

Research on the Emotional Design of the Glaze Color Aesthetics of the Tianqing Glaze of the Ru Kiln

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Abstract: Against the backdrop of intersecting technological latent demands and the revival of Eastern minimalist aesthetics, this paper examines the glaze color of Ru kiln's Tianqing glaze. Through historical analysis and case comparisons, it demonstrates the aesthetic of glaze color via visual, tactile, and aesthetic perspectives. The visual experience emphasizes material unity, the tactile experience conveys emotions through sensory engagement, while the aesthetic realm stimulates imagination through cultural subtleties in product design. This approach offers innovative insights for modern technological product design and the renaissance of Eastern aesthetics.

Keywords: Ru Kiln Celadon Glaze; Material; Emotional Design

1. Introduction

In this era of rapid technological advancement, tech products are increasingly permeating and influencing people's daily perceptions. Excessive development of these products has plunged users into a quagmire of technological existential anxiety,^[1] while material emotional design, akin to an antidote of Eastern wisdom, subtly alleviates the overt pressure of technology.

Ruyao Tianqing Glaze, a monochromatic material achieved through firing, embodies the Song Dynasty's transcendent minimalist aesthetics. Its beauty reflects Taoist philosophy of "non-action yet all things are accomplished" and the Song people's pursuit of "radiance without ostentation." The glaze's hues—celebrated as "the sky clearing after rain" (a metaphor for serenity)—range from sky blue to pale green, egg blue, and moon white, all sharing a subtle azure base. This delicate azure glaze features a warm, milky texture with a slight opacity, often exhibiting crackle under the surface. [1] The aesthetic of "ornamentation without adornment" resonates with Donald

Norman's three-tier emotional design theory across time: Visually, the glaze's "sky-clear after rain" hue softens color contrasts, allowing elements like zirconium, magnesium, and aluminum to blend seamlessly into the material's hue—mirroring Eastern wisdom that "great skill appears clumsy," dissolving technology's oppressive presence at the instinctive level. Tactilely, the warm agate-like texture evokes subconscious natural memories, embedding the philosophical inquiry of "being jade yet not jade" into neural circuits, bridging material and spiritual realms. Aesthetically, the glaze's plain charm and semi-glossy texture open a spiritual passage akin to "forgetting mountains and waters in meditation," transforming smart hardware into a "radiant yet unassuming" digital sanctuary.

This tripartite transformation of material, emotion, and culture is liberating technological products from utilitarian constraints. No longer mere cold assemblies of tools, these innovations have evolved into dynamic aesthetic vessels embodying the Daoist philosophy of 'following nature's way. 'The Ru kiln glaze employs' scattered morning stars 'bubbles to metaphorically represent the philosophy of negative space, while its' crab claw 'crack patterns interpret natural growth. This process transforms the Daoist wisdom of 'non-action yet all action' into tangible design language for technological products.

2. The Three Decodings of the Glaze Color Aesthetics of Ru Kiln

2.1 Decoding the Visual Experience of Ru Porcelain

Color serves as humanity's universal language, not only evoking emotional associations and shaping subjective and objective experiences, but also influencing our perceptions of volume, weight, temperature, time, and noise perception. [2] The glaze of Ru porcelain exhibits subtle color variations under different lighting

conditions. This phenomenon can be attributed to two primary factors: Firstly, the incorporation of agate components in Ru porcelain glaze creates oblique crackle patterns at various angles and bubbles of varying sizes resembling morning stars. These structures produce distinct light reflection effects. Additionally, the suspended metallic elements in the glaze layer and the exchange ratio between carbon and metal elements also influence color changes. Secondly, from a dispersion theory perspective, light consists of different wavelengths including red, orange, yellow, green, blue, indigo, and violet. The colors perceived by the human eye result from light reflection. Consequently, the glaze's varying absorption of different wavelengths causes the glaze color to dynamically shift with light. This color variation evokes associations with natural tranquility or freshness in viewers, thereby triggering corresponding emotional responses.

The imperial praise of Emperor Huizong of Song for "the sky clearing after rain" is transformed into measurable metrics. Analysis of Ru kiln celadon glaze's Lab values reveals its brightness dimension falls into the medium-high range, exhibiting a jade-like texture that is "lustrous yet not glaring." The red-green axis correlates with cool green tones, evoking imagery of natural vegetation and lakes to evoke calmness and comfort. The yellow-blue axis maintains neutrality, reducing yellow-blue tendencies while emphasizing the pure, neutral "sky color" to prevent emotional color interference. The Ru kiln celadon glaze's Lab value comparison table shows: Lab value L (brightness) ranges from 56 to 66, a value (red-green axis) from -7 to -5, and b value (yellow-blue axis) from 0 to 2. [3] This experiment establishes a quantifiable aesthetic gene map for celadon glaze.

Table 1. The Ru Kiln Celadon Glaze's Lab Value Comparison Table

Sample number	L price	a price	b price
The Forbidden CityGCQS-1604	67	-5.39	1.98
The Forbidden CityGCQS-1615	65	-7.29	0.70
The Forbidden CityGCQS-1631	65	-6.75	2.99

The sky-blue hue of Ru porcelain achieves visual harmony through its monochromatic elegance. While appearing unadorned from afar, its subtle glaze patterns reveal distinctive

characteristics upon closer inspection. As described in "Emotional Design", the "instinctive layer" refers to sensory stimuli like vibrant colors, sounds, and scents. [4] This concept suggests that by reducing the physical presence of products through visual softening techniques, we can alleviate psychological pressure. Such material subtlety allows products to seamlessly blend into daily life without drawing attention.

2.2 Decoding the Tactile Experience of Ru Porcelain

The tactile experience of Ru kiln's celadon glaze can be interpreted as a meticulously crafted emotional design language. It transcends the physical properties of materials, interacting with users through specific tactile semantics like "warm and smooth," "sticky and slippery," and "plump and rich." Ming Dynasty scholar Gao Lian's Eight Notes on Health Preservation: Notes on Leisurely Appreciation of Clear Aroma* describes: "I once saw Ru kiln glaze—its color is egg-white, the glaze is thick and glossy like piled fat, yet with faint crab claw-like patterns in the glaze and tiny sesame flower-like protrusions at the base." The phrase "the glaze is thick and glossy like piled fat" vividly portrays the glaze's plump, jade-like tactile texture. [5] Celadon glaze is not a uniform glass phase but forms through liquid-liquid phase separation during cooling, creating countless nano-scale calcium-rich droplets dispersed within a continuous silicon-rich glass phase. [6] This structure results from adding agate to the glaze, which contains crystalline minerals like SiO_2 that produce a dew-like crystalline transparency. [7] This structure scatters light, creating a soft milky sheen that also underlies its unique tactile quality. These nano-scale structures make the glaze surface not perfectly smooth at the microscopic level, but rather exhibit subtle undulations. When fingers glide over it, they create a "sticky" sensation rather than the pure "smooth" feel of glass.

The tactile experience is rooted in the perception of the object's overall structure. The "warm" sensation stems from the glaze's low thermal conductivity, while the "fleshy" texture derives from its thickness and elasticity. Ru kiln celadon glaze is characterized by low silicon (below 65wt%), high aluminum (above 13wt%), and high calcium (above 11wt%). The elevated levels of Al_2O_3 and K_2O in the glaze enhance

its high-temperature viscosity, enabling a stable glaze layer of 0.4 to 0.6mm, which provides the material basis for the tactile "fat-like" sensation. [7] This transforms the purely "hard" tactile quality into a "soft" sensation with slight elasticity, known as the "fleshy" feel.

The crackle effect represents a dynamic extension of tactile experience. Research indicates that celadon glaze cracks between 0.002 and 0.015mm in width, gradually filling and smoothing over centuries of use. As these cracks narrow, they align with the sensitivity threshold of fingertip tactile cells, creating a delicate, hair-like texture that feels crisp yet non-piercing. Over time, the edges of these cracks become rounded, appearing as smooth transitions on contour analysis devices rather than sharp edges—a hallmark tactile characteristic of aged artifacts.

The tactile experience of Ru Kiln's celadon glaze is a crystallization of materials, craftsmanship, and time. Through multi-layered tactile design spanning micro to macro and static to dynamic, it systematically mimics natural textures, precisely aligning with Norman's "emotional design" theory's behavioral hierarchy: in extreme physical interaction, it fulfills users' subconscious need for warmth and affinity, thereby evoking contemplation and emotional resonance [4].

2.3 Decoding the Aesthetic Realm of Yu Porcelain

The aesthetic realm of Ru kiln's celadon glaze guides users through a complete journey from sensory perception to philosophical contemplation. This process aligns perfectly with the reflective dimension in Norman's emotional design—concerning the construction of meaning, memory, and cultural identity. [4] The beauty of celadon glaze can be summarized as a path: beginning with the purity of monochrome, culminating in minimalist vessel forms, transcending through the tactile quality of jade, metaphorically embodying human virtues, and ultimately reaching the philosophical Dao.

The beauty of Ru kiln's celadon glaze originates from its masterful use of negative space. Rejecting traditional decorative techniques like painted or carved patterns, it unifies the entire composition with a single hue of celadon. This is not a lack of color but a refined synthesis. Emperor Huizong of Song once dreamed of "the

sky clearing after rain," and while celadon glaze exists in multiple shades, the celadon color remains the most iconic, encompassing variations like sky blue, powder green, egg green, and moon white. [8] The singular yet nuanced blue compels viewers to transcend superficial glamour, focusing instead on the infinite play of light that transforms the glaze into "as blue as the sky, as smooth as jade." This monochromatic quality serves as the starting point for aesthetic contemplation: it strips away distractions, creating a pure and serene visual realm that guides introspection and sets the stage for deeper spiritual reflection.

Building upon the "monochrome" foundation, the Ru kiln elevates "minimalism" through its ancient and simple vessel forms. These forms are unadorned, free from intricate carvings, and embrace beauty in their smooth, symmetrical lines and full, restrained contours. This "ornamentation without adornment" represents a perfect submission to the physical function of the "vessel" and a complete rejection of superfluous elements in its "form." It creates vast formal blank spaces, akin to the ingenious use of "counting white as black" as Zong Baihua noted, inviting users to fill them with their cultural backgrounds and imagination, transforming the objects into carriers of personal emotions and concepts. [9] The Ru kiln's pursuit of "lustrous glaze with jade-like texture" marks a pivotal leap in its aesthetics, transitioning from visual to tactile perception and connecting external objects with personality. The unique tactile sensation of "resembling jade yet not being jade" is not only a pleasurable physiological experience but also an activation of profound cultural codes. In China's traditional culture, "jade" has long symbolized virtues such as "benevolence, righteousness, wisdom, courage, and purity." Touching Ru porcelain subconsciously evokes a moral experience and character association of "comparing virtue to jade." Thus, the "quality" of the object becomes the material embodiment of noble qualities like gentleness, steadfastness, and restraint.

The aesthetic essence of Ru kiln's celadon glaze crystallizes into the tangible manifestation of the Dao. Its "rain-past celadon" hue evokes the boundless expanse of the cosmos and the crystalline purity of nature. The crackle patterns chronicle the passage of time and the vitality of matter. The "non-action yet creation" phenomenon in its kiln transformation embodies

the philosophy of "Dao follows nature." Though silent, it reveals through material and form the cosmic order, the harmony of yin and yang, and the transformative power of "non-action yet all action." Thus, an everyday object becomes a "digital Taoist sanctuary" or a miniature philosophical landscape—a spiritual dwelling that inspires contemplation of the universe and human existence.

The aesthetic realm of Ru kiln's celadon glaze unfolds as a meticulously designed experiential journey. Beginning with primal visual allure, it transcends minimalist forms through refined craftsmanship and jade-like textures, culminating in metaphors of human character and resonance with cosmic principles. This philosophy offers contemporary design inspiration: a great product should serve as a "path" that guides users from "use" to "experience" and ultimately to "insight," fostering a profound dialogue between humanity and objects to anchor the spiritual world disrupted by our technology-driven era.

3. The Uniqueness and Universality of the Tianqing Glaze of Ru Kiln

3.1 The "Purification" of Sensation and the Setting of Emotion

The beauty of the Ru kiln begins with the deliberate shaping and unification of sensory experiences. The "monochromatic sky-blue" and "minimalist forms" create a visual "subtraction" that discards distractions, compelling viewers to detach from the chaotic world and focus on the subtle luster and texture of the glaze, achieving the initial "purification" of aesthetic engagement. The "jade-like warmth" in tactile sensation further sets the emotional tone, transforming the glaze's potential "coldness" or "alienation" into a "approachable serenity" through its non-invasive, reassuring physical qualities. The visual "simplicity" and tactile "smoothness" are not isolated but form an aesthetic dialectic of "external simplicity with internal richness" and "colored coolness with warm texture," establishing an emotional foundation that is both pure and dynamic.

3.2 The "Leaving Blank" as a Catalyst of Meaning

The beauty of Ru kiln glaze lies in its failure to provide a definitive image, but rather in stimulating the viewer's subjective creativity

through the "negative space" of physical and psychological elements. The milky haze of Ru porcelain's sky-blue glaze, the natural randomness of its crackle, and the subtle play of light together form "a defined texture with an undefined appearance." This inherent ambiguity of the material serves as the physical foundation for the generation of imagery. Cultural symbols like "sky-blue after rain" are themselves open-ended structures that invite viewers to continue writing with their personal natural memories and life experiences, completing the projection of infinite personalized imagery such as "sky color" and "lake light." As Jiang Xun wrote in **Meditations on Beauty**: "Form is emptiness. After the intense sensory stimulation of the Tang Dynasty, the lives of China people gradually calmed from the turbulent currents into the still waters of a clear pond." [10] Song Dynasty aesthetics shifted from intense stimulation to tranquility and clarity, pursuing the generation of inner imagery. The "solidity" of glaze thus evokes the "void" in the viewer's mind, and this "void" in turn enriches and transcends the "solidity," achieving infinite expansion of aesthetic space.

3.3 The Sublimation from "Object Image" to "Mind Image" and then to "Dao Image"

The ultimate fulfillment of aesthetic experience constitutes a progressive sublimation process of layered accumulation and transcendence. When the cultural mechanism of 'virtue through jade' is awakened by tactile warmth, the material's temperature, smoothness, and firmness are interpreted as the moral virtues of a gentleman, transforming aesthetic engagement into a moral self-reflection and character cultivation. By understanding that the crackle marks time's passage and the kiln's transformation embodies nature's craftsmanship, the artifact becomes a vessel of the Dao. It concretely manifests the cosmic principle of 'non-action yet all things are accomplished' and the life cycle of 'all things coexist, I observe their return.' Thus, aesthetics achieves philosophical contemplation of the ontological essence of existence.

This reveals that the aesthetic journey of Ru kiln glaze follows a three-phase dynamic: sensory purification, imagery creation, and spiritual elevation. More importantly, it forms a closed loop. The realization of the supreme Dao profoundly transforms one's original perception of 'monochrome' and 'texture.' These elements

transcend mere physical attributes to become subtle traces of cosmic principles. Such introspective reshaping of perception transforms every aesthetic experience into a meaningful reconstruction and spiritual dwelling. This unveils the universal essence of great design: to forge a pathway enabling users to complete a holistic journey from sensory engagement to spiritual resonance, ultimately achieving harmony with higher-order principles.

4. Conclusion

This study constructs an aesthetic experience system of Ru Kiln's celadon glaze through its analysis of color aesthetics, integrating perception, emotion, and meaning. The research reveals that this system, with its core aesthetic genes of subtlety, warmth, and negative space, forms a closed-loop experience through sensory purification at the instinctive level, emotional connection at the behavioral level, and meaning elevation at the reflective level. It provides a complete paradigm for translating classical material aesthetics into analyzable and translatable generative systems, clarifying its intrinsic mechanism in alleviating "technological existential anxiety." The practical implication lies in elevating technological products from tools to companions and from interaction to integration, pointing to a cultural translation path rooted in Eastern wisdom. Future research can further validate the application efficacy of this paradigm across different product types and explore its integration potential with sustainable design, inclusive design, and related topics. This study provides theoretical resources and practical possibilities from traditional aesthetics to construct a design language with greater

humanistic warmth and local characteristics in the technology-driven era.

References

- [1] Meng, Y. S., & Wang, X. Q. (2020). A study on the replication technology of Ru kiln sky-blue glaze porcelain. *China Ceramics*, 56(11), 71-76.
- [2] Sun, X. H. (2017). *Color psychology* (Bai, L., Trans.). Shanghai SDX Joint Publishing House.
- [3] Zhang, M. W., Tan, F. Z., Zhao, H., et al. (2023). Chromaticity comparison analysis of "sky-blue glaze" from Ru kiln and Yaozhou kiln. *Sciences of Conservation and Archaeology*, 35(04), 98-103.
- [4] Norman, D. A. (2005). *Emotional design* (Fu, Q. F., & Cheng, J. S., Trans.). Publishing House of Electronics Industry.
- [5] Gao, L., Wang, D. C., Li, J. M., et al. (2017). *Zunsheng Bajian (Eight Discourses on the Art of Living)*. People's Medical Publishing House, 660.
- [6] Peng, X., & Zhang, M. L. (2023). Overview of research on color rendering mechanism of Ru kiln porcelain glaze. *China Ceramic Industry*, 30(01), 44-47.
- [7] Wu, R. J., & Xin, A. C. (2016). *A history of Chinese ceramics* (Zhou, B., Ed.). Henan People's Publishing House.
- [8] Sun, X. M. (2016). *Ru kiln: Famous ancient kilns in China*. Jiangxi Fine Arts Publishing House.
- [9] Zong, B. H. (1981). *Wandering in aesthetics*. Shanghai People's Publishing House, 320.
- [10] Jiang, X. (2005). *Meditation on beauty: An introduction to Chinese artistic thought*. Wenhui Publishing House.