

A Comparative Study on the Characteristics of Xuande Kiln (Ming Dynasty) and Tang Kiln (Qing Dynasty) in Chinese Porcelain

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Abstract: As two pinnacles in the history of Chinese ceramics, the Xuande Kiln of the Ming Dynasty and the Tang Kiln of the Qing Dynasty represent the highest achievements in imperial porcelain production of their respective eras. The Xuande Kiln is celebrated for its vibrant and luminous blue-and-white wares, as well as their potent and dignified forms, embodying the artistic confidence rooted in the robust national power of the early Ming Dynasty. The Tang Kiln (referring to the period when Tang Ying supervised imperial production) is distinguished by its diverse forms, exquisite craftsmanship, and innovative integration of techniques, reflecting the mastery of porcelain artistry during the height of the Qing Dynasty. Through a comparative analysis of the historical context, formal aesthetics, glaze technology, decorative themes, and cultural connotations of these two kilns, this study elucidates their artistic and technical characteristics within their socio-historical frameworks and traces the evolution and aesthetic transitions in Chinese ceramic art from the Ming to the Qing Dynasty^[1,15].

Keywords: Xuande Kiln (Ming Dynasty); Tang Kiln (Qing Dynasty); Chinese Imperial Porcelain; Artistic and Technical Characteristics; Comparative Study (of Ming-Qing Ceramics)

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1. Introduction

After millennia of development, Chinese ceramic art has formed distinct kiln systems across various historical periods. Among these, imperial porcelain—produced with the finest materials, most advanced techniques, and efficient management models of the time—epitomizes the aesthetic and technological achievements of each era. The Jingdezhen Imperial Kiln during the Xuande reign (1426–1435) of the Ming Dynasty (referred to as the Xuande Kiln) and the Jingdezhen Imperial Kiln supervised by Tang Ying during the Yongzheng to Qianlong reigns of the Qing Dynasty (known as the Tang Kiln) represent the zenith of porcelain production in their respective dynasties^[1].

The Xuande Kiln emerged at a critical juncture in the maturation of the Ming imperial kiln system. With strong imperial demand for ritual, ceremonial, and daily-use ceramics, porcelain technology advanced significantly, building upon Yuan Dynasty traditions. In particular, blue-and-white porcelain was hailed as “defining the aesthetic zenith of its epoch”^[2,3]. In contrast, the Tang Kiln flourished during the prosperous Kangxi-Yongzheng-Qianlong period of the Qing Dynasty. Tang Ying, the imperial supervisor who identified himself as a “potter,” immersed himself in technical research,

balancing archaism with innovation^[4]. Under his direction, the Jingdezhen Imperial Kiln became a model that “synthesized the essence of all famous kilns throughout history”^[5]. Although separated by nearly three centuries, these two kilns engage in a transhistorical dialogue within ceramic history^[1].

Current academic research on the Xuande Kiln primarily focuses on technical analysis and authentication of blue-and-white and red-glazed porcelain^[2], while studies on the Tang Kiln emphasize Tang Ying’s supervisory practices and innovations in glaze and form^[6]. However, systematic comparisons between the two are still scarce. By examining historical documents, extant artifacts, and archaeological materials related to both kilns, this paper conducts a multidimensional comparison of their artistic features, aiming to enrich the scholarly perspective on Chinese ceramic history and reveal the profound influence of historical context on porcelain production^[7].

2. Historical Background and Production Context of the Xuande Kiln and the Tang Kiln

2.1. Historical Context of the Xuande Kiln (Ming Dynasty)

The Xuande Kiln represents a defining period for the Jingdezhen Imperial Kiln in the Ming Dynasty. Its development was closely tied to the political and economic environment of the early Ming. After Emperor Chengzu (Zhu Di) moved the capital to Beijing, society stabilized and the economy recovered. The court’s demand for porcelain used in rituals, ceremonies, and daily life increased substantially, driving improvements in the imperial kiln system. Emperor Xuande (Zhu Zhanji) himself had a keen interest in porcelain and participated directly in artifact design. According to the *Veritable Records of the Xuande Emperor*, the court repeatedly commissioned Jingdezhen to produce “dragon-and-phoenix porcelain” and “blue-and-white porcelain on a white ground,” imposing strict quality standards and mandating that “substandard pieces shall be discarded”^[8].

By this time, the Jingdezhen Imperial Kiln had developed a large-scale production system. Raw materials were sourced nationwide: imported Sumaliqing cobalt from Persia was used for blue-and-white ware^[9]; high-quality local kaolin and porcelain stone were used for the body and glaze; and pine wood served as the primary kiln fuel, ensuring stable firing temperatures. A rigorous craftsman management system, including the “rotating artisan system” and “resident artisan system,” gathered the finest porcelain makers across the country, guaranteeing technical excellence. The output of the Xuande Kiln not only supplied the imperial court but also reached East Asia, Southeast Asia, and the Middle East through tributary trade, serving as a significant vehicle for Chinese cultural dissemination^[10].

2.2. Historical Context of the Tang Kiln (Qing Dynasty)

The term “Tang Kiln” specifically refers to the imperial kiln system overseen by Tang Ying at the Jingdezhen Imperial Kiln Factory from the 6th year of the Yongzheng reign (1728) to the 21st year of the Qianlong reign (1756) of the Qing Dynasty. Originally a secretary of the Imperial Household Department, Tang Ying was assigned to assist Nian Xiyao in kiln supervision and later took full charge of production. He served for nearly three decades and is regarded as “the most outstanding superintendent of the Qing imperial kilns”^[6]. His tenure coincided with the prosperous Kangxi-Yongzheng-Qianlong era, characterized by strong state finances and diverse imperial aesthetic tastes—emphasizing both archaism and innovation—which provided a supportive policy and material foundation for the Tang Kiln^[1].

Tang Ying emphasized both understanding and managing ceramic production. He personally engaged with kiln processes and compiled technical documents such as *Monumental Record of Pottery Production* and *Illustrated Guide to Porcelain Making*, which systematically recorded production techniques and forms, becoming invaluable sources for Chinese ceramic history^[6]. In management, he refined the “government-supervised and civilian-produced” system, which ensured the quality of imperial wares while also promoting technical improvements in public kilns. Technologically, he integrated the craftsmanship of famous kilns from previous dynasties, innovated in glaze and form, and expanded the variety of Tang Kiln products to “dozens of types,” covering all known categories including blue-and-white, famille rose,

painted enamel, and monochromatic glazes^[4,5]. Moreover, expanded overseas trade during the Qing Dynasty led to the export of Tang Kiln porcelain to Europe, where Western aesthetics also indirectly influenced form and decoration^[11].

3. Artistic and Technical Characteristics of the Xuande Kiln and the Tang Kiln

3.1. Artistic Characteristics of the Xuande Kiln

3.1.1. Form: Potent and Stately, Blending Practical and Ritual Functions

The forms of Xuande Kiln wares are characterized by their vigorous and substantial presence. They inherited the boldness of Yuan Dynasty ceramics while incorporating the dignified temperament of the early Ming. Common forms include bowls, plates, vases, pots, and jars. Larger pieces, such as the “Xuande Blue-and-White Celestial Globe Vase with Sea-Water and Dragon Design,” stand up to 46 cm tall, with a full and rounded body exuding the grandeur of the early Ming period. Smaller items, like the “Xuande Blue-and-White Cup with Interlocking Lotus Pattern,” are refined and elegant, reflecting meticulous attention to daily-use porcelain^[8].

Notably, Xuande Kiln porcelain emphasized both functionality and ritual purpose: sacrificial wares such as the “Blue-and-White Dou Vessel with Five Grains Motif” strictly adhered to ancient ritual bronze forms with clean, structured lines, while scholar’s objects like the “Blue-and-White Brush Washer with Pine, Bamboo, and Plum Blossoms” were shaped for practicality. Influenced by Islamic culture, foreign-inspired forms such as “monk’s cap jugs” and “duomu pots” (Tibetan-style vessels) also appeared, reflecting active cultural exchanges^[1,8].

3.1.2. Glaze: Vibrant Blue-and-White and Mellow Monochromes

The most representative glaze of the Xuande Kiln is blue-and-white. The use of imported Sumaliqing cobalt resulted in a vivid, deep blue with a dark undertone and naturally occurring “iron-rust spots” within brushstrokes—later regarded as a key authentication feature^[2,9]. For example, on the “Xuande Blue-and-White Plate with Interlocking Peony Pattern,” the blue tone varies in intensity, creating rich layers reminiscent of the “five shades of ink” in Chinese ink painting^[8,3].

Monochromatic glazes also achieved excellence: the red glaze, known as “sacrificial red” or “ox-blood red,” is smooth and lustrous, resembling freshly congealed blood; the blue glaze (often called “sky-clearing blue”) is deep and solemn, frequently used for ritual vessels; the yellow glaze, soft and bright, became an imperial exclusive due to the homophonic association with the word for “emperor” (huang). These monochromatic glazes emphasized texture and pursued a “jade-like” effect, embodying the traditional Chinese aesthetic of “comparing virtue to jade”^[12].

3.1.3. Decoration: Diverse Themes and Bold, Dynamic Lines

Decorations on Xuande Kiln porcelain encompass royal symbols, natural landscapes, and religious culture. Dragon motifs were the most common imperial decoration—for instance, the dragons on the “Blue-and-White Jar with Cloud and Dragon Pattern” are dynamic with flying whiskers and sharp claws, conveying imperial majesty^[5]. Plant patterns such as interlocking lotus and baoxianghua (Buddhist floral motif) imply auspicious meanings, rendered with fluid and gentle lines. Other motifs include children at play and landscapes, reflecting secular interests^[12,13].

The “double-outline and fill-in” technique was employed, yielding vigorous and precise lines with sharp transitions—distinct from the softer style of the Yongle period. Pattern arrangement is balanced, with clear hierarchies between primary and secondary decorations. On plates, for example, interlocking patterns often appear on the interior wall, a central motif inside, and lotus petal patterns on the exterior, forming a harmonious visual rhythm^[12,8].

3.2. Artistic Characteristics of the Tang Kiln

3.2.1. Form: Archaism and Innovation, Complex Structures

The most prominent feature of Tang Kiln wares is the simultaneous pursuit of archaism and innovation. Tang Ying promoted “reviving ancient traditions,” replicating wares from the Five Great Kilns of the Song Dynasty (Ru, Guan, Ge,

Jun, Ding) as well as Ming Yongle and Xuande pieces. For example, the “Tang Kiln Guan-Type Glazed Double-Handled Vase” imitates Song Guan ware with naturally occurring crackles almost indistinguishable from the originals^[11]. At the same time, the Tang Kiln introduced complex forms such as “revolving vases” and “interlocking vases” (jiaotai ping). The “Yellow-Ground Famille Rose Openwork Revolving Vase,” for instance, has a rotating inner layer and an openwork outer layer that creates dynamic visual interplay, demonstrating exceptional molding skills^[5,11].

In response to Qing imperial domestic needs, the Tang Kiln also produced numerous wares combining decoration and utility. For example, the “gilded famille rose tea set” includes a teapot, cups, and saucers with unified forms; “enameled porcelain snuff bottles” were created following the introduction of snuff tobacco, designed to be small and portable. Export wares such as the “Guangcai Plate with Figural Design” catered to European tastes, often featuring ornate gilded borders^[4,11].

3.2.2. Glaze: Diverse Types and Luminous Colors

The Tang Kiln produced the most varied glaze types in Chinese history. According to the *Monumental Record of Pottery Production*, there were 57 types of color glazes, including “imitation Iron-Rust Spot glaze,” “imitation Xuande sacrificial red glaze,” and “Western-style purple glaze”^[4]. Among these, famille rose porcelain was a major innovation. By adding “glass white” to overglaze painting, colors attained a soft, opaque texture with graduated tones. For example, on the “Famille Rose Bowl with Peony Pattern,” petal colors shift from pale pink to deep rose, achieving strong three-dimensionality.

Painted enamel porcelain (falangcai) reflects Sino-Western technological fusion. Using imported enamel pigments, these wares exhibit bright, solid colors—typically yellow, blue, and red—with painting precision rivaling meticulous-style painting^[1,4]. In colored glazes, the Tang Kiln innovated “kiln-transmutation glazes” based on traditional techniques, where glaze colors blend into flowing effects of red, blue, purple, etc., due to kiln temperature variations. For example, the “Kiln-Transmutation Glaze Pomegranate-Zun Vase” displays naturally flowing hues reminiscent of sunset clouds^[5,11].

3.2.3. Decoration: Fusion of Chinese and Western Elements, Auspicious Meanings

Decorations on Tang Kiln porcelain integrated Western elements into traditional themes. Motifs such as “dragon and phoenix bringing prosperity” and “the three stars of fortune, prosperity, and longevity” remained dominant but were executed with greater refinement. For instance, on the “Blue-and-White Hexagonal Vase with Interlocking Lotus Pattern,” petals are finely layered with clearly defined veins^[11]. Western themes such as “European noble ladies” and “scrollwork patterns” appeared on export and enameled wares. The “Enameled Plate with Western Figures” employs perspective in figure rendering and depicts Western-style architecture, reflecting the influence of Western painting techniques^[4,11].

Multiple decorative techniques were utilized, including underglaze blue, overglaze enameling, gilding, openwork, and carving. The “Gilded Famille Rose Openwork Incense Burner,” for example, features overall gilding and openwork carving of interlocking lotus patterns, exhibiting luxurious magnificence. Decorations also became more secularized—themes like “abundant harvest” and “flourishing descendants” reflected societal aspirations for a prosperous life^[5,11].

4. Comparative Analysis of the Xuande Kiln and the Tang Kiln

4.1. Differences in Historical Positioning and Philosophies of Production

The Xuande Kiln emerged during the maturation of the Ming imperial kiln system, with a production philosophy centered on “serving imperial authority and showcasing national prestige.” Its style emphasized “monumental presence and practical function.” The boundary between imperial and civilian kilns was distinct, and production strictly followed court standards, rarely influenced by popular aesthetics, resulting in a unified artistic style^[14].

The Tang Kiln, by contrast, operated during the heyday of the Qing imperial kiln system and embraced a more diversified philosophy: it valued archaism and accurate replication of past famous wares, while also encouraging innovation and technical synthesis to meet varied imperial demands. Tang Ying advocated for “exquisite craftsmanship and

comprehensive styles,” allowing the Tang Kiln to maintain imperial dignity while achieving artistic flexibility. Moreover, through the “government-supervised and civilian-produced” system, it facilitated technical exchange between imperial and public kilns^[4-6].

4.2. Differences in Technical Inheritance and Innovation

The technical achievements of the Xuande Kiln built upon and refined Yuan Dynasty practices: the use of Sumaliqing cobalt in blue-and-white ware was perfected; firing temperature control became more precise (around 1300°C); and the body-glaze fit was improved, reducing deformation and glaze flaws^[9]. However, innovation primarily focused on refining individual types, such as purifying cobalt and red glaze pigments, without systematic technological revolution^[15].

The Tang Kiln’s innovations were characterized by “integrated breakthroughs.” Tang Ying systematized processes from material selection to finished product inspection. In glaze formulation, he combined traditional mineral glazes with Western enamel pigments, creating new varieties like famille rose and painted enamel porcelain. In firing technology, he improved kiln structures and adopted a mix of wood and coal firing, increasing success rates. This comprehensive innovation made the Tang Kiln a master synthesizer of traditional Chinese porcelain technology^[4-6].

4.3. Era-Specific Differences in Aesthetic Style

The aesthetic style of the Xuande Kiln reflected the “magnificent and grand” spirit of the early Ming: forms pursued “scale and integrity”; glazes valued “richness and purity”; decorations emphasized “boldness and dynamism.” The overall artistic temperament was solemn and dignified, aligning with the unified and powerful national identity of the early Ming^[1,5,7].

The Tang Kiln’s aesthetic embodied the “exquisite and ornate” taste of the High Qing: forms sought “ingenuity and variety”; glazes prized “luminosity and elegance”; decorations stressed “delicacy and density.” The overall character was luxurious and refined, mirroring the material abundance and cultural fusion of Qing society. These differences ultimately reflect how national power and social mentality shaped artistic expression in their respective periods^[13].

5. Historical Influence and Contemporary Relevance

The Xuande Kiln established the aesthetic paradigm for Ming imperial porcelain. Its techniques for blue-and-white and monochromatic glazes became standards for later emulation. “Xuande-style” reproductions were common during the Kangxi and Yongzheng reigns, attesting to its enduring influence^[12]. Moreover, Xuande porcelain exported via the Maritime Silk Road inspired “Xuande-style” imitations across East Asia, making it an important cultural symbol of the Sinosphere^[10].

The Tang Kiln represents the technical apex of traditional Chinese porcelain production. Its philosophy of “archaism without rigid replication, innovation without loss of essence” offers methodological insights for later generations. Tang Ying’s writings, such as *Monumental Record of Pottery Production*, remain critical sources for modern ceramic history research^[4,6]. The “Sino-Western fusion” style of Tang Kiln wares also provides historical precedent for contemporary cross-cultural ceramic creation^[11].

From a contemporary perspective, comparative study of these kilns not only clarifies the evolution of Chinese ceramic art but also inspires the modern inheritance of traditional craft: the “pursuit of excellence” in the Xuande Kiln and the “inclusive innovation” of the Tang Kiln together constitute the core spirit of Chinese ceramic culture, offering valuable lessons for the innovative development of today’s ceramic industry^[7].

6. Conclusion

As two monumental achievements in Chinese ceramic history, the Xuande Kiln of the Ming Dynasty and the Tang Kiln of the Qing Dynasty each exemplify the porcelain-making pinnacles of their eras through distinct artistic characteristics—

“potent and dignified, vivid and luminous” for the Xuande Kiln and “exquisite and ornate, innovative and diverse” for the Tang Kiln^[11]. Supported by the national strength of the early Ming, the Xuande Kiln established the foundational paradigm of imperial porcelain, integrating imperial will with traditional aesthetics^[13]. During the prosperous Qing, the Tang Kiln elevated porcelain technology to its peak through a synthesis of archaism and innovation, reflecting an era of cultural integration^[4,5].

The differences between the two kilns reflect not only technical evolution but also shifts in zeitgeist and aesthetic ideals: the transition from the “monumental” style of the Xuande Kiln to the “ingenious” style of the Tang Kiln reveals the historical trajectory from the expansive early Ming to the ornate High Qing. Studying the characteristics and legacy of these kilns deepens our understanding of Chinese ceramic history and offers historical wisdom for the modern transformation of traditional craftsmanship, allowing the millennia-old art of porcelain to continue thriving in the contemporary world^[7].

Disclosure statement

The author declares no conflict of interest.

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