The real story is truly about the genius of the pottery masters at the Longquan kilns that could bring together water, earth, and fire into a perfection of form with their magic touch; and create something as wonderous as this octagonal vase. It should be kept in mind that this was done approximately 700 years ago in technological and social conditions that would be considered very foreign to most modern people today.

This piece begs the observer to pick up and hold this piece not only for the visual experience of its lustrous pea-green glaze, but also for its tactile attributes, much like a fine, smooth, resplendent piece of light-green jade, in order to join together with it in an appreciation of beauty and the creative mastery that went into the making of Longquan ceramic wares.