

## Secondary Publication



Grbanovic, Ana Marija

### Between Tradition and Innovation : the Art of Ilkhanid Stucco Revetments in Iran

Date of secondary publication: 03.05.2024

Version of Record (Published Version), Conferenceobject

Persistent identifier: urn:nbn:de:bvb:473-irb-950443

#### Primary publication

Grbanovic, Ana Marija (2023): „Between Tradition and Innovation : the Art of Ilkhanid Stucco Revetments in Iran“. In: Nicolò Marchetti, Francesca Cavaliere, Enrico Cirelli, Claudia D'Orazio, Gabriele Giacosa, Mattia Guidetti, Eleonora Mariani (Ed.), Proceedings of the 12th International Congress on the Archaeology of the Ancient Near East, Vol. 2: Field Reports. Islamic Archaeology, Wiesbaden: Harrazowitz Verlag, S. 763–777, doi: 10.13173/9783447119030.763.

#### Legal Notice

This work is protected by copyright and/or the indication of a licence. You are free to use this work in any way permitted by the copyright and/or the licence that applies to your usage. For other uses, you must obtain permission from the rights-holders.

This document is made available under a Creative Commons license.



The license information is available online:

<https://creativecommons.org/licenses/by-sa/4.0/legalcode>

# Between Tradition and Innovation: the Art of Ilkhanid Stucco Revetments in Iran

Ana Marija Grbanovic<sup>1</sup>

## Abstract

Carved stucco is the architectural revetment medium par excellence in Iran; its history began in Achaemenid, Parthian and Sasanian times, gained paramount significance in the Early Islamic, Seljuq and Ilkhanid periods and experienced a revival under the Safavids and Qajars. However, divides between pre-Islamic and Islamic archaeology, dynastic divisions and the Mongol conquest theory distort this trajectory. This study of *c.* fifty Ilkhanid stucco repertoires proposes a taxonomy of Ilkhanid stucco artistic techniques, based on the scrutiny of production technology, polychromy, inscriptions and ornamentation. It sheds light on the transfer of stucco production knowledge between pre-Ilkhanid and Ilkhanid periods. Ilkhanid craftsmen inherited millenary stucco craftsmanship practices, to which they contributed technical and artistic innovations: new artistic techniques, polychromy development, modified aesthetics, and new epigraphic and ornamental vocabulary. These finds enhance our understanding of Iranian stuccos.

## Introduction

Ilkhanid stucco has been the subject of art historical publications notably by Wilber, Wulff, Blair, O’Kane, Taghavinejad, Shekofte and Salihi, but its technological aspects and artistic techniques have so far only been partially addressed.<sup>2</sup> Research by Aslani provides information regarding Ilkhanid stucco artistic techniques, although the focus of his monograph comprises Islamic stuccos of the Isfahan region across a wider chronological span (Aslani 2014). Scarcity of archaeometric research of stuccos results in a lack of understanding of their material characteristics and polychromy. Extant publications on Ilkhanid and other stuccos reflect a divide between the art historical approach to their research, which above all consists in observation of visual features of stuccos (understood as the stucco style), and the technical approach of archaeometry, which is predominantly concerned with the stucco production process and material characteristics. These two approaches should be combined because of their interdependence; material properties and production technology determined the limits of the creation of different visual features of stuccos.

This article proposes a taxonomy of Ilkhanid stucco artistic techniques (see Figs. 8-9), based on the scrutiny of their production technology, polychromy, inscriptions and ornamentation. Use of the proposed stucco artistic techniques’ taxonomy enables us to go beyond the traditional approach of stucco stylistic comparison and to look at other equally signifi-

---

1 University of Bamberg.

2 See, for example: Wilber 1955; Wulff 1966; Blair 1986a; 1986b; 1987; 1990; 1992; 1993; 1996; O’Kane 1992; 2006; Salihi, Rashidniya and Taghavinejad 2016; 2018; Shekofte and Salihi 2014.

cant aspects of stucco art. The proposed taxonomy provides a framework for understanding Islamic and Ilkhanid stuccos, mobility of craftsmen, questions of stucco art and aesthetics, and allows for a better understanding of their meaning and function. The majority of technological developments in the production of architectural revetments of the Ilkhanid period, seem to have emerged in the first decades of the 14<sup>th</sup> century due to the high frequency of construction projects. Imperial commissions, such as the construction and decoration activities at the Uljaytu mausoleum in Sultaniyya (phase one: 1305-1310; phase two: 1313-1316/20 CE), spurred the invention of new decorative technology and revetment aesthetics. Based on observations of the overall corpus of Ilkhanid carved stuccos, wall paintings, tile and applied moulded and stencilled stuccos, the arts of Ilkhanid revetments should be understood as partially determined by the long-standing tradition of artistic techniques in Iran and partially determined by new technological innovations, which allowed for new artistic techniques in carved stucco and determined changes in its aesthetic appearance.

### **Towards a Taxonomy of Stucco Artistic Techniques**

Basic steps of carved stucco production technology include the arrangement of the support for revetments, application of coarse stucco layers to form the revetments, and subsequent application of fine layers of stucco material, carved according to a design transferred from a sketch or a drawing onto the stucco surface. Once the stuccos were carved, their surfaces were treated for colouring and gilding, which radically transformed stucco reliefs and highlighted their epigraphic programmes and focal points. The taxonomy of Ilkhanid stucco artistic techniques can be proposed as stemming from observations of characteristics of listed stages of stucco production: technical properties of coarse and fine layers of stucco body, modality of stucco design production and transfer, stucco carving angle, and number of carved and applied layers of fine stucco.

Three main types of stucco material subtraction can be identified according to the stucco-carving angle: carving of a bevelled relief, right angle carving of a sharp relief and stucco undercut. Stuccos could be carved out of one or more layers of fine stucco material. Carving of one stucco layer was the least demanding approach. If the stuccos were carved out of several layers, the layers had to be applied and carved in sequence and the design of their ornamentation divided into several visual planes, according to the carved layers, to form the stucco relief.<sup>3</sup> Stucco design was outlined on stucco surfaces in different ways, as determined by its visual properties: a direct incision with a sharp tool, with the aid of ruler for angular scripts and architectural lines, or using a compass for round applied elements such as circular, *shamsa* and teardrop designs. Round scripts and abstract vegetal ornamental elements were produced free hand and outlined by applying paint onto the stucco surfaces.

### **Types of Stucco Artistic Techniques – Ilkhanid Stucco Carving and Design Practices**

#### *a) Stucco Plugs*

Ilkhanid stucco plugs developed from Seljuq prototypes (Aslani 2014: 282-286). In the Seljuq period, stucco plugs were used in revetments, which consisted of two elements: a fired brick supporting wall and carved stucco plugs inserted in the gaps between bricks. Creating gaps required specific building techniques at the time of monument construction

---

3 Each carved layer could present one or more visual planes, depending on the type of carving.

and earlier planning of plug placements. Upon completion of the supporting wall building, craftsmen filled the gaps between bricks with stucco material and carved or stamped designs of plugs. The most common Seljuq plugs comprise different geometric designs and epigraphic elements such as names of revered figures of the Islamic religion. Stucco plugs were inserted to cover large architectural surfaces and often constituted the background of decorative programmes.

The art of stucco plugs evolved in the Ilkhanid period due to architectural contexts and necessities (Aslani 2014: 93-102). Ilkhanid stucco revetments were frequently works of re-decoration of earlier architectural structures. The context of stucco plug production thus drastically changed, because the plugs had to be integrated into existing architectural surfaces. Said architectural surfaces were covered with layers of stucco into which stucco plugs were incised. Production of stucco plugs on interiors of domes, inclined arched surfaces, ceilings or higher registers of supporting walls was particularly frequent because of the ease of this artistic technique production. This artistic technique is understood as the Ilkhanid type of stucco plug, but earlier Seljuq examples have been documented.<sup>4</sup> Evidence from Ilkhanid structures suggests that the Seljuq stucco plug techniques continued to be used in the Ilkhanid period, with evident examples of stucco plugs inserted into supporting walls between fired brick elements.<sup>5</sup> The diversity of Ilkhanid period stucco plugs was discussed by Ventrone (1981), and the majority of them are found in Central Iran.<sup>6</sup> For the Ilkhanid period, the variety of stucco plug combinations, their occurrence, and wealth of artistic techniques, render it difficult to propose patterns of production or their precise dating.

#### *b) Stucco Perforation*

Stucco perforation denotes a specific approach to stucco carving, which consists in using metal tools to repeatedly perforate stucco surfaces to form a uniform geometric pattern. Perforation appears regularly in triangular, square, parallelepiped, circular and star forms. It helps to reduce the visual weight of stucco relief surfaces by enabling a visual breakdown of larger stucco surfaces into perforated surfaces of permitting an interplay between darker and lighter surfaces. Stucco perforation is characteristic of revetments which consist of two or more layers of carved stucco. Craftsmen were well practiced and likely produced perforations free hand without extensive planning. The difference between Seljuq and Ilkhanid stucco perforations is not in technique, but the syntax and usage for the production of stuccos. During the Ilkhanid period, a relative increase in frequency and occurrence of stucco perforations has been recorded. Some of the best examples of Ilkhanid stucco perforations are at the Haftshuya Friday mosque mihrab (c. 1310-1316), the Pir-i Bakran mausoleum stucco (likely works of the same craftsmen's workshop as the Haftshuya mihrab; 1312-1313) and the Uljaytu mihrab (1310).

4 For example, at the Ribat-i Sharaf caravanserai.

5 The most solid evidence for the survival of this artistic technique into the Ilkhanid period is found in the Pir-i Bakran mausoleum.

6 The best examples derive from the eastern *iwan* of the Isfahan Friday mosque (Ilkhanid?), the domed prayer hall supporting walls of the Ushturjan Friday mosque (1315-16) and the Pir-i Bakran mausoleum (1298-1313).

*c) Stuccos Carved Out of One Layer*

One of the least demanding stucco artistic techniques is to produce stucco reliefs by carving one fine layer of stucco body (Fig. 1). Accordingly, it is one of the most frequently employed stucco artistic techniques and has been documented in the majority of regions of the Ilkhanid Empire. After applying coarse stucco layers on the support, craftsmen then applied the fine stucco material, of which the final layer was carved. The stucco design was determined by the necessity to produce it from a single stucco layer. This dictated more shallow and non-protruding characteristics of stucco relief. Most frequently, the carving angle between the tools and the stucco surface amounted to around 90 degrees. Such an angle created sharp edges of stucco relief and a strong shadow and light interplay which rendered the relief dynamic. One layer carved examples are found in numerous stuccos ranging from the Sasanian and Early Islamic periods to the later Seljuq and Ilkhanid. This is one of the oldest stucco artistic techniques and although more frequent in the Seljuq period, it remained common up until Ilkhanid times. Seljuq stucco masterpiece repertoires, such as those at the Ribat-i Sharaf caravanserai (refurbished in 1154-55),<sup>7</sup> demonstrate that the craftsmen's skill produced some of the best Islamic stuccos with this undemanding technique.

*d) Stuccos Carved out of Two or More Layers*

The stucco technique (Fig. 2) in which two or more layers of stucco were carved developed out of the technique of carving one stucco layer in the Early Islamic period. This technique allows for the production of stuccos with a deeper relief and more contrasting appearance on several visual planes. It requires the division of the stucco design into two or more visual planes: these designs were then transferred onto consecutively applied and carved fine stucco layers. After the stucco revetment support had been prepared, craftsmen first applied one layer of fine stucco for carving. On its surface, the craftsmen outlined the carving design. This outlined the precise stucco design to be carved out of the rough stucco layer, and planned elements to be carved out of the subsequently applied layers of fine stucco. Remains of such design traces are visible on stuccos where the upper layer of relief has been lost.<sup>8</sup> Upon completion of the carving of the first stucco layer, craftsmen proceeded to apply additional layers of stucco and carve them. These stucco layers were only applied on the uncarved parts of the first stucco layer. The difference between Seljuq and Ilkhanid stuccos produced with this technique is that: in the Ilkhanid period, the layers of carved stucco gradually became thicker, which might have been due to different additives in the stucco body or a specific manner of working it mechanically, such as killed plaster.<sup>9</sup> This stucco artistic technique was often combined with stucco surface perforation to render reliefs more dynamic.

---

7 TEI 34491. Consulted on: June 7, 2021.

8 Two examples are the mihrabs of the Friday mosques of Sujas (Ilkhanid redecoration) and Abarquh (1338).

9 Killed plaster – specifically worked stucco body with longer drying time and different plasticity, due to the breaking of gypsum crystals through the mechanical working of stucco.

### e) *Stucco Undercut*

Stucco undercut<sup>10</sup> denotes an artistic technique which produces a stucco relief with parts below the ornamentation cut away to produce an empty space (Fig. 3). In this manner, the stucco relief acquires a particular, visually more dynamic, lighter and variegated appearance. This approach to stucco relief production was already practiced in Seljuq stuccos (e.g. the mihrab of the Haydariyya madrasa at Qazwin, 1119), but the technique reached its height in frequency of occurrence during the Ilkhanid period. It is particularly prominent in stuccos found in the Isfahan area (e.g. the Pir-i Bakran mausoleum, 1312-13; the Haftshuya Friday mosque, c. 1310-16), but examples from other regions (e.g. Tabriz Friday mosque mihrab, c. 1300-20) testify to its geographical spread.

For undercut stuccos, carving of more than one layer of fine stucco material was required. Special metal tools with curved incision heads had to be produced by stucco craftsmen, which were employed at a specific carving angle between 90 and 180 degrees. Stucco body likely had to be worked mechanically to be strong enough not to deform during the undercutting process. Wooden pegs were often placed to increase the adherence of protruding parts of stucco relief to the coarse layers underneath them. The specific nature of the artistic technique suggests that only some workshops possessed the knowledge (to produce the killed plaster?) needed to create such stuccos. The stucco undercut technique was almost exclusively employed for stuccos with floral or abstract ornamental designs and was often combined with stucco perforation. Some of the best examples of stucco undercutting are found at Pir-i Bakran mausoleum (1312-13), and the Haftshuya Friday mosque mihrab (c. 1310-16).

### f) *Pseudo-undercut Stuccos*

The pseudo-undercut stucco technique mimics the undercut stucco appearance without actually performing the undercutting (Fig. 4). Stucco craftsmen carved several consecutively applied fine layers of stucco and the final carved layer of stucco was cut to appear bevelled, with its edges cut in a diagonal direction for the relief to undercut. The technique seems to be an Ilkhanid invention with a limited geographical spread. One good example is the small stucco mihrab of the Isfahan Friday mosque (Ilkhanid). Further examples include mihrabs in the 'Ali mosque in Nushabad (Seljuq or Ilkhanid), the Miyandih mosque in Qamsar (Seljuq or Ilkhanid) and the damaged monumental carved stucco mihrab in the north-western hall of the Kashan Friday mosque (Seljuq or Ilkhanid).

### g) *Shallow Applique Stucco Elements*

The shallow applique stucco elements technique (Fig. 5) cannot be independent and was always combined with other stucco carving techniques. The technique renders stuccos more dynamic through the application of further ornamental elements on already carved stucco relief. Craftsmen applied floral or lace-like elements, sometimes arranged into nets, on the surfaces of carved and perforated stuccos. Application of these elements was performed on the fine upper layers of carved stucco in areas which were left uncarved. This transformed the appearance of stuccos; these elements rendered the stucco relief surface substantially more dynamic and reduced its visual weight. The technique appears to be an Ilkhanid in-

10 The term to undercut in English can signify two different actions: cut away the part below or under (which is the correct significance in the given context) or more simply cut away material to leave (a carved design) in relief, which denotes a simple act of relief creation and is not intended in the given context.

vention. The best examples are found at the Pir-i Bakran mausoleum (1312-1313) and the Haftshuya Friday mosque mihrab (c. 1310-16).

#### *h) Applied Protruding Stucco Elements*

This artistic technique (Aslani 2014: 105-106) consists of craftsmen's application, or rather insertion, of a single thick and extremely protruding stucco element into an almost completed stucco relief. The most commonly applied types of protruding elements were geometric bosses. Craftsmen had to plan the presence of bosses before beginning a project, because they had to leave space to insert them into the stucco surface. These protruding elements could be included in stuccos consisting of a single carved stucco layer or multiple superimposed carved stucco layers. The technique enabled craftsmen to create extremely protruding reliefs, which would not be feasible simply with a carved stucco layer. The visual effect achieved is that of a stark contrast between extensive flat planes of stuccos from which protruding elements emerge. One of the earliest examples of the technique is found on the stuccos of the Ribat-i Sharaf caravanserai in north-eastern Iran, dating from the middle of the 12<sup>th</sup> century. In the Ilkhanid period, the use of applied protruding elements became more frequent and they were employed as single or group elements.

#### *i) Protruding Constructed Hollow Stucco Elements*

This stucco technique (Aslani 2014: 133-142) entails the production of stuccos by applying or inserting large protruding hollow stucco ornaments into a carved stucco relief, or as an independent relief production technique (Fig. 6). These elements render the stuccos more dynamic by increasing the depth of relief and the shadow and light interplay. They normally assume the form of abstracted floral ornamentation resembling flower blossoms, leaves or geometric circular forms. The stucco artistic technique is occasionally found on pre-Ilkhanid stuccos, but it is specifically characteristic of Ilkhanid stucco works. Two selected examples of stucco revetment repertoires found at the Haftshuya Friday mosque mihrab (c. 1310-16)<sup>11</sup> and the Tabriz Friday mosque mihrab (c. 1300-20) illustrate this stucco artistic technique.

#### *j) Perforated Stucco Grills*

The perforated stucco grill technique (Aslani 2014: 133-142) served to produce stucco panels featuring see-through grills. This technique is an Ilkhanid invention, but due to the difficulty of production or as a consequence of its function, it was not widespread (Fig. 7).<sup>12</sup> Three Ilkhanid monuments contain(ed) perforated stucco grills. The Uljaytu mihrab in the Isfahan Friday mosque (1310) contained two layers of stucco, in its top register, the upper layer of which was a grill.<sup>13</sup> At the Pir-i Bakran mausoleum (1298-1313), two remaining fragments of stucco grills are located in blind niches of the mausoleum's *iwan*.<sup>14</sup> In the Urumiya Friday mosque mihrab (1277?), the central lunette of the mihrab resembles geometric griddines; it is perforated and reveals earlier parts of the mihrab underneath.<sup>15</sup> These stucco

11 Applied elements are located in the central lunette panel of the Haftshuya mihrab (c. 1310-16).

12 The majority of examples, seems to have been deliberately damaged.

13 The original perforated grill of the mihrab, with only fragments remaining, is found on old photographs, its modern reconstructions do not correspond to the original characteristics of the grill.

14 Aslani (2014: 141) suggests that the grills were somehow pre-fabricated.

15 The Urumiya mihrab might have been restored in the Qajar period and it is therefore excluded from this discussion.

grills cover earlier stuccos, which can be seen through the perforations: these grills might have had a special function of honouring the earlier works of stucco craftsmen by indicating their presence through the perforations. Their production method is difficult to ascertain: it is possible that the grills were produced first and then installed in desired locations, or alternatively they could have been produced on the spot.

### **Developments and Inventions of Stucco Artistic Techniques – the Chronological Context**

One of perhaps the oldest, the technologically least demanding and most frequently employed stucco techniques, consists in carving one fine layer of stucco. Although more complex stucco techniques existed in the Ilkhanid period, this technique continued to be frequently employed across the Ilkhanid Empire (e.g. stuccos of the Damghani craftsmen's workshop or Ilkhanid monuments in Bistam and Damghan). In the Early Islamic period,<sup>16</sup> carving of one stucco layer developed into a more complex technique which entailed the division of the stucco design across different visual planes and its application on consecutively applied and carved stucco layers. Production of stucco relief by carving two or more layers of fine stucco became widespread in the Seljuq and Ilkhanid periods.

Further techniques were developed through the addition of stucco layers and material to carved stucco reliefs (Fig. 8). One such technique, which seems to have been invented in the Seljuq period, is the introduction of applied protruding elements onto one carved stucco layer.<sup>17</sup> The technique became more frequently employed during Ilkhanid times. A development specific to the Ilkhanid period is the more frequent use of techniques comprising the carving of two or more stucco layers, which were often combined with applied protruding elements.<sup>18</sup> A specific technique characteristic of Ilkhanid stuccos, but dating back to the Early Islamic period, was the production of undercut stucco reliefs. Another separate development, which took place in the Ilkhanid period but was confined to central Iran, was the production of carved stuccos combined with glazed elements.<sup>19</sup> This could perhaps be considered a precursor to the tile mosaic medium, which began to be used by Ilkhanid artisans and flourished fully in the Aq Quyunlu (1378-1501) and Timurid (1370-1507) periods. Two more autonomous artistic developments, which might have occurred in conjunction with the redecoration of the Uljaytu mausoleum at Sultaniyya (1310-1316/20), and which were particularly widespread in Muzaffarid Yazd (1314-1393), were the techniques of applied moulded and stencilled stuccos, which are related to the art of wall painting.<sup>20</sup>

16 See, for example: <https://archnet.org/sites/1644> (Last Accessed: May 3, 2021).

17 One of the earliest cases of this artistic technique is featured on the monumental stucco revetment programme of the Ribat-i Sharaf caravanserai in north-eastern Iran (rebuilt and redecorated in 1154-55). See: <https://archnet.org/sites/3873> (Last Accessed: May 3, 2021).

18 A good example are the monumental spandrels of the Uljaytu mihrab at the Isfahan Friday mosque (1310).

19 Such revetments were so far documented only in the Ushturjan Friday mosque (1315-16 redecoration and rebuilding) and the Pir-i Bakran mausoleum (third decorative intervention: 1312-13).

20 The best examples of such revetments are found in the Sultaniyya mausoleum of Uljaytu (second decorative phase: c. 1313-1316/20), Rukniyya (1325) and Shamsiyya (1335?) complexes in Yazd, at the Ushturjan Friday mosque (the lower portion of the mihrab; 1315-16) and the Pir-i Bakran mausoleum (third decorative stage: 1312-13, in the small domed structure).

### Other Significant Characteristics of Ilkhanid Stuccos

Ilkhanid stuccos were characterised by a distinct aesthetic appearance and further differences as compared to pre-Ilkhanid stuccos. Inscription styles for the epigraphic programmes of Ilkhanid stuccos changed (Fig. 10). Square Kufic inscriptions of different types, in particular, became more frequently employed. Other styles, such as Floriated Kufic, slowly disappeared. *Khatt-i banna'i* style continued to be used and was produced with a wider spectrum of techniques. Round scripts, such as *Thuluth* and *Naskh*, became more common for monumental inscription bands. A Seljuq technique for the production of stucco plugs, which could also be employed to form monumental *Khatt-i banna'i* inscriptions, similarly became more frequent: instead of producing carved or stamped plugs to be inserted between the fired bricks of supporting walls, it required plugs to be incised into a layer of stucco which covered the walls.<sup>21</sup> This technique was particularly suitable for monument redecorations, which were frequent in Ilkhanid times. Stucco perforation witnessed a widening of the spectrum of perforation types as well as more widespread use. Moreover, the practice of stucco craftsmen's workshops putting signatures on work increased in an unprecedented manner, as around 40% of Ilkhanid stucco repertoires are signed by their master stucco craftsmen.<sup>22</sup>

Numerous Ilkhanid stucco repertoires conserve remains of their polychromy, indicating that the majority of colouring principles employed on Ilkhanid stuccos were inherited from earlier periods. However, colouring pigments on Ilkhanid stuccos differ in their material composition. Extant archaeometric research of Islamic stucco pigments indicates that, in Ilkhanid times, the stucco colouring palette was more restricted than in earlier periods.<sup>23</sup> This might be the result of a long period of experimentation in colour use by generations of stucco artists. Another specific development of the Ilkhanid period is the occasional appearance of gilding on carved and applied moulded and stencilled stuccos.<sup>24</sup> In addition to stuccos and wall paintings, the Ilkhanid period witnessed a proliferation in the use of strapwork, moulded and glazed tiles, Lajvardina tiles and lustre tiles for monument decoration. This frequent use of the glazed tile medium in the Ilkhanid era developed further in the Timurid period when glazed revetments, especially tile mosaic, almost entirely substituted stuccos. The art of carved stucco was only revived in the Safavid and Qajar periods, but with entirely different technology and aesthetics.

### Conclusion: Ilkhanid Stuccos Between Tradition and Innovation

The discussion elaborated in this article allows for the proposition of a theoretical model for the technological development of carved stucco artistic techniques (Fig. 9). This development was a process which took place over a long period of time: it began in pre-Islamic times and continued throughout the Mongol conquest, into the Ilkhanid period, by the means of transfer of knowledge of stucco art through apprenticeships in workshops and between generations of stucco craftsmen. The oldest techniques comprised the carving of one layer of fine stucco. Gradually, carving and design transfer developed into different techniques, which required carving of several consecutively applied layers of stucco and application of

21 For example, the monumental repertoire at the Ribat-i Sharaf caravanserai.

22 The frequency and prominent forms and locations of these signatures, likely reflect advancement of the social status of stucco craftsmen.

23 Parviz Holakoei, paper presented at the I Love Persian Stucco, Lectures and Practical Workshop conference, University of Bamberg, April 10-12, 2018.

24 It might reflect the practice of tile gilding which also developed in the Ilkhanid period.

different types of protruding elements. Similar development in stucco artistic techniques took place, more or less simultaneously, in other Islamic lands, as a convergent evolution that was likely partially due to migration of craftsmen in the region and consequent transfer of knowledge. Nevertheless, regional differences in stucco production are often substantial and would need to be addressed in a dedicated study.

In the Early Islamic period, stuccos were already being carved out of several layers. Occasionally, stucco undercut was also performed, and their surfaces were noticeably perforated using different tools. Some stuccoworks were already characterised by protruding reliefs, constructed by the means of rudimentary application and carving of thick layers of fine stucco. In addition to these, new artistic techniques developed in the period of the Great Seljuq Empire. Among these, a combination of fired brick, terracotta and stuccos, and the combination of carved stucco with glazed elements can be considered specifically Seljuq.<sup>25</sup> In this period, stucco artistic techniques were more frequently combined in order to produce more variegated and dynamic reliefs, and it seems that, for the first time, applied protruding reliefs came to be employed on stuccos carved out of one or more layers. Stucco relief thus developed in its depth.

The majority of stucco artistic techniques in use during the Seljuq period -such as carving of several stucco layers, application of protruding elements and stucco undercut - continued to be employed by Ilkhanid craftsmen, to whom stucco production technology was passed down through generations (Fig. 8). Other techniques, such as fired brick, terracotta and stucco, and glazed sherds and stucco,<sup>26</sup> slowly died out. They gave way to Ilkhanid inventions, such as the pseudo-undercut stucco, perforated grills, shallow applique elements and application of constructed hollow elements. Moreover, in a separate development, new techniques and artistic media emerged in the Ilkhanid period, including applied moulded and stencilled stuccos, and stucco and glazed element combinations. Frequently employed carved stucco techniques of the Ilkhanid period were thus partially inherited from pre-Ilkhanid times, but some were technological inventions, which might have resulted from large-scale commissions.

## References

Aslani, H.

2014 *Arayiha-yi Gachi dar Mi'mari-yi Duwri-yi Islami Isfahan*, Isfahan.

Blair, Sh.

1986a A Medieval Persian Builder. *Journal of the Society of Architectural Historians* 45 (4), 389-395.

1986b The Mongol Capital of Sultaniyya, 'The Imperial'. *Iran* 24, 139-151.

1987 The Epigraphic Program of the Tomb of Uljaytu at Sultaniyya: Meaning in Mongol Architecture. *Islamic Art* 2, 43-96.

1990 Sufi Saints and Shrine Architecture in the Early Fourteenth Century. *Muqarnas* 7, 35-49.

1992 *The Monumental Inscriptions from Early Islamic Iran and Transoxiana*, Leiden-New York.

25 The best examples of such revetments are found at the Friday mosque of Gulpayigan (1105-1118) and the unfinished revetment repertoire of the Barsiyan Friday mosque near Isfahan (1105, 1134). For Gulpayigan Friday mosque, see: <https://archnet.org/sites/3872> (Last Accessed: May 3, 2021). For Bersiyan Friday mosque, see: <https://archnet.org/sites/5433> (Last Accessed: June 8, 2021).

26 The best and perhaps the only example of use of this stucco artistic technique is the Khwaja Atabak mausoleum in Kirman (1100-1150), on its external architectural surfaces. See: <https://archnet.org/sites/2894> (Last Accessed: May 3, 2021).

- 1993 The Ilkhanid Palace. *Ars Orientalis* 23, 239-248.
- 1996 Patterns of Patronage and Production in Ilkhanid Iran. The Case of Rashid al-Din. In: J. Raby and T. Fitzherbert (eds.), *The court of the Il-khans, 1290-1340*, Oxford, 39-62.
- O'Kane, B.
- 1992 Natanz and Turbat-I Jam: New Light on Fourteenth Century Iranian Stucco. *Studia Iranica* 21 (1), 85-92.
- 2006 Persian Poetry on Ilkhanid Art and Architecture. In: L. Komaroff (ed.), *Beyond the Legacy of Genghis Khan*, Boston, 346-354.
- Salihi Kakhaki, A., Rashidniya, Z. and Taghavinejad, B.
- 2016 Mutala'a-yi Wizhigiha-yi Taziyini Asar-i Gachburi Hunarmandan Kirmani dar Duwri-yi Ilkhani ta Ibtida-yi Duwri-yi Taymuri. *Nigara* 37, 19-32.
- 2018 Mutala'a-yi Taziyinat-i Gachburi Aramgah-i Mir Zabir Sirjan wa Barrasi Intihab-i an ba Hunarmandan Kirmani. *Mutala'at-i Bastan Shinasi* 1, 95-114.
- Shekofte, A. and Salihi Kakhaki, A.
- 2014 Shiwiha-yi Ijrayi wa sayr-i Tahawulat-i Taziyinat-i Gachi-yi Mi'mari-yi Iran dar Qurun-i Haftum ta Nuhum Hijri. *Nigara* 30, 63-81.
- Ventrone, G.
- 1981 On a Variety of Ilkhanid Wall Decoration. *Isfahan, Quaderni del Seminario di iranistica, uralo-altaistica e caucasologia dell'Università degli Studi di Venezia* 10, 53-68.
- Wilber, D. N.
- 1955 *The Architecture of Islamic Iran: The Il Khānid Period*, Princeton.
- Wulff, E. H.
- 1966 *The Traditional Crafts of Persia: Their Development, Technology, and Influence on Eastern and Western Civilizations*, Cambridge-London.

### Electronic Sources:

[www.archnet.org](http://www.archnet.org) (Last Accessed: August 23, 2021)

<http://www.epigraphie-islamique.uliege.be/thesaurus/> (Last Accessed: August 23, 2021)

Ilkhanid stucco artistic techniques - stucco carved out of one layer

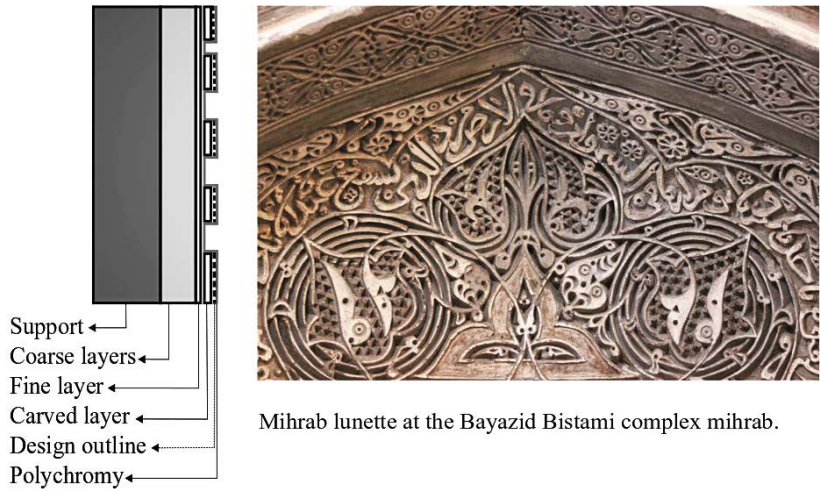


Fig. 1: Scheme showing the structure of the stuccos carved out of one layer

Ilkhanid stucco artistic techniques - stucco carved out of two or more layers

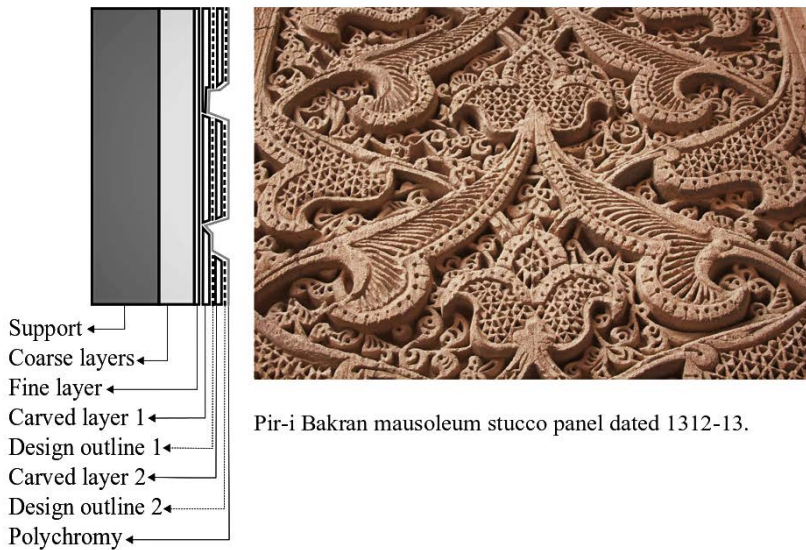


Fig. 2: Scheme showing a stucco relief carved out of two or more layers

Ilkhanid stucco artistic techniques - stucco undercut

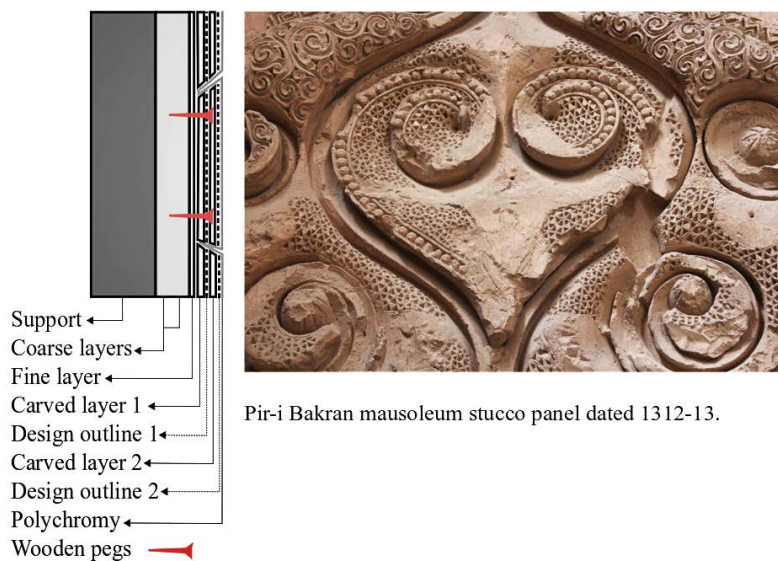


Fig. 3: Schematic representation of the undercut stucco



Fig. 4: An example of pseudo-undercut stucco relief from the Miyandih mosque in Qamsar (interior lunette of the mihrab)

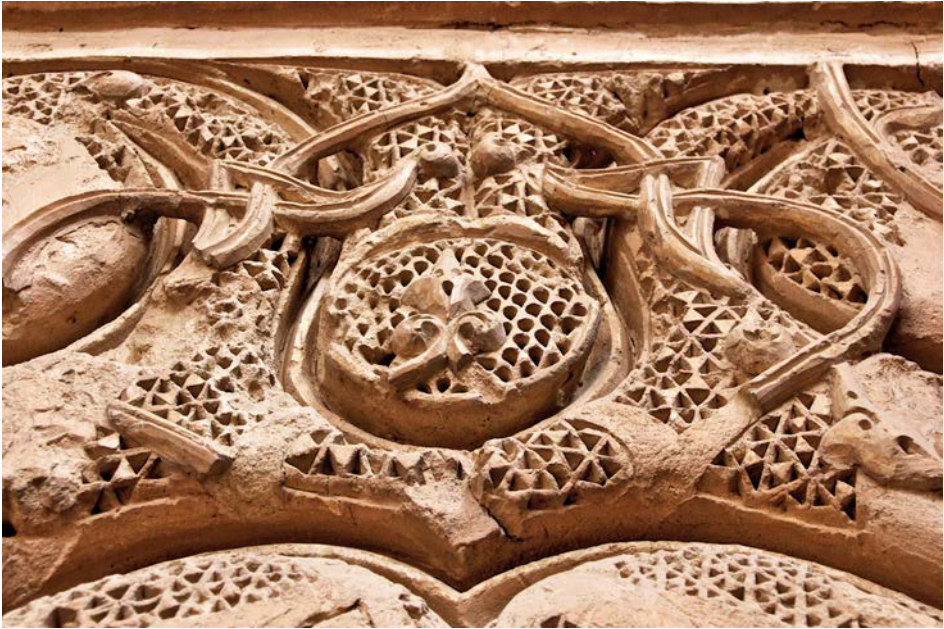


Fig. 5: Detail of the shallow applique elements forming the lace-like design on the surface of the carved stucco relief in the Pir-i Bakran mausoleum (3<sup>rd</sup> decorative stage; 1312-1313 CE)

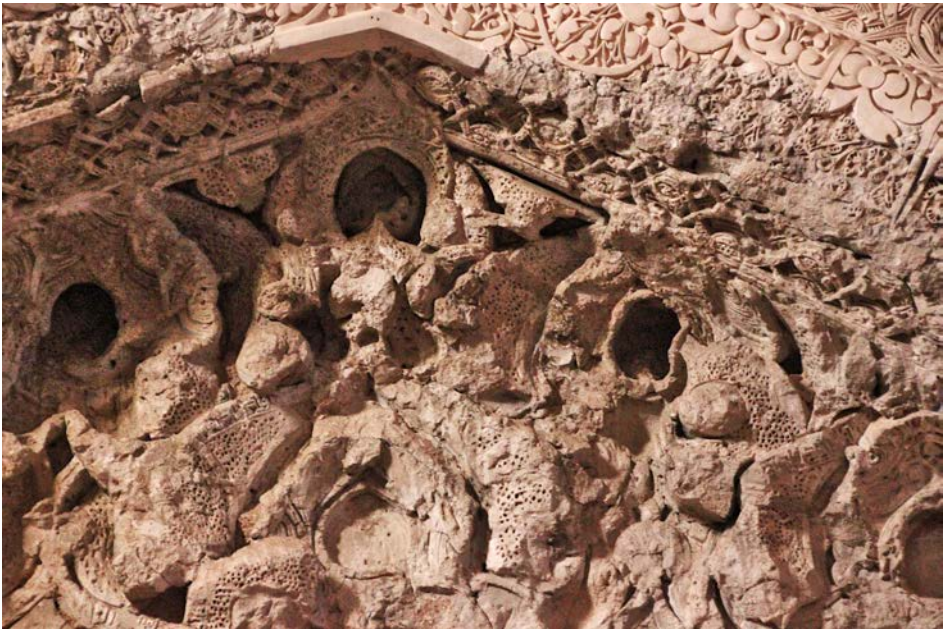


Fig. 6: Detail of the monumental lunette of the Tabriz Friday mosque mihrab: it is formed by the means of accumulation of constructed hollow elements



Fig. 7: Detail showing the remains of the perforated stucco grill at the Pir-i Bakran mausoleum (3<sup>rd</sup> decorative stage; 1312-13 CE)

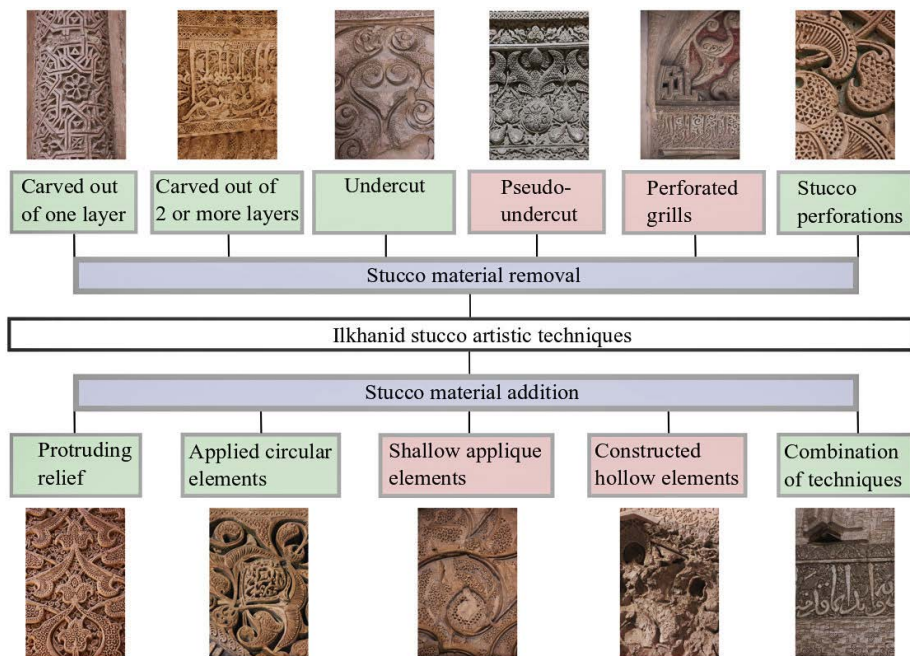


Fig. 8: Most frequently employed stucco artistic techniques of the Ilkhanid period. Techniques marked with red are Ilkhanid inventions

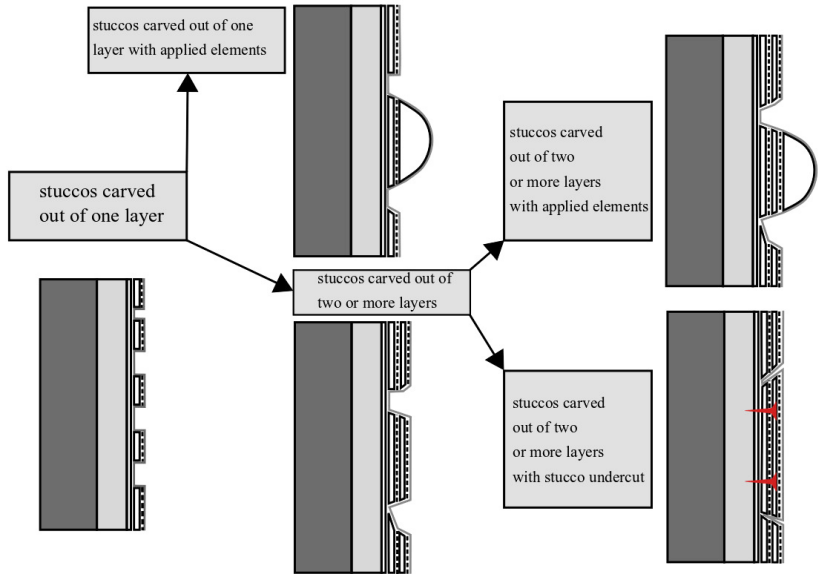


Fig. 9: A theoretical model proposing possible line of development of Iranian stucco artistic techniques between 10<sup>th</sup> and 14<sup>th</sup> centuries CE

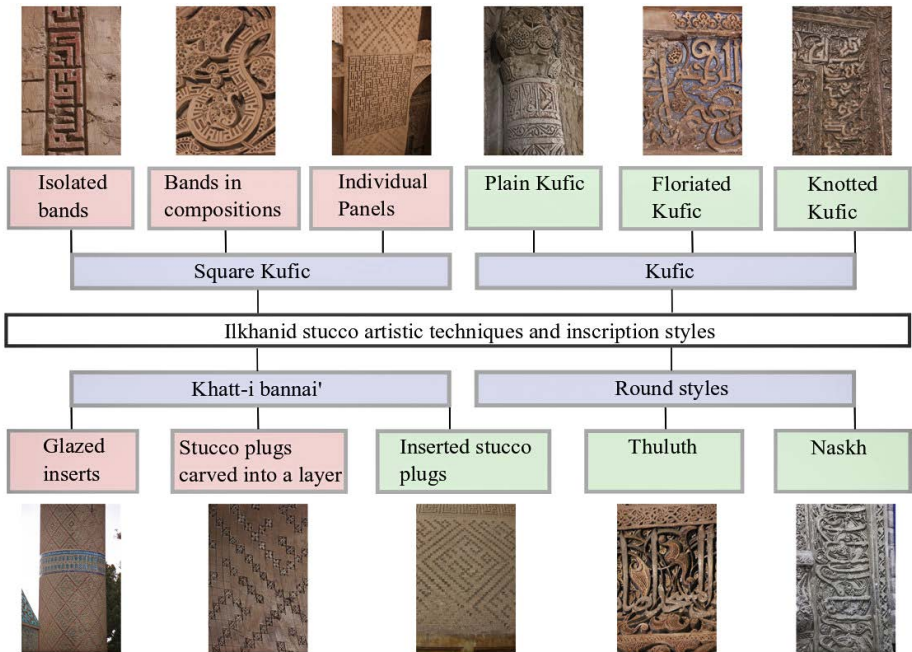


Fig. 10: Taxonomy of the most frequently employed styles of inscriptions in stucco medium during the Ilkhanid period. Inscription styles marked with red are specifically frequently employed in the Ilkhanid period