

A Study on the Integrated Application and Intervention of Materials in the Design of Daily-Use Ceramics

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Abstract:

As living standards continue to rise, everyday ceramic vessels no longer emphasise solely their functional utility. The versatility of single materials can no longer satisfy the refined aesthetic and practical demands of high-end lifestyles. Instead, materials are becoming increasingly specialised and diversified. Ceramic daily ware design intersects with other crafts in numerous aspects—characteristics, conceptual approaches, technical philosophies, and craftsmanship principles. The vessels explored in prior research offer refreshing aesthetic experiences, whether in use or appreciation. Moreover, the combinations diverse materials in design contributes distinct functional and sensory advantages in everyday use. This thesis breaks from conventional, singular approaches to ceramic vessel research, instead focusing on systematic analysis of their integration with metal, glass, and lacquerware. Given the breadth of this topic, the study addresses it by focusing on key points of convergence between these materials. Through case studies, the thesis synthesises and categorises collaborative composition methods between these three craft materials and ceramics.

Keywords:

Ceramics, Materials, Design, Combination, Integration

1. Introduction

Materials form the bedrock of human production and daily existence. We harness the distinct properties of diverse materials to transform or recreate tools that serve our needs. Each ceramic expression possesses its own distinctive character, with the fundamental source of this variation lying in the material itself. How can the integration of diverse materials from traditional craftsmanship with ceramic design enhance the variety of ceramic usage scenarios? How can the combinatorial nature of traditional techniques be better leveraged to enrich the appeal of everyday ceramics? This research addresses two objectives: firstly, to explore the purpose and significance of interdisciplinary art within the ceramic field through systematic theoretical analysis and exposition; secondly, to apply these insights in practical work, thereby realising the research's practical value.

2. Approaches to Combination Intervention

Ceramics, glass, ironwork, and lacquerware all fall within the broad category of craft materials. Through craftsmanship and design, elements or materials from these disciplines can be incorporated into functional vessels, representing a fusion of aesthetic sensibility and production elements. In designing everyday products, craftsmanship serves as the foundational premise, with its primary consideration being utility value. However, the integration of craftsmanship imposes limitations and specific. Consequently, when employing combined materials, craft factors must be considered. Whether these factors relate to decoration or form, their impact on the overall composition presents both opportunities and challenges.

2.1. Internal Material Integration and Addition

During ceramic firing, we frequently enhance material properties and aesthetics by incorporating additional substances. This internal intervention traces back to Japan's Jōmon pottery some 9,000 years ago, where external cord-marked textures were achieved through rope-wrapping techniques, yielding distinctive post-firing patterns. In China, the Southern Song Dynasty wood-leaf pattern bowl from the Jizhou Kiln exemplifies such internal integration. Scholars such as Jiang Xuanyi propose its production involved applying a base glaze to the greenware, affixing treated wood-leaf patterns, then covering the entire piece with black glaze. Upon removal of the wood leaves, the intricate patterns emerged.

The internal fusion of metal and glass within ceramics is equally abundant. Owing to glass's unique properties, its internal incorporation in ceramic design often involves integration with glazes. During the glass firing, certain internal elements gradually soften as temperatures rise (Figure 1). The firing temperatures of glass and ceramics complement each other. Thus, glass frequently appears within our glaze matrices. In utilitarian vessel design, designers incorporate multicoloured solid glass fragments into the piece. During firing, the glass naturally flows along the vessel's internal structure, solidifying upon cooling to become an integral part of the piece. The interplay between glass and porcelain creates a stunning visual harmony.

The internal fusion of metallic materials tends to focus on form and ornamentation. Due to differing melting points, various metals serve distinct functions when integrated within ceramics. Iron is predominantly applied to the body, where its iron (III) oxide content yields natural red or black speckles or decorative effects after firing. In vessel design, this technique is often employed for external ornamentation, creating an archaic, weighty aesthetic reminiscent of wood-fired ceramics. (Figure 2)



Figure 1. *Crystalline Glaze Square Dish.*



Figure 2. *Metal-Glazed Ceramic Bowl.*

This internal intervention reflects not merely a concentration of material types, but also mastery over the firing process, an understanding of materials, their combination, reconstruction, and the transformation and alternation of different substances, ultimately fusing them into an inseparable whole. From a certain perspective, this internal combination of diverse materials transcends mere craftsmanship; it embodies research in materials science. Given the uncertainties of chemical and physical transformations during firing, internal fusion demands greater emphasis on ceramic firing techniques and material research compared to external integration.

2.1. Combination of External Forms

Combining external forms typically occurs after ceramic materials have been fired, when their chemical and physical properties are highly stable. Designers need only incorporate their creative vision while understanding each material's post-forming state and form. Consequently, this approach to combination proves more direct, straightforward and lucid. (Figure 3) This work by Japanese designer Misa Tanaka employs a synthesis of materials and is titled “Serene Skies”. Its defining feature lies in the seamless fusion of porcelain with translucent glass—two distinct materials joined flawlessly. Though lacking ornate decoration or sculptural flamboyance, this design conveys a distinct sensory experience through its craftsmanship.

In external combinations, the focus lies more on expressing the designer’s personal product aesthetic and employing exaggerated techniques to highlight specific characteristics. (Figure 4) This utilitarian vessel exemplifies the combination of metal, lacquerware, and ceramics, accentuating the designer’s bold expression of colour and material. By pairing two distinct materials, it contrasts their unique properties to amplify their characteristics. The use of rich hues breaks the monotony of black, lending the entire composition a rhythmic vitality. Within contemporary aesthetic contexts, such vessels serve not merely functional purposes but also contribute to environmental ambience and home décor design.



Figure 3. Misa Tanaka, “Serene Sky”, 2008.



Figure 4. Tea Set.

With continuous advancements in craftsmanship, the ongoing experimentation with material combinations offers boundless creative possibilities. The future demands an even greater emphasis on harnessing the inherent qualities of materials to create distinctive visual expressions, delivering unexpected aesthetic pleasures to the viewer.

3. Material Sensation and Craftsmanship Expression

3.1. Expressing Material Sensation

Mr. Yanagi Sōetsu once articulated his understanding of materials thus: If you wish to comprehend beautiful creations more deeply, you must engage your body to touch

and perceive them, using the warmth of your own heart to discern the temperature of the object. This is how your connection with beautiful artefacts deepens, their essence elevates, and the mutual exchange of feelings draws you closer, fostering greater understanding and fusion. [1] More simply put, such objects become indispensable in daily life. Due to the differing densities and compositions of metals, glass, lacquerware, and ceramics, their collisions produce distinct sounds. Moreover, each material offers unique tactile sensations and visual impressions when handled. These auditory and tactile qualities are constantly experienced during everyday use.

Figure 5 showcases a collaborative design by Swedish ceramicist Jonathan Keep and art researcher Charles Stern. This collection preserves glass's translucent quality while enhancing practicality through material fusion. Ceramic's malleability further enriches the design with distinctive highlights.



Figure 5. Jonathan Keep and Charles Stern 3D Glass Ceramic Vase, 2014.

In the creation of everyday vessels, the beauty of an object is difficult to realise without a thorough grasp and understanding of materials. It can be said that the existence of materials forms the objective foundation for all artistic expression. It elevates artistic expression to a higher level, endowing all tangible objects with a sense of authentic presence and distinct character. Without the objective existence of materials, the effect we seek to convey is lost.

3.2. The Expression of Craftsmanship

Craftsmanship constitutes the very soul of each handmade object. Unlike the external expressions of decoration, form, and texture, it determines the material manifestation of the object's overall direction – an indispensable craft element. It renders the object more perfect and imbued with human warmth. The evolution of objects is driven by the advancement of craftsmanship, designing craft cultures that enhance human life. [2] The term “craftsmanship,” far from unfamiliar, appears early in China's ancient literary works. At its core, it denotes the technical processes of artistic refinement in production, integrating decorative elements, colour schemes, and form design. Craft production transcends mere mechanisation; it fuses material understanding, sensory perception, and design philosophy through the vessel as a medium, embodying a synthesis of material, technique, and ornamentation.

The Yuan Dynasty blue-and-white cloud dragon and peony scroll pattern beast-ear jar (Figure 6) presents another interpretation. Its main body features blue-and-white porcelain decoration, while the rim incorporates stamped metal material. This lends the vessel a sense of weightiness, accentuating the porcelain's pearly whiteness and translucency. Within the aesthetic of its decorative craftsmanship lies the accumulated

expression of the artisan's skill. Here, tools and materials serve merely as conduits for the hand; this beauty of craft is commonly termed the 'artistry of the hand'.



Figure 6. *Blue-and-white Vase with Cloud-and-Dragon and Climbing Peony Motifs, Animal-shaped Handles, Yuan Dynasty.*

4. Form and Decorative Expression of the Ensemble

4.1. Form Expression

When we peruse the history of Chinese artefacts and admire vessels serving daily life across different eras, we are invariably struck by their ingenious conception and richly varied forms. This awe stems not only from the vessels' shapes themselves, but also from the inherent beauty of their materials and the craftsmanship they embody. Without a profound ability to synthesise form, it would be exceedingly difficult to create vessels of such consummate and diverse design.

Figure 7 depicts a porcelain jar produced in Jingdezhen during the late Ming and early Qing dynasties, circa 1650–1690. In London, England, it was fitted with additional components, transforming the original jar into a large beer mug. The handle takes the form of a sculpted female figure. This combination infuses the originally austere ceramic vessel with dynamic tension, particularly through the handle's design—its lines are full and graceful, impart a pleasing sense of motion and outward expansion. The overall effect is opulent and aesthetically pleasing, with a form brimming with vitality. The introduction of the base lends the entire vessel a sense of stability and grandeur, conveying a reassuring sense of substantiality. This exemplifies the allure of form and represents a rather successful design where metal elements are integrated into ceramic vessels.



Figure 7. *Blue-and-White Wrought Iron Beer Mug.*

Surveying the evolution of Chinese vessel forms, Tang Dynasty ceramics predominantly exhibited grand, imposing shapes brimming with substantial texture.

Song Dynasty designs favoured simplicity and grace; Yuan Dynasty forms were bold and rugged; Ming Dynasty pieces were elegant and upright; Qing Dynasty creations became intricate and elaborate. In contemporary design, vessel forms—as the material embodiment of creation—are not static in their service to human life. Though certain vessels endure through popular affection, they invariably undergo subtle transformations with the times, reflecting an ongoing exploration of aesthetic expression.

Utility remains the fundamental determinant of form. The choice of shape can significantly enhance an object's colour perception, imbuing it with its own emotional resonance and artistic character. This is achieved through the use of diverse materials, distinct production methods, and varied design elements, resulting in markedly different characteristics.

4.2. Expressive Decoration

Diverse decorative techniques form an integral part of every handcrafted vessel. While incorporating materials of varied textures allows each substance's unique qualities to flourish, achieving overall aesthetic harmony remains challenging. Thus, decorative expression must consider not only the physical and chemical principles before and after firing but also the application of formal aesthetic principles.

When contemplating integrated decoration in ceramic design, one must consider the relationship between the whole and its parts, the interplay of foreground and background, the interplay of points, lines, and planes, the sense of rhythm, the saturation of colour, and the balance between diversity and unity. These principles represent the distilled wisdom of humanity's creative endeavours in aesthetic production. When composite materials are integrated into combinations with other substances, those other materials inevitably become focal points within the design. This allows us to accurately position a particular design without detaching it from its essential meaning. Naturally, the combination of ceramic materials need not be expressed solely through quantity; it can equally be defined by the sophistication of craftsmanship and design.

In this ceramic and lacquerware combination, the artist leverages ceramic properties to achieve a rustic, deeply textured finish reminiscent of wood-fired pottery. Yet the flowing handle is adorned with lacquer, employing the material's inherent qualities for contrasting decoration. The lacquer surface is meticulously polished to a high sheen, creating a striking texture contrast between the two materials. The lacquer's colour scheme brightens the entire vessel's tone, becoming the design's focal point and effectively drawing the eye. Though the lacquer's colour and design are striking, they harmonise seamlessly with the ceramic body. (Figure 8)



Figure 8. He Feng, *Ceramic Lacquer-Handled Teapot*, 2011.

In the integrated application of artistic techniques, decoration remains merely a

design tool; its inherent charm must not overshadow its fundamental purpose. It is widely acknowledged that Qing Dynasty porcelain craftsmanship reached consummate mastery. Yet precisely this relentless pursuit of technical perfection often drew excessive attention to the craftsmanship itself, overshadowing the vessel's practical utility and artistic merit in daily life. Consequently, we encounter numerous examples where intricate, masterful techniques are piled upon one another, eliciting awe yet lacking artistic depth and aesthetic appeal. Following the development of single materials, the integrated application and contemplation of diverse craft materials represent the thinking of our era of mature craftsmanship. Only by adapting to these contemporary shifts can we create works that resonate with our times.

5. Conclusions

Since their inception, everyday vessels have evolved in tandem with human needs, fulfilling both material and spiritual requirements through continuous refinement of craftsmanship and techniques. The integrated application and contemplation of craft materials represent a product of our era – an inevitable outcome of diverse materials reaching a certain level of development. As indispensable elements of daily life, these vessels persistently evolve, perfect themselves, and advance. The advancement of such products cannot be confined within the framework of any single material. How to effectively integrate various craft materials with ceramics is a crucial aspect for the future development of daily utensils. Through deep understanding and application of diverse materials, combined with design and production employing modern technology and thinking, each material can express its unique characteristics within the vessel. This delivers an optimal sensory experience for the user, who can appreciate its weight, temperature, form, texture, volume, and tactile qualities during use. This constitutes the communicative experience between the user and the work, born from the comprehensive consideration of multiple materials.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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