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The Complex of Gawhar Shad in Herat: New Findings about its Architecture and Ceramic Tile Decorations

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ABSTRACT

The architectural complex commissioned by Gawhar Shad in Herat (820–841/1417–1438) constitutes one of the major foundations of the Timurid capital city. The site has sustained substantial damage over the centuries and very little is currently known about its architecture and decoration. Since the 1980s, access to it has been strictly limited due to the presence of landmines. This article aims to present the last archaeological surveys carried out on the site in recent years, and to introduce the first results of the study of the ceramic tiles collected on the “Musalla” and transferred to the National Museum of Herat in 2015.

KEYWORDS

Ceramic tile; architecture; Gawhar Shad; Timurid Herat; Musalla

Introduction

The objects of interest outside [the old city of Herat] are almost entirely confined to *ziarats*, or shrines, and holy places of sorts. Amongst these, of course, the buildings of the Musalla on the north face of the city stood pre-eminent; but being now in course of demolition, under orders from the Amir, nothing but the tradition of their beauty will remain for future generations. (Major C.E. Yate, 1885)¹

The city of Herat, which in 1405 became the second capital of the Timurid Empire (r. 771–912/1370–1506), underwent highly remarkable cultural development over the course of the fifteenth century.² Between 820/1417 and 841/1437–1438, during the reign of sultan Shah Rukh (r. 807–850/1405–1447), Gawhar Shad (d. 861/1457), the wife of the Timurid sovereign and an active patroness in her own right, oversaw the building of an important architectural complex containing a mosque and a madrasa associated with a dynastic mausoleum (Figure 1). In the late nineteenth century, the remnants of Gawhar Shad’s mosque were briefly used as a *musalla* – i.e. a vast open space for collective

prayers.³ Although this period was ephemeral, the term remained in use to designate all or part of the vast structure formed by the Gawhar Shad Complex and the neighbouring madrasa, built many years later by the Timurid Sultan Husayn Bayqara (r. 875–912/1470–1506). Though the two complexes were completely independent from one another, the name “Musalla” curiously remained in the collective consciousness to describe the entire zone.⁴

Very little remains of this large site. Passing time, wars and earthquakes ravaged the two foundations; in the 1830s, accounts written by European travellers already describe it as a badly damaged site. Military attacks over the course of the nineteenth century continued to destroy it and, in 1885, following the advice of British troops, the emir ‘Abd al-Rahman Khan (r. 1880–1901) gave the order to bomb the site in order to prevent it from becoming a hideaway or stronghold for the Russian army; in the end, the Russians never made it to Herat, but the remnants of the “Musalla” were nonetheless severely affected.⁵ The structures that were still in place continued to disintegrate. The

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¹Yate, *Northern Afghanistan*, 30.

²More than 60 monuments were built in Herat over the course of the fifteenth century, important religious and charitable foundations among them. On the history of Timurid Herat, see: Allen, *Catalogue of Toponyms*, and Allan, *Timurid Herat*, as well as: Szuppe, “Herat iv”; Forbes Manz, *Power, Politics and Religion, and Rise and Rule*; Subtelny, *Timurids in Transition*; Bernardini, *Mémoire et propagande*; Lentz and Lowry, *Timur and the Princely Vision*.

³About the term *musalla* (Arabic n.; Persian syn. *‘idgah* or *namazgah*), see: Wensick and Hillenbrand, “Musalla.”

⁴During the fifteenth century, the *musalla* was located at the foot of Kuh-i Mukhtar; the place was then named *musalla* or *namazgah* in the sources (see Allen, *Catalogue of Toponyms*, 157). Around the end of the nineteenth century, this prayer area was moved to the ruins of the Gawhar Shad Mosque; the place had already lost its function as a *musalla* when Niedermayer visited the site in 1916–1917. Niedermayer, *Afghanistan*, pl. 178; Allen, *Catalogue of Toponyms*, 158.

⁵The first descriptions given by Europeans in the nineteenth century date from the 1830s: Conolly, *Journey*, 20; Lal, *Travels*, 256–7. In 1838, the Qajar invasions could have greatly ruined the remaining structures (according to Pelly, *Journal*, 67). But the “Musalla” was still well preserved, judging by accounts such as that of Ferrier in 1845 (Ferrier, *Caravan Journeys and Voyages*), N. Khanikoff (1860) or Siraj al-Din (in 1885, transl. in Allen, *Catalogue of Toponyms*). Around 1885, officers from the British Afghan Boundary Commission provided substantial documents, although these are sometimes difficult to interpret: see Holdich, “Musalla and tomb,” 177; Yate, *Northern Afghanistan*, 30; Yate, “Inscriptions Formely in the Musalla,” 290; and documents of the Phototheca Afghanica,

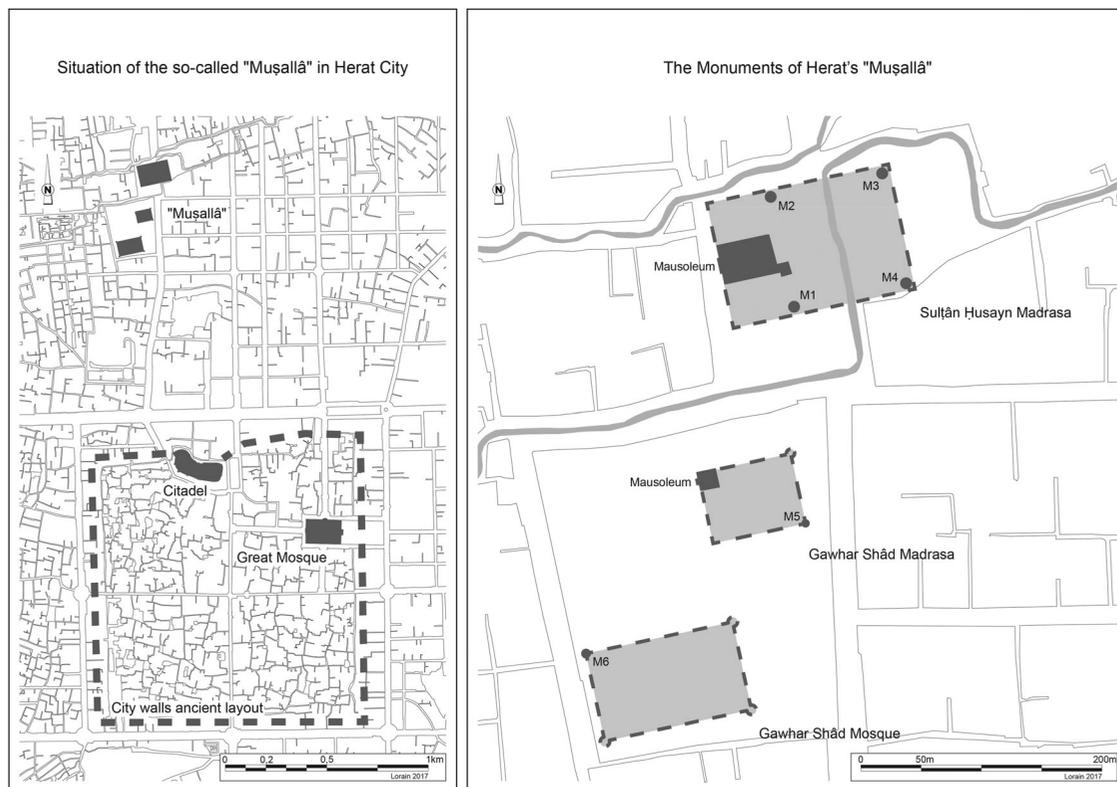


Figure 1. Schematic reconstruction of the mosque and madrasa of Gawhar Shad in Herat (© Th. Lorain 2017).

minarets of Gawhar Shad's mosque crumbled one by one: the first between 1916 and 1922,⁶ two others after the earthquakes of 1931 and 1951,⁷ a last one following artillery shelling during the winter of 1984–1985.⁸ Today, only the base of the northwest minaret remains (M6, Figure 2). As for Gawhar Shad's madrasa, which was built a bit farther to the northeast of the mosque, only the mausoleum and one of the minarets remain standing (M5, Figure 1).⁹

In many respects, the Gawhar Shad Complex is in fact better known through texts than through its architectural vestiges. The site is mentioned as early as the fifteenth century and in the early sixteenth century by several Persian sources (we can cite Fasih Khvafi, Samarqandi, Khvandamir or Mirkhvand) that can provide us with contextual information, though they may

not make a full architectural restitution of the complex possible.¹⁰ The nineteenth-century accounts offer a glimpse of the site in an earlier phase of dilapidation.¹¹ Numerous studies have taken up these different sources in order to establish a historical framework and to sketch out the architectural outline of the famous Gawhar Shad Complex. In the 1930s, Eric Schroeder proposed a reconstitution of the complex based on European descriptions and on the sketches, maps and engravings that accompanied them.¹² His work is still used as a base for other attempts at a restitution. After the studies published in the 1940s–1960s by Guya I'timadi, followed, in the 1960s–1970s, by those of Fikri Saljuqi – the nephew of the very controversial Siraj al-Din – the writings that have done the most to advance our knowledge of the Gawhar Shad Complex

especially ELD 023 and ELD 024, online edition: http://www.phototheca-afghanica.ch/index.php?id=110&no_cache=1&tx_browser_pi1%5Btx_fmphototheca_collection.title%5D%5B%5D=11 [last connection: 25 February 2017]). See also reproductions in O'Kane, *Timurid Architecture in Khurasan*, pls. 14.1, 14.9.

⁶The fall had already occurred in April 1922, according to Foucher, *La vieille Route*, 10 and pl. I. This minaret was photographed in 1916 by Niedermayer in *Afghanistan*, pls. 157–64.

⁷According to Knobloch, *Archaeology & Architecture of Afghanistan*, 133.

⁸See especially the report from 31 October 1986, United Nations, General Assembly, A/41/778 ("Herat, une ville d'art et d'histoire, victime du conflit"). Only the base of the minaret was then standing.

⁹Minarets named M1, M2, M3 and M4 belong to the madrasa of Sultân Husayn Bayqara in Herat.

¹⁰The architectural data included in these historical narratives have been investigated in: Allan, *Catalogue of Toponyms*; O'Kane, *Timurid Architecture in Khurasan*; and Golombek and Wilber, *Timurid Architecture*.

¹¹For further references, see note 5.

¹²Schroeder collaborated with Donald Wilber for the American Institute of Iranian Art, 1936–1937 campaign. Wilber, "Institutes Survey"; Ball, *Archaeological Gazetteer of Afghanistan*, 123; Pope, *Survey of Persian Art*, II, fig. 404.

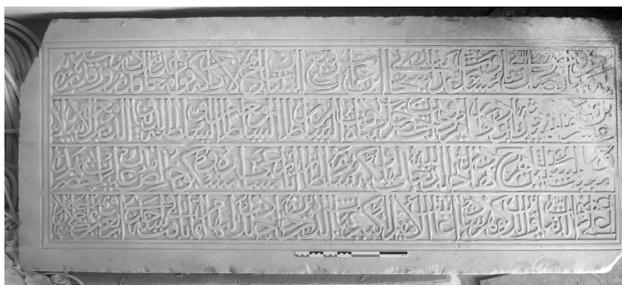


Figure 2. Marble foundation inscription from the complex of Gawhar Shad in Herat (H. 95; L. 220 cm), now kept in the National Museum in Herat – Citadel Ikhtiyaruddin (© S. Aube/Th. Lorain 2015).

in Herat are those of Terry Allen, Bernard O’Kane, and Lisa Golombek and Donald Wilber (all published in the 1980s).¹³

Since these last studies, the condition of the site has degenerated much further. The consequences of the Soviet invasion (1979–1989) made it difficult to reach: by the late 1980s, the site contained landmines, and the civil war (1989–1996), followed by the arrival of the Taliban (1996–2001), made it impossible to pursue the investigation of the complex.¹⁴ The zone began to be rehabilitated starting in 2001¹⁵ and a few restoration and prospecting projects were undertaken, unaccompanied by any academic studies, however.¹⁶ Over the years, thousands of fragments of wall coverings, fallen from the Gawhar Shad or the Sultan Husayn Bayqara complexes, had been collected and piled up without distinction inside the Gawhar Shad Mausoleum. In 2015, UNESCO had this important material transferred to the National Museum of Herat – Ikhtiyaruddin Citadel, and mandated the *Délégation archéologique française en Afghanistan* (DAFA, Kabul) to classify, record and study this material (including approximately 12000 fragments of decorative wall coverings, mainly ceramic). Some of these fragments have been identified as coming from the Gawhar Shad Complex. A clean-up of the base of the minaret of the madrasa (M5) that began in 2017 as part of an effort to stabilise it has also revealed new sets of tiles.

Although it has been largely decontextualised, the totality of this material constitutes an important source of data for the history both of this site and of Timurid ceramic tiles, for although the Gawhar Shad Complex frequently comes up in studies of Herat, its architectural decoration has never been the object of any real study. The aim here is therefore not to retrace once more the history of the Gawhar Shad Complex through these sources, nor to offer a new reconstitution of the organisation of the whole complex. Through the analysis of those architectural ceramic pieces that are still in place, and by reconnecting certain sets of tiles, now out of their context, with structures that have already disappeared, this article aims to underline the techniques and the decorative repertory used in the Gawhar Shad Complex.

The Founding of the Gawhar Shad Complex

While little remains today of the vast architectural complex built by Gawhar Shad (Figure 1), the textual and material sources that have been preserved make it possible to retrace the founding of the complex. We shall briefly recall the main elements of it here.

The architect in charge of the construction was the famous Qavam al-Din b. Zayn al-Din Shirazi.¹⁷ The founding act of the complex is recorded by an engraving on sculpted marble, in an elegant thuluth calligraphy, on four registers (today kept in the National Museum of Herat, Figure 2). The text establishes that the foundation, which began on the 27th day of the month of Ramadhan 820/7 November 1417 in the reign of Shah Rukh and at the instigation of Gawhar Shad, and was finished in the year 841/1437–1438.¹⁸ The inscription ends with the calligrapher’s signature: Jalal Ja’far.

The construction of the complex thus spread over more than 20 years. But the different buildings that it contains were already in use before its inauguration in 841/1437–1438. The mausoleum of the madrasa had already received its first inhumation in the year 827/1424; its decoration was renovated ten years later, at the time of the death of the Timurid Baysunghur

¹³See: I’timadi, *Adabat-i nafise-yi Harat*, “Le Dôme vert,” and “The General Mosque of Herat”; Allen, *Catalogue of Toponyms*, and *Timurid Herat*; O’Kane, *Timurid Architecture in Khurasan*; Golombek and Wilber, *Timurid Architecture*. The narrative of Siraj al-Din was recorded several decades after his visit by his nephew Fikri Saljuqi. Considering that Siraj al-Din was only 14 when he visited the place, his description is of doubtful precision. He might have relied on a textual source to support his description, but he does not quote it. For a discussion about this contentious source, see: O’Kane, *Timurid Architecture in Khurasan*, 167–75. Siraj al-Din’s narrative is given by Saljuqi, *Khiyaban*, 17–20, and translated into English in Allan, *Catalogue of Toponyms*, 113–4, and 123–4.

¹⁴During this period, UNESCO commissioned experts to produce assessments. Andrea Bruno wrote two reports in 1983 and 1990. Flemming Aalund produced a quick survey of the monuments of Herat and its surroundings. Initial conservation works were undertaken in 1996 on the dome of Gawhar Shad by conservators from the Department of Historical Monuments in Herat, supported by the World Food Program (SPACH [1996]: 5).

¹⁵In 2001 a wall was built encircling the Gawhar Shad Complex and the area was changed into a public garden (see: Jawed, “Rehabilitation of the Musallah”).

¹⁶See: Santana Quintero and Stevens, “Metric Survey Tools”; Urban, “Herat: Gawhar Shad Madrasa.”

¹⁷He is mentioned by Samarqandi and Mirkhvand, see in particular the studies of Wilber, “Qavam al-Din”; Babaie, “Qavam al-Din Shirazi.”

¹⁸Translations of this inscription are given by Niedermayer, *Afghanistan*, 59; Allen, *Catalogue of Toponyms*, 122–3; Claus-Peter Haase in Franke, *National Museum Herat*, 23–4. This inscription mentions a building (*‘imarat*) but doesn’t specify if it is related to the mosque or to the madrasa.



Figure 3. Three of the stone slabs originating from the Masjid-i Jami' of Gawhar Shad, now kept in the courtyard of the 'Abdullah Ansari Mausoleum in Gazurgah (© S. Aube 2015).

(d. 837/1433).¹⁹ The Timurid historian and chronicler 'Abd al-Razzaq Samarqandi (d. 887/1482) nonetheless gives 836/1432 as the first official date of completion for the madrasa.²⁰ The *khutba* was at first pronounced in the madrasa and not in the mosque.²¹ Three more years would have to pass before the mosque's inauguration, in 839/1435–1436: this is attested by an inscription sculpted into marble (the panels of which are now dispersed) that was displayed over the minarets surrounding the mosque (Figure 3).²² The inauguration in 841/1437–1438 thus apparently marked the completion of the main construction work for the complex, only a few months before the death of its architect (d. Sha'ban 842/January-February 1439). This chronology of the complex reminds us that the dates given for the completion of the edifice do not necessarily take into account either the effective finalisation of its decoration or even the time at which the buildings began to be used.

If we trust Isfizari's account, the mosque was still not entirely finished at the time of Gawhar Shad's death (861/1457).²³ He adds that the Timurid Sultan Husayn (r. 875–912/1470–1506) had ten mosques in the region restored during his reign, but does not specify whether Gawhar Shad's mosque was among them.

Varying intentions have on occasion been attributed to the founding of the Gawhar Shad Complex. Several nineteenth-century European accounts claim that Gawhar Shad's ambition was to receive the relics of Imam Riza and thus to redirect into Herat the pilgrimage route to the sanctuary of Mashhad.²⁴ Terry Allen interpreted this founding as a desire to substitute the Gawhar Shad Mosque for the main Masjid-i Jami' of Herat.²⁵ No conclusive element seems to support these theories. However, one of the incontestable aims behind the building of the Gawhar Shad Complex was to house a dynastic mausoleum within it.

Between 827/1424 and 898/1493, four generations of Gawhar Shad's family were buried in the mausoleum that she had commissioned. Her husband, the sultan Shah Rukh, killed on 25 Dhu'l hijja 850/March 22, 1447, was entombed in the *gunbad* ("cupola") of the madrasa –before being transferred in 852/1448–1449 to the Gur-i Amir in Samarkand, following an order by 'Ulugh Bayg. Three of their children were also buried in this mausoleum, including the Timurid sultan Baysunghur (837/1433). Baysunghur's own descendants were inhumed in the same location: the bodies of three of his children are there, as well as two of his grandchildren, the sons of 'Ala' al-Dawla.²⁶ Another of Gawhar Shad's great-grandsons, from the line of her son 'Ulugh Bayg, also rests in the mausoleum.²⁷ In addition to Gawhar Shad's direct descendants, the mausoleum contains other members of her family, such as her brother

¹⁹ A poem (now gone) related to the death of Baysunghur (d. 837/1433) decorated the mausoleum. Siraj al-Din claimed to have seen it in 1885. See: Allen, *Catalogue of Toponyms*, 123–5. This evidence suggests that the architectural decoration was still in progress after 836/1432.

²⁰ See the studies of Allen, *Catalogue of Toponyms*, 122; and O'Kane, *Timurid Architecture in Khurasan*, 167 (based on Samarqandi and Mirkhvand).

²¹ On 8 Safar 836/13 October 1432, quoted by Allen, *Catalogue of Toponyms*, 122 after Samarqandi, *Matla' al'dayn va majma'*, II, 645–7. Fasih writes about the death in 838/1434–1435 of Mawlana Shams al-Din Muhammad, prayer leader (*imam khatib*) at the mosque and teacher (*mudarris*) at the madrasa of Gawhar Shad (Fasih, *Majmal-i Fasihi*, 275; see also O'Kane, *Timurid Architecture in Khurasan*, 167): this means that the madrasa was already running at that time.

²² The slabs composing this inscription are nowadays spread around Gazurgah, as well as among several museum collections (see especially the National Museum in Herat and the Islamische Museum – Staatliche Museen zu Berlin). Its reconstitution and translation are given by O'Kane, *Timurid Architecture in Khurasan*, 170–1.

²³ Isfizari, *Raudhat al-jinnat*, 34–5, partly translated into English in: Golombek and Wilber, *Timurid Architecture*, I, 304. His narrative supposes that the monument was almost completed during Gawhar Shad's lifetime, excepting the architectural decoration.

²⁴ See: Conolly, *Journey*, 19; Ferrier, *Caravan Journeys*, 179; and Lal, *Travels*, 257. Yet they are all late witnesses and no evidence seems to support this idea.

²⁵ See: Allen, *Catalogue of Toponyms*, 113; Golombek and Wilber, *Timurid Architecture*, I, 304.

²⁶ The tombs associated with the Gawhar Shad Mausoleum are well studied in: Allen, *Catalogue of Toponyms*, 126–9. Sultan Baysunghur is said to be buried in the *gunbad-i 'ali*. The two other children of Shah Rukh and Gawhar Shad are Miriyyam Sultan Baygi (d. 845/1441–1442) and Mirza Muhammad Juki (d. 848/1444–1445, who is said to be buried in the "gunbad" of the madrasa); see: Yate, "Inscriptions Formely in the Musalla," 292; Allen, *Catalogue of Toponyms*, 126; and Golombek and Wilber, *Timurid Architecture*, I, 303. Baysunghur's children are 'Alishah Baygi (d. 12 Sha'ban 844/15 Jan. 1441), Muhammad Mirza (buried in the *gunbad-i khvabgah* of his father after having been murdered in 855/1451 by his brother Abu al-Qasim Babur) and 'Ala' al-Dawla (who apparently died in 865/1460–1461 in the Caspian region, but his tombstone indicates a death on 6 Dhu'l hijja 863/13 October 1459; however he was buried in the madrasa on 21 Safar 865/15 Dec. 1460). His grandchildren are Mirza Baysunghur (d. Jumada I 860/Jan.-Feb. 1456) and Ibrahim Sultan (d. 863/1459, whose body is said to have been taken to the *gunbad* of the madrasa on 6 Shavval 863/15 August 1459); see: Allen, *Catalogue of Toponyms*, 126–7; as well as: Yate, "Inscriptions Formely in the Musalla," 292–3; and l'timadi, "Le Dôme vert," 17, and *Adabat-i nafise-yi Harat*, 42.

²⁷ Mirza Muhammad Juki b. 'Abd al-Latif b. 'Ulugh Bayg, who died in 868/1463–1464 when he was imprisoned at the *qal'a* Ikhtiyar al-Din in Herat. See: Allen, *Catalogue of Toponyms*, 127–8; l'timadi, "Le Dôme vert," 18, and *Adabat-i nafise-yi Harat*, 45.

Amir Sufi Tarkhan and his grandson, and even a great-great-grandson of Timur, a descendant of the line of Miranshah.²⁸ The body of Gawhar Shad herself, executed by the Timurid sultan Abu Sa'id in Ramadhan 861/July 1457, also rests in the mausoleum.²⁹

Architectural Overview of the Complex

The Mosque of Gawhar Shad

Of the mosque of Gawhar Shad, all that remains today are the base of one minaret (M6, Figure 8) and a group of descriptions dating from the nineteenth century, at which time the complex was already severely dilapidated.

The M6 minaret marked the northwest corner of the mosque (Figure 1). It consisted of a dodecagonal base with a long, tapered shaft. The inner staircase of the minaret was accessed through a pointed-arch doorway situated at the level of the top of the surrounding walls of the mosque.³⁰ This door was oriented towards the southeast. Until recently it was possible to make out where the two southern and eastern walls had been torn away; they once formed the corner of the mosque, with the minaret jutting out from this corner. The tearing away of these walls is also emphasised by the absence of a marbled and tiled decoration. The minaret's spiral staircase gave access to a balcony from which the muezzin could send out the call to prayer. This balcony rested on a corbel decorated with muqarnas and was certainly protected by a parapet, of which nothing remains. A few metres above the door leading to the balcony, the rest of the minaret has been destroyed. The staircase seems to continue beyond the balcony, but we do not know what sort of element it led to. It is possible that the minaret once had a second balcony, like the minaret of the Gawhar Shad Madrasa.³¹ In the 1930s, the base of the minaret was inserted into the construction of a new madrasa.³²

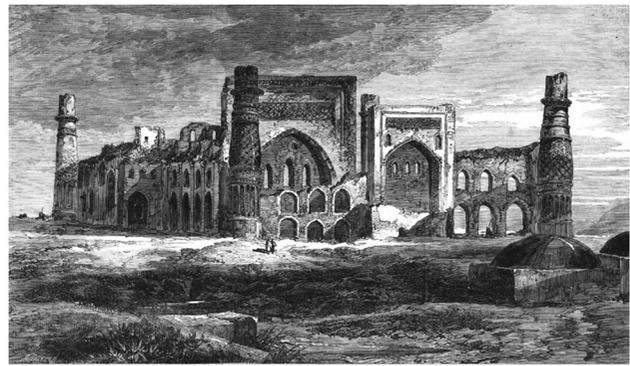


Figure 4. Drawing of the Gawhar Shad Mosque published in "The Illustrated London News", June 13, 1863.

Russian mortar fire in 1985 erased all traces of the new building and led to the destruction of a large part of the shaft of the minaret.

To gather an idea of the spatial organisation of the Gawhar Shad Mosque – which has been covered up by a modern concrete building for a number of years – today we must turn to nineteenth-century descriptions, as Bernard O'Kane, Lisa Golombek and Donald Wilber have already done.³³ They thus reconstitute a mosque that was built following a "four-iwan" layout. The building formed a vast rectangular space (106 × 64 m³⁴), oriented east–west. A minaret stood at each of the outer corners of the mosque.³⁵ The building was entered through a tall *pishtaq* set to the east; the façade was framed by two minarets (Figure 4).³⁶ The eastern wall of the mosque seems to have been constituted of domed rooms, separated by two *shabistan* of which the exact disposition is unknown.³⁷ The central domed chamber, in the axis of the *pishtaq*, functioned as an octagonal vestibule³⁸ and opened onto the courtyard of the mosque through a small iwan, framed by two stairways that gave access to a series of small rooms on the floor above.³⁹ In the centre

²⁸ Amir Sufi Tarkhan's grandson was named Amir Muhammad b. Amir Mihrab Tarkhan (d. Muharram 844/June 1440). Miranshah's descendant was Mirza Mu'in al-Din Shah Rukh b. Sultan Abu Sa'id, who died in Sari in 899/1493–1494, although his tombstone indicates a death occurring on 15 Shawwal 898/8 August 1493. Khvandamir, Part One. Genghis Khan, 403–404; Allen, *Catalogue of Toponyms*, 126, and 128.

²⁹ Gawhar Shad is the only deceased who is not mentioned in textual sources. About her death, see: Forbes Manz 2002: 181; I'timadi, "Le Dôme vert," 17. About her tombstone, see also: Yate, "Inscriptions Formely in the Musalla," 293; Allen, *Catalogue of Toponyms*, 128–9; and O'Kane, *Timurid Architecture in Khorasan*, 173.

³⁰ Below this level, the minaret is solid.

³¹ Lal explains that he "ascended a menar of two stories high" in the Gawhar Shad Mosque (Lal, *Travels*, 257–8). These "two stories" might be the levels of balconies, but the second one has today disappeared.

³² See: Hatch Wolfe, *Herat*, 38.

³³ See: Allen, *Catalogue of Toponyms*, 113–5, and 122–9; O'Kane, *Timurid Architecture in Khurasan*, 167–77; and Golombek and Wilber, *Timurid Architecture*, I, 302–305. Their descriptions are based primarily on Yate, *Northern Afghanistan*, 30; and Lal, *Travels*, 257–8.

³⁴ Dimensions were given by Pougatchenkova, *Chefs-d'œuvre d'architecture*, 128.

³⁵ See one of the lithographs published in the Illustrated London News, vol. 42 (1863), June 13, accessible online: http://www.phototheca-afghanica.ch/index.php?id=35&no_cache=1&tx_browser_pi1%5BshowUid%5D=845&cHash=1c9cba14f0 (last access 25 February 2017). The trace of the southeastern minaret is still visible on the ground, but no structure is apparent.

³⁶ Ibid. See also the lithographs of the British Afghan Boundary in Holdich, "The Musalla and tomb" (also published in O'Kane, *Timurid Architecture in Khurasan*, pl. 14.2), and online: <http://www.phototheca-afghanica.ch/typo3temp/GB/c4b80c7cbb.jpg> (last access 25 February 2017).

³⁷ This kind of layout with three domed chambers separated by shabistan can be seen at the Ghiyathiyya Madrasa of Khargird (Iran).

³⁸ Siraj al-Din described a hexagonal vestibule (translated in Allen, *Catalogue of Toponyms*, 123). O'Kane corrected this into octagonal vestibule (O'Kane, *Timurid Architecture in Khurasan*, 168–9).

³⁹ Allen, *Catalogue of Toponyms*, 123.

of each of the three other façades there was also an iwan. To the west, the main iwan was followed by a large domed chamber, which was itself prolonged by a second domed chamber of smaller dimension.⁴⁰ On each side of this layout, Schroeder places two rectangular hypostyle prayer rooms.⁴¹

The Madrasa of Gawhar Shad

Although the madrasa is often mentioned in the textual sources in reference to the many burials that took place there, its space is never described as precisely as that of the mosque. But the monument built by Gawhar Shad apparently had a similar layout to that of the mosque.⁴²

This rectangular edifice, oriented east–west, opened on the east with a high *pishtaq*⁴³ framed by a minaret at each extremity of the façade. Only the southeast minaret (M5) is still standing (Figures 1 and 5). It is a tapered structure on a dodecagonal base, conserved to a height of 42.4 m. It had a diameter of about 6 m at its base before it was encased in a brick structure in the 1950s.⁴⁴ Here once more, the door to the stairway was only accessible from the top of the outer wall of the madrasa. We can see the traces of where these walls were torn down, revealed both by the irregular surface of the minaret in this area and by the abrupt absence of the brick and tile decorations along the now vanished walls. It is also interesting to note the holes left by wooden beams in these sections where the wall was torn down. These must have been for quoining the walls of the minaret, on at least four levels. This system of horizontal quoins must have reinforced the cohesion between the outer wall and this strongly protruding minaret. The door is oriented towards the north-west and its lintel is also in the shape of a pointed arch. The spiral staircase, built around the core of the minaret, leads to a first balcony situated about 27.4 m above the ground. Its parapet is no longer in place, but the corbelling decorated with muqarnas on which it rests is still rather well preserved. There is a second balcony with the same layout at about 39.75 m from the ground. The summit of the minaret has also disappeared, leaving no trace of the outer structure that covered the building.



Figure 5. View of the south-eastern minaret of the madrasa (M5), with the four minarets of the Sultan Husayn Madrasa behind it (© S. Aube/Th. Lorain 2017).

While there are no surface remnants of the minaret that marked the northeast corner of the madrasa, a rapid campaign of archaeological digs, carried out in 2010 by the Th. Urban & Partner company at the request of UNESCO, made it possible to uncover its foundations. These were built of stones sunk into lime mortar. The diameter of the foundation of the minaret is larger than that of its base, and is slightly irregular (between approximately 7.75 and 8.25 m in diameter). The height of its foundation was 3.8 m. This dig also exposed the foundations of the surrounding wall of the madrasa. These foundations follow the same layout as the minarets but seem to have been shallower, measuring only 1.6 m high.⁴⁵

⁴⁰Visiting the site in 1833, Lal gives the following description:

The place is decorated with four high menars and two lofty arches, which make a beautiful square of seventy-five paces (...). Having passed the square, we entered a lofty dome, which encouraged us to climb five stairs, and to come into a gilt and painted room, where Gauhar Shad prayed. (Lal, *Travels*, 257–8)

⁴¹Restitution quoted by O’Kane, *Timurid Architecture in Khurasan*, pl. 14.1.

⁴²Siraj al-Din said: “This Masjid-i Jami’ was like the above-mentioned madrasah” (in: Allen, *Catalogue of Toponyms*, 113).

⁴³Drawings by Holdich and Peacocke display the fragment of an arch that probably corresponds to the entrance *pishtaq* (Holdich, “The Musalla and tomb”).

⁴⁴The exact construction date for this ring, which is punctuated with blind niches, is unknown. It was built long after the destruction of the last walls of the madrasa and was intended to stabilise the minaret, which leans dangerously towards the south-east. New structures were then put in place to counteract the risk of the minaret falling. Since 2003, it has been held in place by a system of cables anchored in imposing blocks of concrete (see: Manhart, “UNESCO’s Mandate,” 261).

⁴⁵See: Urban, “Herat: Gawhar Shad Madrasa,” 10–15.

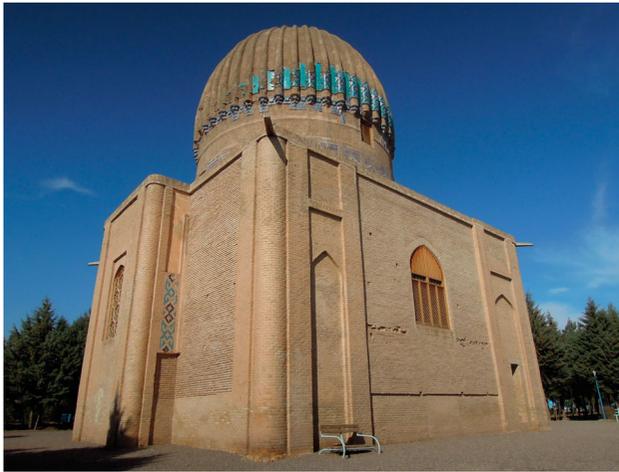


Figure 6. The mausoleum of Gawhar Shad from the South-West (© S. Aube/Th. Lorain 2017).

The position of these two minarets and that of the Gawhar Shad Mausoleum enable us to reconstitute a rectangular madrasa whose outer border measured 83 m from east to west by 60.75 m from north to south.⁴⁶

The courtyard of the madrasa had a layout based on four iwans.⁴⁷ No vestiges of it can be seen today, however. There remains only the mausoleum (most often described as a *gunbad* in the sources), in which six tombs are still to be found today. This domed building used to mark the northwest corner of the madrasa. Photographs taken by Byron in 1933, before the edifice was considerably restored, show that the connections between this space and the rest of the madrasa could still be identified at the time: the point of departure of the four barrel arches, separated by transverse arches, was still visible on the eastern wall, and the scars from the removal of the southern structure could also be observed.⁴⁸

The present-day external appearance of the mausoleum is largely the result of a reinterpretation by the restorers who worked on the structure in the 1950s (Figure 6). The building's outer border is now nearly square (16.8 × 16.1 m along its sides⁴⁹), prolonged to the west by a rectangular annex marking the location of the mihrab. It is only possible to reach it today by a door in the eastern façade, in the axis of this mihrab. However, this structure was not originally square for it

was attached to the rest of the madrasa on its eastern and southern sides, and its south-eastern corner was truncated for the purposes of continuity with the courtyard of the monument.⁵⁰ There was also an opening leading to the adjacent room to the south, and a door on the north side that gave direct access to the mausoleum from the outside.⁵¹

On the interior, the structure follows a cruciform layout, formed by a square central space, prolonged on each side by a rectangular niche, which open variously onto a door (on the east side, and formerly on the south as well), a window (on the north side, and now on the south as well), and a mihrab (on the west, today also accompanied by a high window).

From a purely architectonic point of view, the covering structure is relatively simple. It consists of three principal forms. We thus find a square formed by four intersecting pointed arches that meet at the corners of the room. These arches support an octagonal drum by means of squinches at each of the four corners. Finally, this drum receives a circular dome through the intermediary of sixteen small squinches, one at the centre of each side of the octagon and in each of its corners.

The appearance of the covering structure of the mausoleum is made significantly more complex by its muqarnas decoration, domes and a half-dome in painted stucco-work, which is only intended to smooth the transition between the different levels created by these three forms, from the main dome towards the openings (Figure 7). Conceptualising and realising this decoration necessarily required a certain level of competence in architectural matters because the layout of the decoration and of the structure itself are intrinsically linked. The question of how tasks were shared between the architect and the designer thus arises. We must keep in mind that this covering structure is above all ornamental. It is invisible from the exterior because it is sheltered by a high circular drum that receives the gadrooned, bulb-shaped cupola serving as a cover. Between the covering cupola and the dome, the drum hides a second cupola totally invisible both from the inside and the outside. Its only purpose is to consolidate the structure and to make it possible to elevate its exterior height considerably, from 10.8 m under the cupola to 25 m at the peak of the dome.⁵²

⁴⁶Results given in *Ibid.*, 24.

⁴⁷Holdich, "The Musalla and tomb"; Siraj al-Din Saljuqi in: Allen, *Catalogue of Toponyms*, 113.

⁴⁸See Byron's photograph kept at the Courtauld Institute of Art in London, reference A38/315, as well as Niedermayer, *Afghanistan*, pl. 163 (evidence of the removal of pieces is better seen here), and A. Scheibe, *Deutsche im Hindukusch*, S. 53, DHE 304 bis 307: http://www.phototheca-afghanica.ch/index.php?id=35&no_cache=1&tx_browser_pi1%5BshowUid%5D=1566&L=&cHash=bab381ffd628df06ba972705c48836f0 (last access: 25 February 2017).

⁴⁹According to Pougatchenkova, *Chefs-d'œuvre d'architecture*, 128.

⁵⁰Golombek and Wilber, *Timurid Architecture*, II, fig. 75. Conservators filled a staircase accessing the roof with an empty space.

⁵¹These north and south passages were obstructed during restoration works carried out in the twentieth century. They are still visible in images taken in 1916 (Niedermayer, *Afghanistan*, pl. 163) and 1933 (by Byron, Courtauld Institute of Art, London: negatives A38/315 and A38/318). See also: Golombek and Wilber, *Timurid Architecture*, II, fig. 75.

⁵²The height is given by Pougatchenkova, *Chefs-d'œuvre d'architecture*, 128.



Figure 7. Interior of the mausoleum of Gawhar Shad (© S. Aube/Th. Lorain 2015).

In view of the rules of symmetry that presided over the architectural norms of this period, there is much to suggest that an identical room once formed the counterpart to this mausoleum, in the southwest corner of the madrasa.⁵³

Ceramic Tiles From the Gawhar Shad Complex

Ceramic tile is a fragile material. Over the last thirty years, the state of conservation of the wall coverings in the Gawhar Shad Complex has deteriorated even further. The coverings of minaret M6 have nearly all fallen, carrying with them the last vestiges of the decoration of the mosque. Most of the *in situ* architectural ceramics are today concentrated in the Gawhar Shad Madrasa, namely on its mausoleum and around its south-eastern minaret (M5), which has itself been greatly altered. Old photographs of the complex nonetheless make it possible to reconstitute part of the decoration of these structures and to reattribute a number of decorative fragments collected on the site. Through a descriptive reconstruction of these ceramic tile coverings, the following section offers an analysis of this decorative grouping in an attempt to shed light on certain heretofore unstudied fragments found on the site. The whole of this analysis aims to highlight the specificities of the decoration of the Gawhar Shad Complex, and to put it in perspective with its few contemporary parallels.

Ceramic Tiles from the Mosque's Minaret (M6)

The northwest minaret of the Gawhar Shad Mosque was once completely ornamented by wall coverings

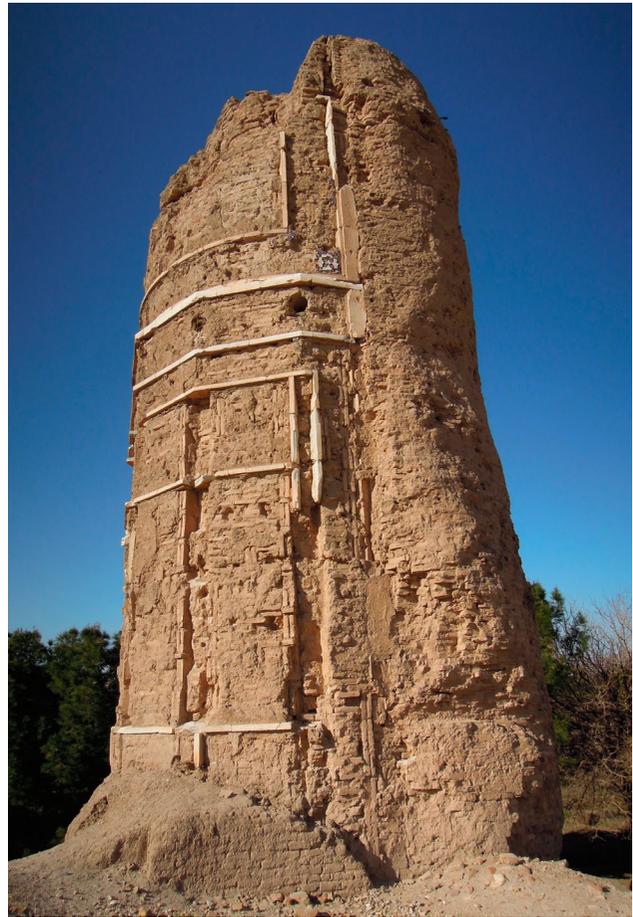


Figure 8. Ruins of the north-western minaret of the Gawhar Shad Mosque (M6) (© S. Aube/Th. Lorain 2017).

(Figure 9), with the exception of the section that framed the door leading to the staircase. Only the base of the minaret is still preserved today (Figure 8), but photographs taken before its fall in 1985 make it possible to reconstitute the main traits of its decor.

The decoration of this minaret was distinguished by very diverse techniques: cut-tile mosaics, marbles, monochrome tiles and underglazed painted ceramics. Oskar von Niedermayer's photographs from 1916 show that the dado of the minaret was already missing at that time, and that it was surmounted by a carved marble band with inscriptions commemorating the building's foundation in 839/1435–1436 (today dispersed, Figure 3).

The different sections making up the decoration of M6 were delineated by marble borders, which highlighted the general composition as well as the main decorative themes of the decoration. These marble borders are today the principal elements that subsist from the decoration of the minaret (Figures 8 and 10).

⁵³We should note here that Allen had hypothesised the existence of another funerary chamber that may have been installed in the madrasa to handle the many burials that occurred there. See: Allen, *Catalogue of Toponyms*, 126.

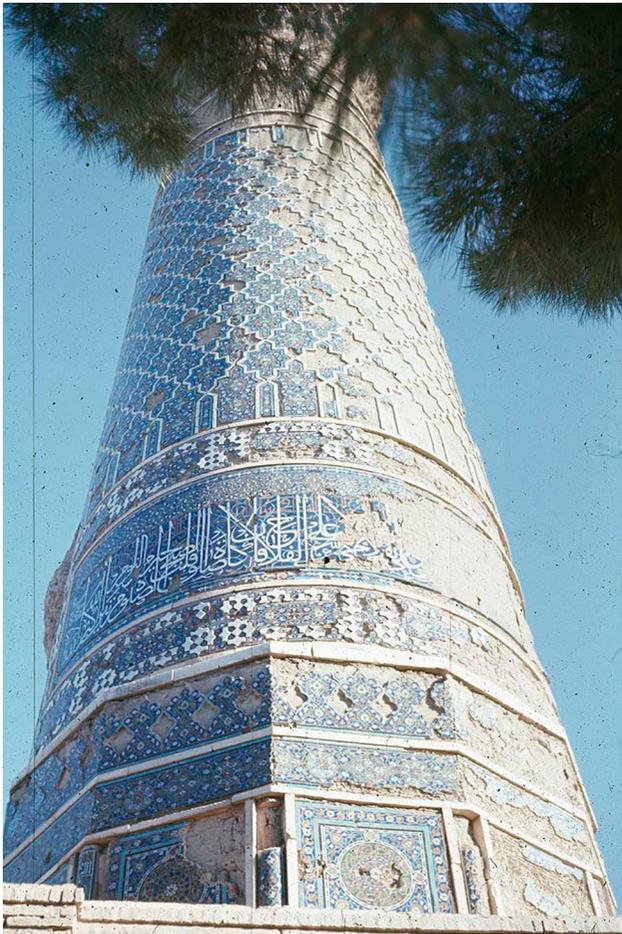


Figure 9. The minaret M6 in the 1970s (© B. O’Kane, with the kind permission of the author).

Cut-Tile Mosaics

Cut-tile mosaic nonetheless played a preponderant role within this decoration. The rare elements that are still *in situ* (Figure 10), as well as the fragments identified as having come from this minaret (examples on Figure 11), bear witness to an extremely sophisticated ornamentation: the chromatic scale was very broad (cobalt, turquoise, black, white, yellow, green, and unglazed terra cotta tesserae⁵⁴); the vegetal ornaments were filled in using tesserae of various colours; the floral vocabulary was quite extensive, and some of the decorative elements were particularly refined – such as the double line that outlined polylobed medallions (see for instance: Figure 10, bottom).

The decoration is organised as follows:

- The dodecagonal shaft of the base minaret was cut into decorative panels bordered with vegetal friezes, and then separated by mosaic colonnettes. The



Figure 10. Detail of some of the standing ceramic tiles from M6 (© S. Aube/Th. Lorain 2017).

recurring motif of the minaret was a long eight-pointed star, very stretched out, emphasised by the thick contours of the carved marble. The motif was surrounded by a pointed arch and surmounted by a cartouche in thuluth script.⁵⁵

- The theme of the long star with eight points was also intensely developed over the entire upper section of the minaret (Figure 9).⁵⁶ Each star was delineated by a marble border. The dialogue between the mosaic and the marble thus punctuated the whole decor of the minaret.
- The transition between these two decorative zones was marked by a high double inscription, of which only a few traces remain today: the main panel burgeoned into ample thuluth characters in white and was seconded by an upper panel of small yellow kufic characters (Figure 9).

Underglazed Ceramic Tiles

All around this inscription, the various decorative elements created a dialogue between different ceramic techniques and played upon the effect of relief that this produced. At the summit of its dodecagonal base, the minaret used to have a decorative panel featuring broad palmettos made of cut-tile mosaic, alternating with underglazed tiles painted in cobalt on a white reserved background (Figure 12). These “blue-and-white” tiles were decorated with an assembly of white palmettos on a cobalt background. No fragments of these “blue-and-whites” have yet been found in the rubble.⁵⁷ This type of “blue-and-white” tile

⁵⁴About the colour variations of mosaic tiles, see: Aube, *La céramique dans l’architecture*, 39–44.

⁵⁵Allen read the inscription as follows: “wata’arifa al-waqt” (Allen, *Catalogue of Toponyms*, 115).

⁵⁶An old view of this decoration is published in: Hatch Wolfe, *Herat*, 39.

⁵⁷The base of M6 has never been cleared away since the fall of the minaret. Sherds of “blue-and-whites” might be found in the rubble.



Figure 11. Sherds of ceramic tiles from minaret M6, kept at the National Museum of Herat (© DAFA 2015/S. Aube/Th. Lorain).



Figure 12. Detail of mosaic tiles and “blue-and-white” decorations from minaret M6 in the 1970s (© B. O’Kane, with the kind permission of the author).

is rare in Iranian and Central Asian architecture from this period. The closest stylistic comparisons with these wall coverings can be found on the walls of the ‘Ishrat-Khana Mausoleum in Samarkand (ca. 869/1464), and even more so in Gawhar Shad’s Masjid-i Jami’ in Mashhad (819–



Figure 13. “Blue-and-white” tiles on the main iwan of the complex of ‘Abdullah Ansari in Gazurgah (© S. Aube 2015).

821/1416–1418) as well as in the main iwan of the sanctuary of ‘Abdullah Ansari in Gazurgah (ca. 829–832/1425–1429, Figure 13).⁵⁸ As in Herat, these are skillfully drawn, with no black contour lines.

Other innovative effects were introduced in the border framing the main inscription band. This border laid out a geometric network. Its principal polygons were formed by monochrome white-glazed tiles

⁵⁸The “blue-and-white” tiles of Gazurgah and Mashhad are mentioned in: O’Kane, *Timurid Architecture in Khurasan*, 122–3.



Figure 14. Detail from standing ceramic tiles on M6 (© S. Aube/Th. Lorain 2017).

arranged in slight relief in relation to the rest of the decoration (Figure 14). Between these polygons were medallions of very narrow cut-tile mosaics, with vegetal patterns. The use of such monochrome white tiles in relief is entirely unusual in Timurid architecture. In Khargird, the Ghiyathiyya Madrasa (846–848/1442–1446) has preserved a few diamond-shaped underglazed tiles. Their principal surface is white and they are presented in slight relief in relation to the rest of the decor, which likens them to the coverings of M6 (Figure 30 (A)); but the contours of the tiles from Khargird have a blue edging that is absent on those from Herat. Wall coverings similar to those from Herat were found in the neighbouring complex built in the 890s/1485–1495 by the Timurid Sultan Husayn.⁵⁹ We can assume that the Gawhar Shad Mosque probably inspired designers from the period of Sultan Husayn.

Ceramic Tiles from the Mausoleum of Gawhar Shad

The Gawhar Shad Mausoleum once marked the north-west corner of the madrasa (Figure 1). The mausoleum's interior is adorned with dense muqarnas, domes and half-domes sculpted in plaster and painted in blue, white, red, and gold (Figure 7). The dado's decoration has completely disappeared but the decorative tendencies of the Timurid period suggest that it was covered in ceramics, very probably in a geometric pattern. A comparable decoration can be observed in Khargird, in the room situated to the north of the entry vestibule of the Ghiyathiyya Madrasa.

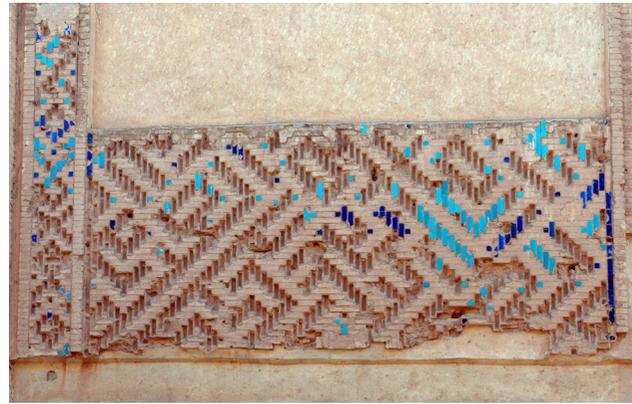


Figure 15. Banna'i decoration from the North façade of the Gawhar Shad Mausoleum (© S. Aube/Th. Lorain 2017).

So, the architectural ceramics to be found today on this structure are concentrated on the outside of the building. A large portion of the fragments collected on the site are “*banna'i*”-type bricks, i.e. bricks with a monochrome glaze, generally associated with unglazed bricks to form a geometric or epigraphic pattern. This technique is very widespread in Timurid architecture. Considering the decorative practices of this period, it is very plausible that the entirety of the outer walls of the madrasa, as well as its domes and very probably part of the walls of the central courtyard, were decorated with this sort of brick. This was doubtless also true for the Gawhar Shad Mosque. Today, only the northern and western walls of the mausoleum, as well as the shell of its dome, still have this type of decoration (Figures 6 and 15). Fragments of geometric friezes made from *banna'i* bricks still border the mausoleum's façades. On the north, on either side of the great arch above the window, sections of an epigraphic pattern are still present.⁶⁰ religious invocations in a convoluted kufic script were formed by monochrome turquoise bricks that stood out against a background of unglazed bricks (Figure 15).

The eastern and southern façades of the mausoleum have not kept their original decoration. Let us recall that they were originally connected to other rooms in the madrasa.⁶¹ The cut-tile mosaics of vases and floral friezes that now occupy the spandrels of the eastern façade are a contemporary creation: the walls of the room adjacent to the mausoleum were previously plastered and very likely painted, and the wall panelling was apparently tiled in ceramic.

⁵⁹An article on this subject is forthcoming, tentatively titled: Aube, Lorain, Bendezu-Sarmiento, “The Timurid ‘Mosalla’ of Herat Revisited: Architecture and Decoration of Sultan Hosayn Bayqara Madrasa.”

⁶⁰This decoration was better conserved in 1933, as seen in photos taken by Robert Byron; see: Courtauld Institute of Art, London, negative A38/314.

⁶¹See the photos taken in the 1930s. The architectural decoration was no longer standing on a photo taken in 1933 by Robert Byron (Courtauld Institute of Art, London, negative A38/315 and A38/317). His image also shows that the current arches did not exist. See also the photo taken by A. Scheibe in 1937 – Deutsche im Hindukusch, S. 53, DHE 304 bis 307, to be seen online: http://www.phototeca-afghanica.ch/index.php?id=35&no_cache=1&tx_browser_pi%5BshowUid%5D=1566&L=&ciHash=bab381ffd628df06ba972705c48836f0 (last access 25 February 2017).



Figure 16. Detail of the dome of the Gawhar Shad Mausoleum (© S. Aube/Th. Lorain 2015).

The dome of the mausoleum is covered by an assemblage of varied techniques. The shell of the dome is covered with monochrome turquoise-glazed bricks, highlighted with gadroons with a pattern of friezes of cobalt, white and yellow diamonds on a turquoise background (see the upper section of the photo [Figure 16](#)). In addition to these *banna'i* bricks, the dome is decorated with colored-glaze “cloisonné” tiles (better known as “*cuerda seca*”),⁶² as well as with cut-tile mosaics.

Colored-Glaze “Cloisonné” Decorations

The base of the dome ([Figure 16](#)) is adorned in a frieze of colored-glaze “cloisonné” tiles: the wall coverings are first coated in a white monochrome glaze, then in different high-fire monochrome glazes, separated by a black line made from a manganese-based mixture rich in iron, in a glass matrix.⁶³

The register of “cloisonné” tiles covering the dome is decorated with religious incantations in a floral kufic calligraphy (*ya subhan, ya jabbar*) ([Figure 16](#)). Under this register stands a cornice with muqarnas decorated with palmettos and flowers, presented under arches and friezes of gold-embossed squares. Beneath this level on the drum was a tall Qur’anic inscription ([Figure 17](#)).⁶⁴ All traces of this last calligraphy have now disappeared from the drum, but a few fragments were found among

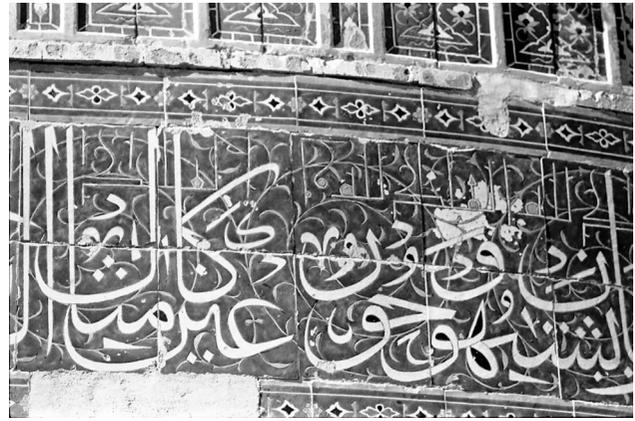


Figure 17. The vanished inscription on the drum of Gawhar Shad Mausoleum (© A. Bruno 1975/ Andrea Bruno’s Archives of Afghanistan kept at UNESCO [4500290209-A1], ref.: AB_AFG_HER_609_01).

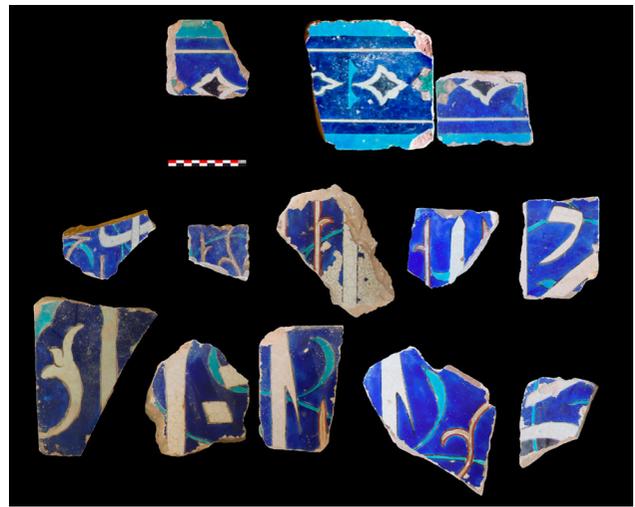


Figure 18. Sherds from the inscription of the drum of the mausoleum (© DAFA 2015/S. Aube/Th. Lorain).

the sherds studied for UNESCO ([Figure 18](#)). There was once double inscription here, on two registers. The main register was carved in white thuluth calligraphy, spreading over a background of foliated scrolls. A few sherds conserve traces of the secondary register, in a floral kufic calligraphy with highly cursive delineations, accentuated with gold and delineated with pink.

Parallels to this type of “cloisonné” tile can be found in Timurid architectural ceramics dating from

⁶²The technique is better known as “black line”, “*cuerda seca*” or even “*haft rang*” type. This new appellation was proposed by Lucile Martinet. We are grateful to Lucile Martinet and Bernard O’Kane for this term, which may succeed in bringing about a consensus.

⁶³Based on analysis carried out on colored-glaze “cloisonné” tiles from the dome of the Gawhar Shad Mausoleum (Conti and Sidoti, “Laboratory Tests”). About this technique, see: Pacheco, “Étude des films d’or,” 152. Lucile Martinet is currently writing a PhD dissertation on this subject. We warmly thank her for all the information that she kindly shared with us. See: Lucile Martinet, “Étude historique et physico-chimique des décors à glaçures colorées ‘cloisonnées’ de céramiques architecturales au sein des empires timourides, ottomans et safavides (fin XIV^e-fin XVII^e s.),” supervised by Étienne Anheim and Claire Déléry, EHESS (Centre de Recherches Historiques)/Musée du Louvre (Département des Arts de l’Islam). Her research points out that the line of the Timurid “cloisonné” tiles from Khurasan has a base of chrome with little manganese, unlike samples from Herat, which are closer to the “cloisonné” tiles from Timur’s lifetime.

⁶⁴Parts of this inscription are still visible in Byron’s images. See: Courtauld Institute of Art, neg. A38/318. Also: Hatch Wolfe 1966: 33, and Andrea Bruno’s Archives of Afghanistan kept at UNESCO (4500290209-A1), ref.: AB_AFG_HER_609_01 (reproduced on our [Figure 17](#)).



Figure 19. Colored-glaze “cloisonné” tiles and “blue-and-white” tiles from the south-western iwan in the madrasa Ghiyathiyya, Khargird (© S. Aube 2015).



Figure 20. Ceramic tiles replaced above the entrance door of the Mazar-i Zayn al-Din in Taybad (© S. Aube 2015).

the late fourteenth century to the 1440s. The chromatic palette, with its subtle pistachio-green highlights and its use of gold, recalls the elegant “cloisonné” tiles that can be seen in the Aq Saray Palace in Shahr-i Sabz (781–798/1379–1396), in Timur’s mosque known as “Bibi Khanum” in Samarkand (801–808/1398–1405), or in the madrasas of ‘Ulugh Bayg in Bukhara and Samarkand (820–823/1417–1420).⁶⁵ But the closest comparisons are to be found in Khurasan, on monuments built under the supervision of the architect Qavam al-Din: edgings and medallions on the interior of iwans in the Ghiyathiyya Madrasa in Khargird (Figure 19), or some fragments that were reused above the entrance of the mausoleum of Zayn al-Din in Taybad (848/1444–1445, Figure 20), or, even more strikingly, inscriptions on the drums of



Figure 21. Inscription and tile decorations from the drum of the mausoleum of Shaykh Ahmad in Turbat-i Jam (© S. Aube 2015).

the mausoleum of Shaykh Ahmad in Turbat-i Jam (844/1440–1441, Figure 21) and of the Gawhar Shad Madrasa in Kuhsan (844/1440–1441).⁶⁶ The colored-glaze “cloisonné” tiles of the dome of the Gawhar Shad Madrasa thus fit into the Timurid decorative tradition of this period.

Cut-tile Mosaics

Finally, the base of the drum is covered in vertical panels of cut-tile mosaic. These form pointed arches on a background of decorative unglazed bricks. On the spandrels of these decorative arches are medallions containing palmettos on a background of flowered stems, while the pseudo-tympanum is adorned with a highly stylised kufic epigraph, containing the name of *Allah* repeated seven times. Under the pointed arch a starred pattern is developed, comprising floreted hexagons in mosaic, connected by terra cotta triangles. Each panel is separated by a small frieze of polygons.

Laboratory Analysis on Banna’i and “Cloisonné” Decorations

In 2015, samples were taken from the decorations of the mausoleum’s dome by conservators Lucia Conti and Giancarlo Sidoti, at the request of UNESCO.⁶⁷ Subsequent analysis revealed that the chemical composition of the *banna’i* bricks and that of the colored-glaze cloisonné tiles were identical: a very fine clay paste, rich in

⁶⁵About this evolution, see: Soustiel and Porter, *Tombeaux de paradis*, 213–8; and O’Kane, “Development of Iranian cuerda seca.”

⁶⁶About these different monuments, see: O’Kane, “Madrasa al-Ghiyasiyya at Khargird,” and “Taybad, Turbat-i Jam”; see also: O’Kane, *Timurid Architecture in Khurasan*, 197–201, 211–15 and 223–6; Golombek and Wilber, *Timurid Architecture*, I, 322–7 and 344–9.

⁶⁷We are sincerely thankful to UNESCO and to the team of Italian conservators who carried out these analyses in November 2015: Lucia Conti and Giancarlo Sidoti, with the collaboration of Livia Alberti and Ermanno Carbonara. Their results are presented in an unpublished report: Conti and Sidoti, “Laboratory Tests.”



Figure 22. Remains of inset-technique decoration at the bottom of minaret M5 (© S. Aube/Th. Lorain 2015).

quartz, with a small quantity of feldspars. Both techniques used the same process to obtain the white glaze, which was opacified with tin. The turquoise glaze of the *banna'i* was obtained by adding a base of copper oxide to this mixture. The yellow was obtained through a high concentration of lead and iron oxides. It is interesting to note that the dark blue colour (cobalt oxide) was applied in two layers of glaze – the first having a slightly stronger colour than the second – unlike other glazes that were applied in a single layer.

The cloisonné tiles from the Gawhar Shad Mausoleum are very characteristic of Timurid productions from the first half of the fifteenth century. The chromatic palette is limited to white (tin) and turquoise (copper), reinforced by black (manganese), on a cobalt background.⁶⁸ We may also note the use of a more unusual apple green (from a lead and copper stannate base).

Finally, the wall coverings were given an ornamentation of gold leaf arranged in small squares; the black-line “cloisonné” that separates the colours is here pink (from an iron oxide base⁶⁹) instead of black. This pink line not only helps delineate the different colours but also emphasises the metallic reflections of the gold.⁷⁰ Pink is also used occasionally as a fill colour. It might seem perplexing to find such a refined chromatic array on tiles placed as such a height as to be barely visible to visitors below, but it is important to consider the iridescent capacity of these gold highlights, which could reflect sunlight to great effect.⁷¹

Ceramic Tiles From the Madrasa’s Minaret (M5) and Surroundings

The M5 minaret at one time formed the southeast corner of the Gawhar Shad Madrasa. Only the framework around the door leading to the stairwell has no decoration: on either side of the door, the minaret is bare up to the level of the lintel. Its covering essentially consists of cut-tile mosaics and facing bricks, unlike the decoration of M6, which combined more diversified techniques. Other types of wall coverings have been found at the foot of M5, however.

Cut-Tile Mosaics and Inset Technique

The different decorative registers of M5 are punctuated by epigraphic bands made of cut-tile mosaic. The imprint of an inscription, made of cut-tile mosaic, can be detected just above the marble base (Figure 22). Between the first and second decorative register we can still see a few traces of an epigraphic band in mosaic, with a double inscription: tall white thuluth characters, seconded by an upper register with yellow kufic characters, on a cobalt background (Figure 23). The third epigraphic band, placed under the first balcony, has disappeared, but older photographs show that it bore an inscription in a geometrical kufic script.⁷²

Between these decorative bands, two registers of medallions made of cut-tile mosaic were developed on a background of decorative bricks. The lower register was composed of rectangular pointed cartouches (Figure 22),

⁶⁸Physical-chemical analysis undertaken on three “cloisonné” tiles and on *banna'i* bricks from the dome of Gawhar Shad demonstrates a similar petrography, as well as white and turquoise glazes. See Conti and Sidoti, “Laboratory Tests.”

⁶⁹This is the result of analysis undertaken on three tiles by *ibid.* It is worth mentioning that analysis led by Claire Pacheco described the pink line as being made of hematite (Fe₂O₃) and frit (Pacheco, “Étude des films d’or,” 152). More systematic analyses would lead to more reliable results.

⁷⁰This is one of the conclusions of Céline Ollagnier on Timurid tiles from the Aq Saray Palace in Shahr-i Sabz (lecture given during the workshop “The Timurid Period” held at Leiden University, May 26–27, 2016; as well as her PhD dissertation: Ollagnier, “De Kairouan (Tunisie) à Shahr-i Sabz”). See also Pacheco, “Étude des films d’or,” 152 and the PhD dissertation of Lucile Martinet (see note 65).

⁷¹This brightness capacity is still observed in medieval architectural decorations, even when only some small pieces of gold remain. We experienced this with ceramic tiles with small gilded decorations from the madrasa of Sultan Husayn in Herat.

⁷²See Andrea Bruno’s Archives of Afghanistan kept at UNESCO (4500290209-A1), and especially the photo AB_AFG_HER_557_22 taken ca. 1970.



Figure 23. Detail of tile and brick decorations of minaret M5 (© S. Aube/Th. Lorain 2015).

the middle level by poly-lobed oval medallions (Figure 24 (A,B)), while tripartite fleurons spread between the two balconies with muqarnas (Figure 25). The top of the minaret, now destroyed, had tiles that were variously rectangular, square and L-shaped.⁷³ It should be noted that varied and inventive epigraphic decorations adorned the monument, as can still be seen today in the row of poly-lobed cartouches filled with thuluth mirror calligraphy that repeats the words *al-hamdulillah* (Figure 24A). Other fragments in mirror-image thuluth script as well as in a geometric kufic script have been found among the rubble: they are stylistically very close to calligraphies used on M5, but on a black background rather than cobalt (Figure 26).

A common decorative method is the inset technique, which emphasises mosaic medallions by setting them against a background of unglazed cut bricks. It is found on numerous monuments in the region, such as the minarets of the Gawhar Shad Mosque (819–821/1416–1418) and those of the Masjid-i Shah in Mashhad (855/1451, Figure 27), or on those of the Ghiyathiyya Madrasa in Khargird (here with “cloisonné” tiles in place of mosaics). Some geometric networks on the M5 minaret – such as the band framing the first register (Figure 23, bottom) – announce other decorations that would be observed at later periods in Herat. The paneling of the Sultan Husayn Madrasa (Figure 28), for example, shows a composition and technical methods comparable to those observed on M5.⁷⁴

Apart from the mosaic medallions of the first register, now gone, which once presented a dense and richly worked decoration,⁷⁵ we may note that the treatment of cut-tile mosaic is not entirely similar between M5 and M6. The chromatic palette is certainly comparable, but a less sophisticated use is made of it: the filling of floral elements is for example less diversified; vegetal and floral elements are less often open so a less developed polychromy is used to fill them than is the case for the elements on the mosque. The architectural decoration remains nonetheless inventive but in comparison with the minaret of the mosque, the floral vocabulary here seems more repetitive and the forms require less complicated cutting of tiles. The ornaments of M5 apparently grew simpler as the work had to be carried out at increasingly greater heights (compare the filling in of the medallions in Figure 24(A) and in (B)); however, we may also wonder whether part of the decoration was done rapidly in order to speed the completion of the project.

“Blue-and-White” Tiles

Finally, several tile fragments were collected at the base of the minaret of the madrasa in 2017, during the restoration work carried out by UNESCO to stabilise the minaret. Among the fragments of wall coverings were found, unsurprisingly, a very large quantity of sherds from cut-tile mosaics, as well as *banna’i* bricks. Other types of ceramic pieces also appeared, most likely originating from the rooms adjacent to the minaret. The most significant grouping is probably the set of about 50 fragments of “blue-and-white” tiles (Figure 29). Some of these pieces show a blue vegetal pattern on a white background, under a transparent glaze (see the 10 tiles at the bottom of Figure 29). Black outlines emphasise the motifs on several of these fragments. The tiles are too fragmentary to allow us to determine the general shape of the wall coverings in this set. Most of them, however, seem to have formed polygons, decorated with a vegetal frieze, sometimes in relief, bordered with a cobalt edging. One fragment differs from this group: its complete shape is unknown because all its sides are missing, but its decoration contains a section of a bird’s wing (a Simorgh?), drawn in a cobalt blue gradation that is more meticulous than that of the other “blue-and-whites” found (cf. the tile on the bottom right corner of Figure 29). Finally,

⁷³We are once again sincerely thankful to Bernard O’Kane for having providing us a photo taken in the 1970s displaying the decoration from the top of the minaret; see the black-and-white publication of his photo in: O’Kane, *Timurid Architecture in Khurasan*, fig. 14.12. As far as we can judge from this photo, the ceramic tiles seem to have been a type of colored-glaze “cloisonné” decoration (*cuerta seca*). Some of the fragments collected on the site could correspond to these tiles. If so, the quality of these tiles is far less consistent than on the “cloisonnés” from the dome of the mausoleum. In any case, any conclusion would be chancy without more images from this vanished part of the minaret.

⁷⁴See our forthcoming article: Aube, Lorain, Bendezu-Sarmiento, “The Timurid ‘Mosalla’ of Herat Revisited: Architecture and Decoration of the Sultan Hosayn Bayqara Madrasa.”

⁷⁵See the image published in: Lentz and Lowry, *Timur and the Princely Vision*, 88 fig. 30.

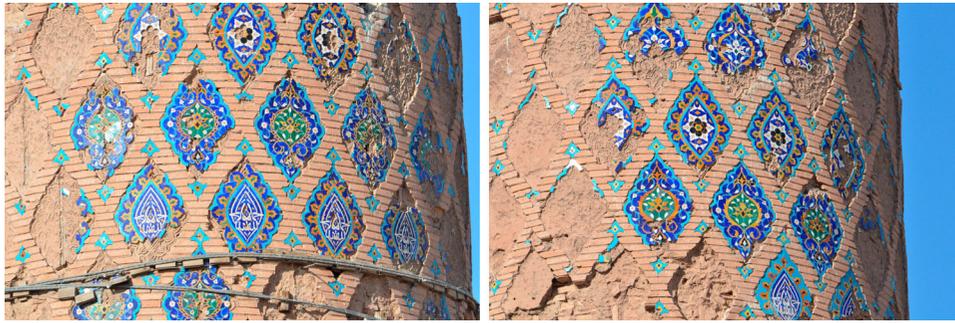


Figure 24. (A) and (B) Two details of the decoration of minaret M5 (© S. Aube/Th. Lorain 2017).



Figure 25. Detail of the decoration of minaret M5 (© S. Aube/Th. Lorain 2017).

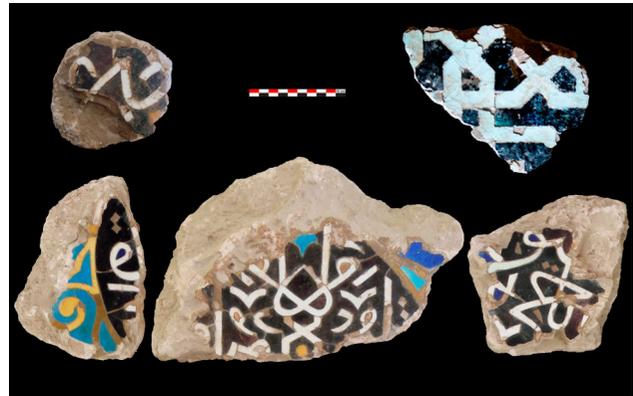


Figure 26. Sherds with calligraphic decorations, kept at the Herat National Museum (© DAFA 2015/S. Aube/Th. Lorain).

there is a series of painted and glazed pieces that constitute elements of polygons and borders, simply painted white, with a discreet cobalt edging accenting each side of the tile (cf. the 11 topped tiles of Figure 29). With, perhaps, the exception of the fragment with the bird's wing, all the pieces from this group were made with the same type of paste and have technical properties that suggest that they can be considered as a single set.

Examples of “blue-and-white” tiles in Timurid architecture are relatively limited. It is thus surprising to observe several declensions of this type of tile. The white tiles with a cobalt edging evoke in a way the white monochrome relief tiles seen on the M6 minaret (Figure 14). Their technique, their style and their diversity announce the “blue-and-whites” found in Tabriz on the Blue Mosque (870/1465) and on the mosque of Uzun Hasan (ca. 882–889/1477–1484).⁷⁶ But they recall even more strongly the painted and glazed tiles arranged on the inner walls of the southwest iwan of the Ghiyathiyya Madrasa in Khargird. In this building we can see a similar range of “blue-and-whites” (Figures 19 and 30(A,B)):



Figure 27. Entrance façade of the Masjid-i Shah in Mashhad (© S. Aube 2006).

i.e. vegetal patterns painted in cobalt on a white background under a transparent glaze, and white polygons outlined with cobalt edging, like those uncovered in Herat. The parallel between the series of “blue-and-

⁷⁶Images and studies of these decorations are given in several publications by Aube, “Mosquée bleue de Tabriz,” and “Uzun Hasan Mosque in Tabriz,” and *La céramique dans l’architecture*, chapter 4.



Figure 28. Detail of the decoration of a dado in the madrasa of Sultan Hosayn – north façade of the mausoleum (© S. Aube/Th. Lorain 2017).

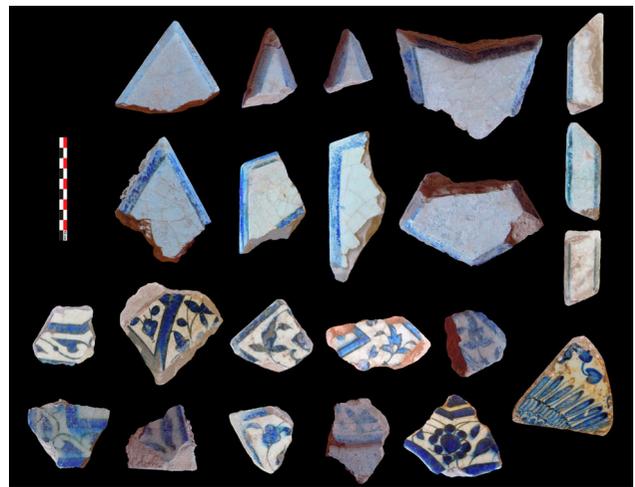


Figure 29. “Blue-and-white” finds collected around M5, here associated with some other sherds previously stored inside the Gawhar Shad Complex, with no mention of the exact place of discovery (© DAFA 2015-2017/S. Aube/Th. Lorain).



Figure 30. (A) and (B) “Blue-and-white” tiles from the south-western iwan of the madrasa Ghiyathiyya, Khargird. (© S. Aube 2015).

whites” from Khargird and those from Herat is all the more remarkable in that this type of ceramic tile was very little used in the fifteenth century. If we consider that these two sites were both built under Qavam al-Din’s supervision, we might wonder how much this type of decoration might have been one of the characteristics of the famous architect’s style.

Colored-Glaze “Cloisonné” Tiles

A number of fragments of “cloisonné” tiles were uncovered during the restoration work on the M5 minaret (see for example [Figure 31](#)). They are technically similar to those found on the cupola of the Gawhar Shad

Mausoleum and came from the same construction project. Like the tiles that can still be observed today inside the Ghiyathiyya Madrasa in Khargird ([Figures 19](#) and [30](#) (A)), we may suppose that these “cloisonné” and the “blue-and-white” tiles mentioned above most likely composed a single panel, on a background of unglazed bricks.

Finally, it might be of interest to mention a few other “cloisonné” fragments that might come from the immediately vicinity of the mausoleum of Gawhar Shad – although the exact location at which they were collected presents some issues.⁷⁷ They differ from the previous tiles in their polychromy, which includes cobalt, turquoise, black, white, but also yellow – absent from the preceding set – and a few rare pieces show traces of

⁷⁷Some fragments of this group were collected at the base of the Gawhar Shad Mausoleum. When they were picked up, these sherds were interpreted as originating from the dome; in accordance with the standing decoration on this dome, this does not seem possible.



Figure 31. Colored-glaze “cloisonné” tile found in the area of M5, kept at the Herat National Museum (© S. Aube/Th. Lorain 2017).

green. Their typology and their technique likens them to examples from the late Timurid period found in Herat, in the Masjid-i Jami⁷⁸ (903–905/1498–1500) and in the madrasa of Sultan Husayn. The context of discovery of these latter “cloisonné” tiles from within the Gawhar Shad Complex is still unclear, however, and we must remain extremely prudent about the conclusions to be drawn from these few pieces. If the localisation of their discovery was confirmed, this could indicate possible restorations undertaken during the reign of Sultan Husayn.

Conclusions

Since architects from the Medieval Iranian world generally remain anonymous, it is an even greater rarity to be able to identify a single figure as being responsible for several different architectural projects. This, however, is the case of the famous master (*ustad*) Qavam al-Din b. Zayn al-Din Shirazi, to whom we owe the complex ordered by Gawhar Shad in Herat.⁷⁹ He is also associated with several other Timurid monuments in

Khurasan: the *khanqah* and the madrasa of Shah Rukh in Herat (813/1410, now vanished), Gawhar Shad’s Masjid-i Jami’ in Mashhad (819–821/1416–1418), the mausoleum of Khvaja ‘Abdullah Ansari in Gazurgah (829–832/1425–1429), and the Ghiyathiyya Madrasa in Khargird (846–848/1442–1446).⁸⁰ The chronology of these monuments shows the concomitance between the various other building projects and the construction of the Gawhar Shad Complex in Herat. The mosque of Mashhad was officially completed one year after the work began in Herat (820/1417). The complex in Gazurgah was built during the same period as the one in Herat – which was doubtless facilitated by the geographic proximity of the two sites. This was not the case of the madrasa in Khargird, situated more than 200 km from Herat, which was nonetheless undertaken during Qavam al-Din’s life, i.e. before 842/1439, even though the Gawhar Shad Complex was not yet finished at this time. The chronology of these constructions suggests that Qavam al-Din must have had significant resources at his disposal. Samarqandi describes him as excelling in *muhandisi* (engineering), *tarhi* (design) and *mi’mari* (architecture): terms that place him in the position of a designer or creator rather than in that of a project supervisor.⁸¹ The meaning of these words in the fifteenth century remains problematic, however, so it is a delicate matter to interpret the exact role of this figure who is generally qualified as an “architect,” for the sake of convenience. His architectural innovations have already been highlighted through the edifices that we know to be his work.⁸² But how involved was he in the decorative choices for these monuments? It is interesting to recall that the marble pieces dividing the decoration of the minaret M6 were integrated into the constructive bricks (Figures 8 and 10). This implies, of course, very close connections between the architectural and decorative work. Moreover, the decorative programmes that were developed on Qavam al-Din’s buildings demonstrate true stylistic and technical correlations. These remarks suggest that Qavam al-Din might have been actively involved in the choice of decoration and necessarily worked closely with teams of artisans who were faithful to him.⁸³

⁷⁸About the Masjid-i Jami’ of Herat and its Timurid restoration works see: O’Kane, *Timurid Architecture*, 353–6; and Golombek and Wilber, *Timurid Architecture*, 1, 317–8.

⁷⁹See: Wilber, “Qavam al-Din.”

⁸⁰See: Golombek, *Timurid Shrine at Gazur Gah*, 61–62; as well as articles by Wilber, “Qavam al-Din”; and Babaie, “Qavam al-Din Shirazi.” Shah Rukh’s *khanqah* and madrasa in Herat are the first evidence of Qavam al-Din professional activity (Allen, *Catalogue of Toponyms*, 138–41). About other monuments, see also the following studies: Golombek, *Timurid Shrine at Gazur Gah*; O’Kane, “Madrasa al-Ghiyasiyya at Khargird,” and *Timurid Architecture in Khurasan*, 119–30 (Mashhad), 149–52 (Gazurgah), 211–15 (Khargird); Golombek and Wilber, *Timurid Architecture*, 1, 307–11 (Gazurgah), 322–24 (Khargird), and 328–31 (Mashhad).

⁸¹Samarqandi, *Matla’ al’dayn*, 720, quoted by Wilber, “Qavam al-Din,” 31.

⁸²See among other examples the qibla iwan surrounded by a pair of minarets in Mashhad, the form and opening of the mihrab in Herat, Gazurgah or Khargird, the principle of false façades (Mashhad and Gazurgah) or outstanding intersecting arches in the domed chambers of Herat and Khargird (see the lecture hall). For a synthesis on this architectural style and its evolution, see: Wilber, “Qavam al-Din,” and the short presentation in: Babaie, “Qavam al-Din Shirazi.”

⁸³Donald Wilber already expressed the idea of a faithful team of craftsmen working closely with Qavam al-Din (Wilber, “Qavam al-Din,” 35).

Indeed, we have seen that all the constructions associated with Qavam al-Din shared the same decorative tendencies. Whether in Mashhad, Herat, Gazurgah or Khargird, the designer pushed the art of cut-tile mosaic to one of its highest levels, through a large range of colours and very minutely cut tiles, resulting in a very diverse ornamental repertory. All these buildings share a comparable ornamental vocabulary in which the art of calligraphy occupies a structuring position and in which certain general tendencies of the vegetal patterns can be identified (see the suppleness and the shape of the half-palmettos in their largest developments, Figure 32 for example, or the double dotted line that structure a number of compositions, Figures 10 or 11⁸⁴). Qavam al-Din liked to accentuate his glazed medallions with an inset technique, arranging them within a background of unglazed bricks; he imposed this aesthetic notably on his minarets, in Mashhad, Khargird (Figure 19) and in Herat (Figures 5 and 24(A,B)). He pushed these decorative effects even further through the interplay of reliefs and through combining different decorative techniques. We have seen that the rare “blue-and-white” tiles of this period are in large part related to his productions, for he introduced these tiles on all the monuments attributable to him. The same is true of the colored-glaze “cloisonné” tiles (Figures 16–18). Through the complex that he built for Gawhar Shad in Herat, we also discover some of his other decorative innovations, such as polygons made of carved marble or of white monochrome ceramic (Figure 14).

It is in the architectural decorations of the Ghiyathiyya Madrasa in Khargird, commissioned by Pir Ahmad Khvafi, a vizier of Shah Rukh, that we can see the most striking links with the Herat complex. The two buildings use an analogous ornamental repertory, and especially a broad spectrum of ceramic techniques of very similar quality. In addition to the mosaics, the *banna’i* and the “cloisonné” tiles, it is particularly interesting to put into perspective the panels of underglazed “blue-and-white” tiles in Herat and in Khargird (Figures 29 and 30): this array is all the more surprising in that, as we have seen, this type of decoration is quite rare in Timurid architecture. The parallel between the two monuments goes beyond their ceramic tiles, furthermore; the mausoleum in Herat and the *Jami’at-Khana* of the madrasa in Khargird also share types of architectural organisation, with imposing wall coverings of painted plaster, that are entirely comparable

with one another (Figure 7). These two monuments certainly illustrate the fashionable repertory and tendencies of their time. However, some aspects seem to be more unusual – like the “blue-and-white” tiles. They might be a last testament to forgotten fashions. On the other hand, they might be evidence of Qavam al-Din’s style late in his career.

Qavam al-Din’s stylistic origins remain delicate to define. This master bore the nisba *Shirazi*. In Khargird, the architect pursuing the building project following Qavam al-Din’s death is presumed to be from Shiraz too: Ghiyath al-Din Shirazi (846/1442).⁸⁵ Each of these two successive architects thus bore a nisba suggesting a Shirazi origin, in the Fars. It is tempting to consider Shiraz as the original source of this stylistic inspiration, as Lisa Golombek has proposed,⁸⁶ but nothing attests to the veracity of this claimed origin, and the city of Shiraz has not conserved any contemporaneous vestiges that would make it possible to identify any stylistic contributions proper to this region.⁸⁷

The style employed by Qavam al-Din followed fashions that had emerged starting in the late fourteenth century in Timurid Transoxiana. We thus find, for example, mosaic medallions on a background of bricks that could already be seen on the minarets of the Aq Saray Palace in Shahr-i Sabz (although here “cloisonné” tiles rather than mosaics were used, 781–798/1379–1396), or on the minarets framing the iwan with qibla on Timur’s Masjid-i Jami’ in Samarkand (“Bibi Khanum”, 801–808/1398–1405). Furthermore, the style operated by Qavam al-Din is reflected on Timurid monuments of Herat and its region too. The geometric patterns and the mosaic medallions on a brick background can be found in Herat on the mausoleum of Muhammad Abu al-Valid b. Ahmad (before 903/1497–1498), as well as on that of Shahzada ‘Abdullah b. Mu’awiyah (865–893/1460–1488, Figure 33), or in the architectural decoration of Sultan Husayn Bayqara’s madrasa (890s/ca. 1485–1495, Figure 28). This last building even reuses various aspects of the decoration of the Gawhar Shad Complex: polygons in white monochrome ceramic tile or in marble, as well as nearly identical networks of stars on a brick background; even the architectural form of the madrasa reemployed some elements from the Gawhar Shad Complex, such as the original layout with two successive domed rooms.

But the diffusion of such a style goes beyond the sphere of Herat alone. The Masjid-i Shah in Mashhad

⁸⁴For some examples of these features, see among others: Lentz and Lowry, *Timur and the Princely Vision*, fig. 30 (Herat); Babaie, “Qavam al-Din Shirazi,” 30 (Mashhad); Golombek, *Timurid Shrine at Gazur Gah*, fig. 37 (Gazurgah); O’Kane, “Madrasa al-Ghiyasiyya at Khargird,” figs.VIId to VIIf.

⁸⁵See: O’Kane, “Madrasa al-Ghiyasiyya at Khargird,” 79. Ghiyath al-Din is not known on other construction works.

⁸⁶See: Golombek, *Timurid Shrine at Gazur Gah*, 60–62.

⁸⁷Aube, *La céramique dans l’architecture*, 177–80.



Figure 32. Detail of courtyard decoration in the 'Abdullah Ansari Shrine in Gazurgah (© S. Aube 2015).

(855/1451, [Figure 27](#)) or the mausoleum of Zayn al-Din in Taybad (848/1444–1445) are interesting examples of this. In addition to brick and mosaic effects, the Taybad complex clearly illustrates the adoption within Timurid Khurasan of decorations that combined “cloisonné” and “blue-and-white” tiles with carved marble tiles.⁸⁸ The influence of this style is furthermore observable as far as Samarkand, where the 'Ishrat-Khana Palace (ca. 869/1464) brings together medallions made of mosaic with “cloisonné” and “blue-and-white” tiles, in a style that stands out from other decorative processes that were in use at the time in Transoxiana. And these fashions go far beyond the Timurid borders. This same level of excellence in mosaic work, combined with the interplay of bricks and reliefs, and with diversified



Figure 33. Detail of mosaic and brick decoration in the entrance iwan of the Shahzada 'Abdullah b. Mu'awiyah Shrine in Herat (© S. Aube/Th. Lorain 2017).

ceramic techniques, including an exceptional array of “blue-and-whites,” can also be found in Tabriz, the fifteenth-century capital of the Qara Qyunlu and Aq Qyunlu dynasties: in the Blue Mosque (870/1465) and the mosque of Uzun Hasan (ca. 882–889/1477–1484).⁸⁹ We can see in the epigraphic repertoire of the Blue Mosque the same degree of elegance, and even the repetition of certain ornamental models: the drawn-out star⁹⁰ that was the main theme of the M6 minaret in Herat, or the friezes of tripartite palmettos in herringbone patterns⁹¹ that adorned the upper section of the M5 minaret in Herat ([Figure 25](#)) and that had already been used in Mashhad, in the ornamentation of the Gawhar Shad Mosque.⁹² In Tabriz we should note the innovative use of flowered medallions in mosaic on a brick background,⁹³ whose origin might be sought in the style illustrated a few decades earlier in the milieu of Qavam al-Din. These comparisons accentuate the close relationship that was maintained between Herat and Tabriz during their time as flourishing artistic centres. These parallels exemplify the circulation of craftsmen between different construction sites or different courts.⁹⁴ Through them, the circulation of models is also exemplified.⁹⁵

Thus, while Qavam al-Din's work is often praised for being precursory to later Safavid or Mughal architectural

⁸⁸“Blue-and-white” tiles of the mausoleum in Taybad are shown in *Ibid.*, 87 pl. 81.

⁸⁹On these two monuments, see: Aube, “Mosquée bleue de Tabriz,” and “Uzun Hasan Mosque in Tabriz,” and the synthesis in: Aube, *La céramique dans l'architecture*, chap. 4.

⁹⁰See: Aube, *La céramique dans l'architecture*, 35 pl. 8 for an illustration of this pattern in Tabriz.

⁹¹For an illustration of this pattern in Tabriz, see *Ibid.*, 93 pl. 87 (cf. one of the columns on the left side).

⁹²See the photo published in: Golombek and Wilber, *Timurid Architecture*, II, pl. 247.

⁹³A few of these decorations are illustrated in: Aube, *La céramique dans l'architecture*, 35 pl. 8, 45 pl. 20, 62 pl. 42.

⁹⁴Several historical events caused, for instance, the expatriation of craftsmen from one court to another. This was the case when the Timurid Baysunghur subdued a rebellion in Tabriz in 1420 and took the local craftsmen and intellectuals back to his own court. In 1458, the Qara Qyunlu Jahanshah seized Herat and returned to Tabriz accompanied by craftsmen. For examples of artistic connections between Tabriz and the Khurasan, see: Aube, “Uzun Hasan Mosque in Tabriz,” 53–6.

styles,⁹⁶ it should be mentioned that the style he developed was already impacting Timurid and Turkmen architecture over the course of the fifteenth century. The Gawhar Shad Complex in Herat is one of these offshoots reflecting a foundational decorative style.

One could expect that future archaeological digs on the site would provide new information on this landmark. The first surveys carried out by Urban in 2010 already revealed that the Gawhar Shad Madrasa was almost certainly built over an earlier building, which has however never been studied.⁹⁷ The implementation of archaeological digs would help us understand what this major monument of Timurid architecture was built on, to advance further in its restitution, possibly to find material within its context, and hence to go further in the restitution of the decorations of the complex, of the techniques used, and of the radiance of the remarkable artistic centre that was Herat in the fifteenth century.

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⁹⁵About the circulation of architectural models in fifteenth-century Iran, see: Necipoğlu, *The Topkapı Scroll*, and Aube, *La céramique dans l’architecture*, chapter 4, and especially 67–71.

⁹⁶Babaie, “Qavam al-Din Shirazi,” 33.

⁹⁷Urban, “Herat: Gawhar Shad Madrasa,” 20.

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