

The Impact of Technical Innovations in Color on the Visual Evolution of Qajar Ceramic

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Introduction

The visual characteristic of ceramic like other works of art in the Qajar period (19th century Iran), underwent fundamental transformation and followed the dominant trend in the art of the period. This trend showed significant differences from the previous ones. Such changes were most evident in the field of ceramic coloring due to a variety of emerging color spectrums, which had no antecedent in the Persian ceramic before, nor had they emerged as they should have. In theoretical debates on this issue, the reason for this change is generally attributed to the changes in the social and aesthetic tastes of the period; however, there is not much talk about the impact of technological innovations in this field. The present research aims to answer these questions: what factors caused the emergence of innovations in Qajar ceramic technology? What role did the technical innovations play in the formation of the visual evolution of ceramic of the period in terms of painting and coloring?

Research Method

To answer the main questions of this research, the areas of innovation in technology were first examined and evaluated from the perspective of studying and teaching new sciences, translating and writing books on new sciences, and importing new technologies. Then, in two separate sections, various examples of technical innovations in the coloring of Qajar ceramic were explained, including the application of new pigments and the production of mixed colors. In this qualitative research, a historical-analytical research method was applied, and the data was collected through library study and field works. Various sources were used, including historical texts and references (books, manuscripts, and documents), works and documents in museums and historical buildings. In this research, the main emphasis has been placed on the remaining Qajar ceramic, color composition of which has been subjected to chemical and micro-structural analyses by other researchers.

Research Findings

Contrary to the popular belief, the visual changes in the color spectrum of Qajar ceramic were not solely due to a change in aesthetic tastes of the time; hence, the innovations made in ceramic technology during this period should also be considered as an important and influential factor. Sending students abroad, the establishment of modern educational institutions, the translation and writing of new scientific books, and the import of new technologies were among the factors resulted in the emergence of these innovations. As a result, they lead to the transfer of knowledge and new equipment, especially in the fields of ceramics, glassmaking, mining, and chemistry. Each of these fields had the potential to influence the traditional process of Persian ceramic in different areas. Coloring is one of the things influenced by the modern currents of ceramic technology more than the other areas. The result of this influence was the use of new pigments in variety of decoration, including underglaze, monochrome, and polychrome which led to the variety of colors used in the ceramic of the period. Gold nano-particles, lead antimonate, uranium oxide, and chromium oxide were among these pigments, from which different spectrums of red-pink, yellow, yellow-orange, and green colors were obtained. Some of these pigments such as gold nanoparticles and lead antimonate were rare in Persian ceramic, while some such as uranium oxide and chromium oxide were even unprecedented. The production of red-pink gold color in Persian ceramic started from the Zand period (18th century Iran) in polychrome works, but the effects of its use were manifested in the Qajar period. The use of this color in Qajar ceramic increased significantly from the last quarter of the 13th century AH/AD 1860s-70s to the extent that it was also applied in underglaze and monochrome products. Lead antimonate was widely used in the underglaze ceramic of the 4th AH/AD 10th century in Iran, but its became obsolete until the beginning of the Qajar period. It was in this period that its use was revived in the underglaze technique as a result of familiarity with the true nature of the antimony mineral and its role in obtaining the color of yellow. Uranium oxide and chromium were also popular as two emerging colorants in the underglaze technique of Qajar ceramic since early 14th AH/AD 20th century. The combination of pigments in the underglaze technique is one of the other measures employed to achieve a wider range of colors and was not popular until the Qajar period, especially the late 13th AH/19th century. Yellowish green, bluish purple, and brownish green are the most common of these colors. In order to increase the variety of colors, the Qajar ceramists also made a good use of the concentration of colors in painting. This was done in the underglaze technique by diluting the pigment with varying amounts of water, and in the poly-chrometechnique by thickening the paint with a vat and by reducing the paint from the surface of the work.

Conclusion

The results of the research demonstrate that the modern technology of coloring in Qajar ceramic was mainly focused on the underglaze technique, which indicated the awareness of the ceramists of the period of technical capabilities of this neglected method in ceramic painting. Another important achievements of Qajar ceramists in the face of technical innovations in the field of color was the “indigenization” of such techniques in accordance with the tradition of Persian ceramic. The use of glass powder, tenkar, and gold potassium alum (tawas) in the preparation of reddish-pink gold pigment (which was contrary to European methods), the use of this pigment in underglaze and monochromatic techniques, or the combination of new pigments with alkaline-lead glaze, common in traditional Persian ceramic can be considered as one of the prominent examples of this phenomenon.

Keywords: Qajar Ceramic, ceramic technology, color making, coloring.