University of Sistan and Baluchestan

Iranian Journal of Archaeological Studies

Print ISSN: 2251-743X Online ISSN: 2676-2919

Archaeological Sciences Research Centre

An Analysis of a Šamšir (Sword) in the Malek Library Museum in Tehran, Iran

Manouchehr Moshtagh Khorasani

Department of Leadership and Intercultural Studies, Frankfurt School of Finance and Management, Frankfurt, Germany.
E- mail: manouchehr@moshtaghkhorasani.com

Received: 21/ 02/ 2023; Received in Revised form: 27/ 04/ 2023; Accepted: 18/ 05/ 2023; Published: 20/ 06/ 2023

Abstract

The following article analyzes a classical highly-curved Persian *šamšir* (sword) that is kept in the Malek Library Museum in Tehran, Iran. The blade is highly-curved, has a wedge shape, and a flat fuller. However, the typical style of most highly-curved Persian sword blades has no fullers. The blade is made of patterned crucible steel (*pulād-e gŏhardār*). Persian patterned crucible steel was considered one of the best types of steel not only in Iran but also in other countries. Based on the pattern and visisble structures of the surface of the blade, patterned crucible steel was classified into different categories. The crucible steel pattern on this example is *pulād-e jŏhardār-e xati* that means "lined watered steel. The blade has a gold-overlaid maker's mark of Assadollāh Isfahāni and also carries the name of Šāh Abbās. These are integrated in four gold-overlaid inscriptions on the obverse side of the blade. The upper cartouche reads: *Al-Soltān Šāh Abbās* (the ruler Šāh Abbās), the upper middle cartouche is a *bodduh* (a magic square), the lower middle cartouche reads: *Amal-e Assadollāh* (the work of Assadollāh), and the lower cartouche reads: *Isfahāni*. The inscriptions seem to be later additions to the blade. The crossguard is made of patterned crucible steel and pierced in floral and geometric designs on both sides. The scabbard chape is made of steel. The handle scales are made of bone. The wooden scabbard is a new replacement covered with new leather. The general dimensions of the saber follow many historical examples.

Keywords: Shamshir, *Šamšir*, Sword, Saber, Crucible Steel, Steel Pattern, Handguard, Maker's Mark, Assadollāh Isfahāni.

Article Type: Research Article

Introduction

The following article analyzes the properties of a shamshir that is kept in the Malek Library Museum in Tehran. The highly-curved blade bears the maker's mark of *Amal-e Assadollāh Isfahāni* عمل اسدالله اصفهانی(The work of Assadollāh Isfahāni), a magic square of *bodduh*, and also a dedication line to Shah Abbas Safavid that reads *Al-Soltān Šāh Abbās* السلطان‌شاه‌عباس (The ruler Šāh Abbās) (Figure. 1). The sword also has a wooden scabbard covered with leather.

The Pattern of the Blade

The blade is made of patterned crucible steel. The crucible steel pattern on this example is *pulād-e jŏhardār-e xati* پولاد جوهردار خطی which means "lined watered steel; a type of crucible steel with lined pattern (see Romanowsky, 1967:78). The blade is slightly curved. It has one main central fuller. There are four narrow fullers placed between the central fuller and the back of the blade. To make watered steel blades, smiths and ironworkers used a type of steel that was made in crucibles. Therefore, this type of steel is called patterned crucible steel. Crucible steel or watered steel is called *fulâd-e jŏhardâr* فولاد جوهردار or *pulâd-e gŏhardâr* پولاد گوهردار in Persian. A sword or blade that is made of crucible steel is called *tiq-e jŏhardâr* تیغ جوهردار (blade/sword of watered steel) and *tiq-e jŏharbâr* تیغ جوهربار (blade/sword of watered steel) (see Mir Ābedini & Afðāri , 1985:418). Patterned crucible steel in this blade is a slowly cooled type of steel with a carbon content of 1-2.1%. Thus, patterned crucible steel can be described as ultra-high carbon steel that was allowed to cool slowly after being

© The Author(s):

DOI: 10.22111/IJAS.2023.46282.1279
DOR: 20.1001.1.2251743.2023.13.1.10.1
Publisher: University of Sistan and Baluchestan



Figure. 1: *Shamshir from the Malek Museum.*

completely molten. The inner structure of the crucible steel is made when the molten charge starts to solidify slowly and the elements with the highest melting point begin to solidify and grow into a dendritic network. Impurity elements, such as Mn (Manganese), S (Sulfur), Si (Silicon/Silicium), and P (Phosphorus), begin to shape a network by separating between the austenite dendrites. The dendrites are deformed into planar arrays parallel to the blade surface during the forging procedure. The existence of austenite dendrites, together with the impurity elements, creates beautiful patterns in watered steel blades such as in this example. Note that this part refers to the cooled cementite dendrites (Figure. 2).

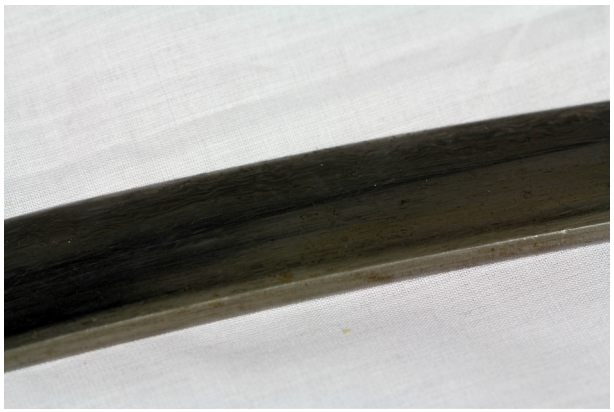


Figure. 2: *Close-up of the blade of the shamshir in Malek Museum.*

Inscriptions on the Blade

There are four gold-overlaid Persian inscriptions on the obverse side of the blade. These include:
The upper cartouche reads: "Al-Soltān Šāh Abbās السلطان‌شاه‌عباس",
The upper middle cartouche is a bodduh بدوح.
The lower middle cartouche reads: "Amal-e Assadollāh عمل اسدالله",
The lower cartouche reads: "Isfahāni اصفهانی".

The Inscription "Al-Soltān Šāh Abbās السلطان‌شاه‌عباس"

The upper inscription reads "*Al-Soltān Šāh Abbās* السلطان‌شاه‌عباس" which means "The ruler Šāh Abbās". Shah Abbas was a Safavid king who ruled Iran from 1588-1629 CE. However, this cartouche is highly unusual for a Safavid-blade cartouche to have such an inscription,(see Figure. 3).



Figure. 3: *The cartouche Al-Soltān Šāh Abbās* السلطان‌شاه‌عباس *on the blade of the shamshir of Malek Museum.*

Usually, on Safavid sword blades, the name of any Safavid king is combined with the phrase: *bande-ye šāh-e velāyat* بنده شاه ولایت (The subject/ slave of the kingdom/ dominion/trusteeship of Ali." This phrase is associated with different kings of the Safavid period, such as:

A)*bande-ye šāh-e velāyat Abbās* بنده شاه ولایت عباس (The subject/ slave of the kingdom/ dominion/ trusteeship of Ali, Abbās) (for this inscription see Moshtagh Khorasani, 2006:430, cat.70; 432, cat. 73, 434, cat. 74; 435, cat. 75; 436, cat. 76; 438, cat. 78; 441, cat. 79; 451, cat.85; 453, cat.86; 454, cat.

87; 456, cat. 89; 475, cat.107; 481, cat.112; 526, cat. 151; 541, cat.162) (see Figure 4 taken from a Safavid-period shamshir from the collection of Hussain Ebrahim Alqarashi, Kuwait).

C)*bande-ye šāh-e velāyat Esmāil* بنده شاه ولایت اسماعیل (The subject/ slave of the kingdom/ dominion/trusteeship of Ali, Esmāil (Ismāil)" (for this inscription, see Moshtagh Khorasani. 2006:430, cat.70; 431, cat.72).

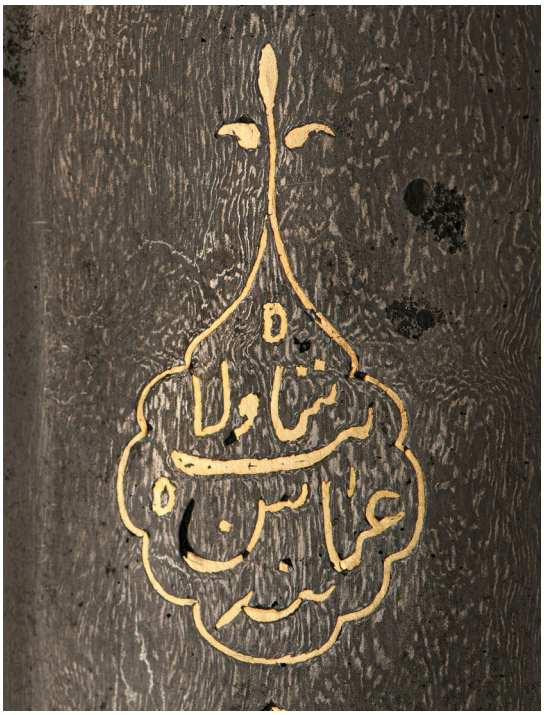


Figure. 4: *A gold-inlaid bande-ye šāh-e velāyat Abbās*

بنده شاه ولایت عباس

B)*bande-ye šāh-e velāyat Hossein* بنده شاه ولایت حسین (The subject/ slave of the kingdom/ dominion/ trusteeship of Ali, Hossein)" (for this inscription see Moshtagh Khorasani, 2006:454, cat. 87), (Figure. 5). A sword inscribed with *bande-ye šāh-e velāyat soltān Hossein* بنده شاه ولایت سلطان حسین and attributed to Šāh Soltān Hossein is kept in the Military Museum of Tehran (for more information, see Moshtagh Khorasani, 2006:450, cat. 84).

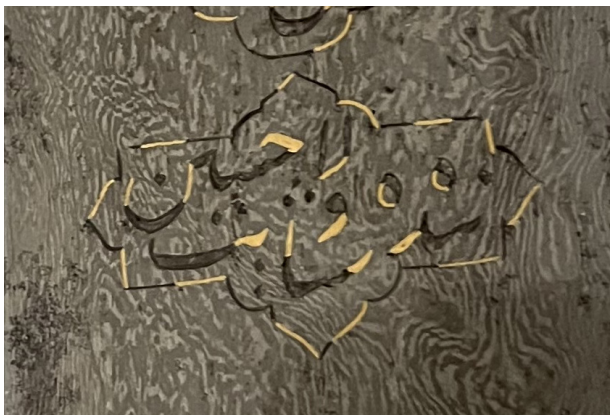


Figure. 5: *The gold-inlaid cartouche bande-ye šāh-e velāyat Hossein*

بنده شاه ولایت حسین

D)*bande-ye šāh-e velāyat Safi* بنده شاه ولایت صفی: (The subject/ slave of the kingdom/ dominion/ trusteeship of Ali, Safi). This translates as follows: "Safi is the representative of Ali's rule and acts on his behalf" (for this mark, see Moshtagh Khorasani, 2006:444, cat. 80; 446, cat. 81; 448, cat. 82). For a Safavid-period blade with this mark (see Moshtagh Khorasani, 2022:184-185, cat. 34), (see Figure. 6).

E)*bande-ye šāh-e velāyat Soleymān* بنده شاه ولایت سلیمان (The subject/ slave of the kingdom/ dominion/ trusteeship of Ali, Soleymān) (for a Safavid-period blade with this inscription, see Moshtagh Khorasani, 2021:123-131, cat. 3),(see Figure. 7).

F)*bande-ye šāh-e velāyat Tahmāsp* بنده شاه ولایت طهماسب (The subject/ slave of the kingdom/ dominion/trusteeship of Ali, Tahmāsp) (see Moshtagh Khorasani, 2010). For this mark on a Safavid-period blade from a private collection, (see Figure. 8).



Figure. 6: *The gold-inlaid cartouche bande-ye šāh-e velāyat Safi*
بنده شاه ولایت صفی



Figure. 7: *The gold-inlaid cartouche bande-ye šāh-e velāyat Soleymān*
بنده شاه ولایت سلیمان



Figure. 8: *The gold-inlaid cartouche bande-ye šāh-e velāyat Tahmāsp*
بنده شاه ولایت طهماسب

According to the *Lexicon of Dehkhoda*, *bande* بنده means "subject" or "slave." People who serve or inhabit the realm ruled by a king are his subjects. *velāyat* ولایت means "kingdom" or "ruled land"; therefore, a king has a *velāyat* ولایت to rule. Dehkhoda goes on to say that the person to whom *velāyat-e Ali* ولایت علی relates considers himself the representative of Imām Ali امام علی and, consequently, rules and governs on his behalf. This is very much a Shiite phrase, for the Shiites consider Ali علی the true heir to the Prophet Mohammad. Further, the Lexicon of Dehkhoda also tells us that there were different titles/names used to refer to Ali. These include *amir al-momenin* امیرالمومنین, Assadollāh اسدالله, Heidar حیدر, *molāye motagiyān* ملای متقیان, *šāh-e mardān* شاه مردان, and *šāh-e velāyat* شاه ولایت. Thus, *šāh-e velāyat* شاه ولایت (the king of the land) refers to Ali as can be seen in old manuscripts, such as *Futuvvanāme-ye Soltāni* (see Kāšefi Sabzevāri, 1971:6, 10).

Navai and Ghafari Fard (2002:102-3) report that in the Qājār-period manuscript *Rostam al Tavārix*, the story is told of how Šāh Ismāil killed a bear when he was thirteen years old and also killed a lion while hunting in Iraq, and said that Šāh Esmāil inherited the bravery of *hazrat-e šāh-e velāyat* حضرت شاه ولایت (referring to Ali). During the Afsharid period, swordmakers stopped using the phrase *bande-ye šāh-e velāyat* بنده شاه ولایت. They used the title *Al-Soltān* السلطان in combination with the name of king Nāder. Thus, the swords of Nader Shah Afshar are inscribed with *Rekābi Al-Soltān Nāder Šāh*

رکابی‌السلطان‌نادرشاه (riding companion of the ruler *Nāder Šāh* (see Moshtagh Khorasani, 2006:484, cat. 114): for an Afsharid-period blade signed with *Al-Soltān Nāder* السلطان‌نادر (see Moshtagh Khorasani, 2013:308, cat. 3.

Therefore, the use of the inscription *Al-Soltān Šāh Abbās* السلطان‌شاه‌عباس on a Safavid blade is highly unusual. This phrase appears in the center of some shields (*separ*) from the Qajar period (see Moshtagh Khorasani, 2021:148-149, cat. 10), (Figure. 9).



Figure. 9: *The inscription on a shield Al-Soltān Šāh Abbās* السلطان‌شاه‌عباس

The Inscription Bodduh بدوح

The blade also has a magic square called *bodduh* بدوح. There are different interpretations of the meaning of this square. It refers to the name of a genie or an angel who can perform miraculous things. This magic square is written by letters or numbers in occult sciences. As an angel, this sign has certain characteristics. For example, it is believed that if one writes this square on an envelope, the letter will certainly arrive. Therefore, it serves as a guardian angel to protect the letters. It can also be described as a secret *telesm* طلسم (talisman). For example, they believed that if a traveler used this sign, he would be able to travel day and night without becoming exhausted, or a pregnant woman would be able to give birth without fear of a miscarriage. The term *bodduh* بدوح is also used to conjure feelings of love (see Moshtagh Khorasani, 2006:147-148; Moshtagh Khorasani, 2010:129-130) (Figure. 10).



Figure. 10: *The gold-overlaid bodduh on the shamshir of Malek Museum.*

Additionally, the Shiite Iranians used *bodduh* بدوح as a talisman for the successful outcome of an event, or as protection from the evil eye (Zeller and Rohrer, 1955:102). The *bodduh* consists of the even numbers 2, 4, 6, 8 or 8, 6, 4, 2. The numbers correspond to the letters ب, د, و, and ح of the *horuf-e jomal* حروف جمل (see Moshtagh Khorasani, 2010:129-130). The Lexicon of Ananderaj reports that bodduh is the name of a dead angel and when his name was inlaid in gold on swords and daggers, it served as protection for warriors (*Lexicon of Dehkhoda*). Citing Reinaud, Egerton (2001:53) stated in an earlier publication from 1896 that these *bodduh* بدوح signs are the even numbers, 2, 4, 6, and 8, since the uneven numbers are unlucky. However, as will be shown below, odd or odd numbers do sometimes appear on the blades. However, this is always in conjunction with even numbers. Sometimes, instead of numbers, the corresponding letters are used. These appear in the form of a small square consisting of four parts, each with an Arabic letter (*be* ب , *dal* د, *vav* و , and *he* ح), comprising *bodduh* بدوح (see Jacob, 1985:160) (see table. 1).

Table. 1: *The sign of bodduh*

د	ب
ح	و

These *bodduh* بدوح signs sometimes stand as even numbers in these small squares. This corresponds to the way the letters are positioned in the Arabic alphabet of 28 letters Arabic alphabets, as follows:

Abjad (A "1"- **b "2"** – ja "3" – **d "4"**)
Hawwaz (ha "5" – **wa "6"** – z "7")
Hutti (hu "8") (**hu "8"** – t "9" – i "10")

The Lower Cartouches **"*Amal-e Assadollāh* عمل اسدالله" and "*Isfahāni* اصفهانی"**

The lower cartouches are separated, but usually the maker's mark either appears as *Amal-e Assadollāh Isfahāni* عمل اسدالله اصفهانی (The work of Assadollāh Isfahāni) within one cartouche or as *amal-e Assadollāh* عمل اسدالله (the work of Assadollāh). The separation of these two cartouches on the blade of the shamshir from the Malek Library Museum is highly unusual (see Figure. 3). Other variants of this signature also exist as *Amal-e Assad Isfahāni* عمل اسد اصفهانی (the work of Assad Isfahāni), and *Assadollāh Isfahāni* اسدالله اصفهانی (Assadollāh Isfahāni) (for more information see Moshtagh Khorasani, 2006:156-163). For a gold-inlaid maker's mark on a Safavid-period blade from the collection of Hussain Ebrahim Alqarashi, Kuwait, (see Figure. 11).

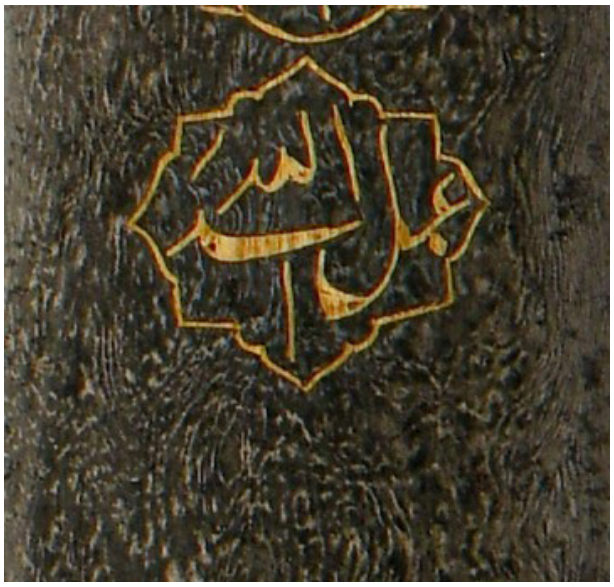


Figure. 11: *The gold-inlaid cartouche amal-e Assadollāh* عمل اسدالله

For the maker's mark *Amal-e Assadollāh Isfahāni* عمل اسدالله اصفهانی (The work of Assadollāh Isfahāni) from the Afsharid-period with an additional cartouche *Al-Soltān Nāder* السلطان نادر (see Moshtagh Khorasani, 2013:308, cat. 3).

Dated swords with this maker's mark further complicate the matter. There are seven dated examples which, rather than solving the mystery of the life of the smith Assadollāh, only complicate the matter since the period over which these swords are said to have been made is too long for a normal human life, let alone the active life of a smith. Among the swords discussed in the book *Arms and Armor from Iran: The Bronze Age to the End of the Qajar Period*, the earliest date is 992 hijra/1583-1584 CE, and the latest is 1135 hijra/1722-1723 CE, a period of 139 years (see Moshtagh Khorasani, 2006:156-163). Even the positioning of the individual words in this phrase varies from sword to sword. Taking all these factors into consideration, it seems unlikely or even fundamentally implausible that a single smith named Assadollāh produced all these blades. It seems feasible and probable that "Assadollāh" اسدالله was a title of honor signifying the highest level of mastery in swordmaking. For a dated cartouche with the mark Assadollāh from the collection of Hussain Ebrahim Alqarashi, Kuwait, see Figure 15. This cartouche is a dated maker's mark and reads *amal-e Assadollāh* 181 عمل اسدالله اصفهانی ۱۸۱ (the work of e *Assadollāh*). 181 stands for 1181 hijra which is 1767-1768 CE. This is within the reign of Karim Khan Zand who {xe "Namen:Shah Soltan Hossein"} {xe "Namen:Hossein"} {xe "Namen:Safavid"} {xe "Namen:Karim Khan Zand"} {xe "Namen:Zand"} ruled from 1163–1193 hijra/1750–1779 CE, (see Figure. 12).



Figure. 12: *The gold-inlaid cartouche amal-e Assadollāh 181* ۱۸۱ عمل اسدالله اصفهانی

Some researchers believe that some of these inscriptions were counterfeited to increase the value of a sword. However, this may be the case with later swords with poorly executed inlay or even overlay, but all the examples presented in the book Arms and Armor from Iran (see Moshtagh Khorasani 2006) have inscriptions with finely executed calligraphy and workmanship. It is possible that the name Assadollāh served as a quality mark or as the highest title given to an Iranian smith who had reached a very high level of mastery in making swords. A person attempting to counterfeit a cartouche would

try to imitate the original cartouche of Shāh Abbās Safavid in all aspects including the corresponding date to deceive his buyers (Mayer, 1962:128). Even within the same period, the name Assadollāh was used in different inscriptions of maker's marks. There are three dated swords inscribed with the phrase of *Amal-e Assdollah Isfahāni* from the same period, namely *Amal-e Assadollāh Isfahāni 116* (عمل اسدالله اصفهانی ١١٦), *Amal-e Assadollāh Isfahāni 117* (عمل اسدالله اصفهانی ١١٧), and *Amal-e Assadollāh Isfahāni* (عمل اسدالله اصفهانی) and *Bande-ye Šah-e velāyat Abbās saneye 135* (بنده شاه ولایت عباس سنه ١٣٥) (see Moshtagh Khorasani, 2006:156-163). All these blades are from the period of Shāh Soltan Hossein Safavid, who ruled from 1105-1135 hijra/1694-1722 CE. However, all three swords have different handwriting styles. This indicates that at least during the period of Shāh Soltān Hossein Safavid's rule, various smiths signed blades using the signature *Amal-e Assadollāh Isfahāni* (عمل اسدالله اصفهانی). However, another important factor is that making a sword involved different individuals with diverse skills who were involved in making the various parts of a sword as was the case in making Nihonto swords in Japan.

One of these groups in Iran was the *fulādgarān* فولادگران (steelworkers). The book *Jogrāfiyā-ye Esfahā states that fulādgarān* فولادگران made the sword fittings (Tahvildār Isfahāni , 1964:106). *Fulādkārān* فولادگران in the Safavid era also used steel for fretwork, for decoration purposes on helmets and shields (see Ehsani, 2003:195). Additionally, calligraphers helped them in the design of inscriptions on *gol-e kamar* گل‌کمر (belt buckles).

Additionally, Safavid steelworkers, who specialized in making arms and armor, cooperated with *zargarān* زرگران (goldsmiths) when decorating them (see Ehsani, 2003:195). This could have led to different handwriting styles. However, a smith normally worked with one calligrapher and not with several. He would have tried to keep his mark as uniform as possible. The Safavid-period manuscript *Tazakore-ye Nasrābādi* writes about a master swordmaker named *Ostād Kalbeali*, who mentions his father Assad اسد:

استاد کلبعلی شمشیرگر از والد خود اسد نقل می‌کرد

Master Kalbeali the swordmaker was talking about his father master Assad (see Nasrābādi Isfahāni , 1938:9).

Mirzā Mohammad Tāher Nasrābādi Isfahāni was born in 1027 hijra/1619-1620 CE and started to write the book *Tazakore-ye Nasrābādi* in 1083 hijra/1672-1673 CE and lived until the end of the rule of Šāh Soleymān Safavid [Šāh Soleymān Safavid ruled from 1052-1077 hijra/1666-1694 CE].

The manuscript Ta'id Besārat (Aid to Sight), which deals with sword classification and analysis, written by Mirzā Lotfallāh also mentions the name Assad اسد as a swordmaker. Mirzā Lotfallāh wrote *Ta'id Besarat* under the pseudonym Nithār with the honorary epithet of Nosratallāh Xān. Mirzā Lotfallāh was born in Delhi as he was called Nisar Dehlavi (Elgood, 2017:896). Mirzā Lotfallāh was a witness when the troops of Nadir Shah attacked and massacred Delhi (Elgood, 2017:896). The date of completion is contained in the book: if the Yāi hamzatum is counted, as it usually is in such treatises, the most appropriate year is 1118 hijra/1706-1707 CE, and without Yā it will be 1108 hijra/1696-1697 CE (Mirzā, 1706-1707 or 1696-1697). Mirzā Lotfallāh died in 1747 CE (see Elgood, 2017:896); for a detailed discussion of this book (see Moshtagh Khorasani, 2022). If one considers both dates of completion, namely 1706-1707 CE and 1696-1697 CE, it is clear that the manuscript *Tazakore-ye Nasrābādi* was written during the rule of Šāh Soltān Hossein Safavid (1694-1722 CE). In the manuscript *Ta'id Besārat*, Mirzā Lotfallāh explains that the Iranian sword is called *ikeri* ایکری by the Turks and is made in Isfahān (Isfahan), especially by Assad اسد, who, he says, is like the Sāleh صالح from India, and his son Kalbeali کلب‌علی. The Iranian swords [made by Assad اسد and Kalbeali کلب‌علی] cut *jošan* جوشن armor very well, and Mirzā Lotfallāh explains that if he were to report all of the good qualities of the Iranian swords according to what he had seen and heard it would seem like an exaggeration. This again proves that there was not only one smith called Assadollāh who lived during the reign of Šāh Abbās Safavid who ruled from 1587–1629 CE (for a detailed discussion of Assadollāh (see Moshtagh Khorasani, 2006:156-163; Moshtagh Khorasani, 2010:83-85). For the maker's mark signed with the name Assadollāh and its variants on different swords (see Moshtagh Khorasani, 2006:430, cat.70, 432, cat. 73; 434, cat. 74; 435, cat. 75; 436, cat. 76; 441, cat. 79; 451, cat. 85; 448-449, cat.83; 451, cat.85; 453, cat. 86; 456, cat. 89; 461, cat.93; 471, cat.103; 481, cat.112; 503, cat.131; 518, cat.143; 526, cat.151; 529, cat.152; 536, cat. 157; 547,

cat.166); (see Moshtagh Khorasani, 2010:487, cat. 8; 488, cat, 9; 489, cat. 10; 490, cat. 11; 491, cat. 12; 492-493, cat. 13; 494-495, cat. 14; 497, cat. 16; 502, cat. 21); (see Moshtagh Khorasani, 2013, 307, cat. 2; 308, cat. 3; 309, cat. 4); (see Moshtagh Khorasani, 2021:123-132, cat. 3; 136-137, cat. 6; 142-143, cat. 8).

The Method of Applying the Inscriptions to the Blade

In contrast to the high-quality method of gold-inlaying used to apply inscriptions to Iranian blades, the inscriptions here are applied using the cheaper method of gold-overlaying. The cross-hatched areas between the frames and the inscriptions are clear signs of the application of the gold-overlaying method. Three general methods were used to apply gold to steel surfaces: a) *zarnešān* زرنشان or *talākub* طلاکوب (gold-inlaying), b) *koftegari* کوفتەگری (gold-overlaying), and c) *zarkufteh* زرکوفته (gilding) (see Moshtagh Khorasani, 2006:183-185; Floor, 2003:225). The method of *zarnešān* زرنشان involved engraving an inscription, or a design, on the surface of the steel blade by using a fine engraving tool, slightly undercutting the surface. Then the workers hammered fine gold wire into the groove. The result was a very durable decoration. If the corners of the gold do not project above the surface of the steel blade, this method is called *tahnešān* تەنشان (see Moshtagh Khorasani, 2006:183-185; Pant, 1980:195). The *koftegari* کوفتەگری (gold-overlaying) involves cutting the surface with transverse lines resembling the cross-hatching of wood engraving. Then they beat the gold on the surface, smoothen and heat it, and then polish the surface with a white, porous stone (Pant, 1980:194). This method is less expensive as it requires less gold, but it is less durable.

Floor (2003:225) quotes Benjamin, who also distinguished another method of embossing valuable iron and steel with precious metals. In this method, a thin layer of gold leaf was applied[1]. The result was not as durable as {xe "Subject:zarneshan"} *zarneshan*. Zeller and Rohrer (1955:174) also identify this technique, and state that this style is much finer than the flat technique of gold overlay({xe "Subject:koftegari "}*koftegari*). They describe the result of this method by explaining that when the dark, roughened surface of the steel is covered with gold, the darker steel parts can be seen through the golden background. This technique is used for long inscriptions. The gilding process involves roughening the surface, which needs to be gilded via cross-hatching (the same method as in {xe "Subject:koftegari"} *koftegari*) or applying acid to the surface so that it acquires a broken or roughened texture. Very thin sheets of gold leaf are, then, applied to the surface and burnished. The next step involves repeated heating and burnishing until the malleable gold sticks to the roughened surface (see Pant, 1980:197-8). Pant adds that, next, the piece is polished with sweet lime. There is also a method identified as{xe "Subject:zarkoufte" } *zarkoufte)* by de Rochechouart. Floor (2003:246) quotes de Rouchechouart, who distinguished a third method called {x e "Subject:zarkoufte"} *zarkoufte,* asserting that this word derived from the verb *koubidan* (to pound, to crush). According to de Rouchechouart, this method was the most common but limited to metals since stones and ivory broke under the hammer strokes. He stated that instead of making grooves, the workers limited themselves to indicating the design (with small, intersected holes) with the engraving tool. The next step involved covering the small holes on the surface that they wanted to fill with gold with the help of a special tool. The workers used extremely thin filigree by putting it under a jade press so that the gold would be entirely pushed into the holes. Next, the object was placed in the fire so that the heat created a sort of welding. Then, the object was removed and polished again with jade. The operation was repeated two or three times before achieving perfect solidity and satisfactory results. At the end of the process, workers polished it with emery and olive oil. De Rouchechouart stated that the quantity of gold used in that method was very small. With 5 grams of gold, the workers could make 60 meters of filigree.

***Crossguard (Bolčāq* بلچاق)**: The crossguard is made of patterned crucible steel (pulād-e gŏhardār گوهردار پولاد). The middle of the crossguard is pierced in floral and geometric designs on both sides.

***Handle (Qabze* قبضه *or Daste* دسته)**: The handle scales are made of bone. The dots on the scales

[1]The inscriptions are in gold work in negative format (the inscription is made by inlaying gold in the background, leaving the letters black) (author's observation).

are an indication of the use of bone. Normally, quality handle scales are made of walrus ivory. The adhesive material is a new restoration to the handle scales (Figure. 13).

***Scabbard Fittings*:** The lens-shaped scabbard fittings and the scabbard chape are made of steel.

Scabbard (Qalāf غلاف or Niyām نیام): The wooden scabbard is a new replacement covered with new leather (see Figure. 14).

Dimensions: The general dimensions of the saber follow many historical examples. As these sabers were hand-made, they were made based on individual desires and specifications. Some of the dimensions are:

Total length of the back of the blade in a straight line: 89. 4 cm
Total length of the front of the sword (edge side) in a straight line: 100.4 cm
Total length of the blade on the back: 91.4 cm
Total length of the blade on the edge side: 93.2 cm
Width at the base of the blade: 3.25 cm
Thickness of the blade on the forte: 0.65 cm

Conclusion

The shamshir sword from the Malek Library Museum has the common shape of a classical highly-curved saber with a wedge-shaped blade. The blade has a flat fuller. Judging by the type and quality of the used pattern crucible steel used for making the blade, the sword must be from the late Qajar period. The separation of the maker's mark *Amal-e Assadollāh* (The work of Assadollāh) and *Isfahāni* (Isfahāni) is highly unusual and indicates a later addition to the blade. The same is true with the unusual inscription *Al-Soltān Šāh Abbās* السلطان‌شاه‌عباس (The ruler Šāh Abbās). As all inscriptions on quality Persian blades are gold-inlaid, the use of the method of gold-overlying to



Figure. 13: *The handle of the shamshir of Malek Museum.*



Figure. 14: *The scabbard of the shamshir of Malek Museum.*

write the inscription is another indication of a later addition. The wooden scabbard and its leather also seem to be a later addition.

Acknowledgment

I would like to thank all scholars who helped to maintain the quality of this article by acting as reviewers.

References

Egerton, Lord of Tatton. 2001. *A Description of Indian and Oriental Armour*, New Delhi: Asian Educational Services.

Ehsani, Mohammad Taqi. 2003. *Haft Hezār Sāl Honar Felezkāri Dar Irān* [Seven Thousand Years of the Art of Metalworking in Iran], [In Persian], Tehrān: Šerkate Entešārāte Elmi Va Farhangi.

Elgood, Robert. 2017. *Rajput Arms & Armour: The Rathores & Their Armoury at Jodhpur Fort*. 2 Volumes, New Delhi: Mehrangarh Museum Trust in association with Niyogi Books.

Floor, Willem. 2003. *Traditional Crafts in Qajar Iran* (1800 – 1925), Costa Mesa: Mazda Publishers.

Jacob, Alain. 1985. *Les Armes Blanches du Monde Islamique: Armes de Poing: Épées, Sabres, Poignards,* Couteaux. Paris: Jacques Grancher.

Kāšefi Sabzevāri, Molānā Hossein Vā'ez. 1971. *Fotovvatnāme-ye Soltāni,* Annotated by Mohammad Ja'far Mahjub, [In Persian], Tehrān: Entešārāt-e Bonyād-e Farhang-e Iran.

Mayer, L.A. 1962. Islamic Armourers and Their Work, *Prince of Wales Museum Bulletin* (Mumbai) 6: 128, 20 pls.

Mirzā, Lotfallāh. 1706-1707 or 1696-1697. *Ta'id Besārat [Aid to Sight],* [In Persian], London,Handwritten Manuscript on Swords and Swordmaking in the British Library.

Moshtagh Khorasani, Manouchehr. 2006. *Arms and Armor from Iran: The Bronze Age to the End of the Qajar Period,* Tübingen: Legat Verlag.

Moshtagh Khorasani, Manouchehr. 2010. *Lexicon of Arms and Armor from Iran: A Study of Symbols and Terminology*, Tübingen: Legat Verlag.

Moshtagh Khorasani, Manouchehr. 2013. *Persian Archery and Swordsmanship: Historical Martial Arts of Iran,* Frankfurt am Main: Niloufar Books.

Moshtagh Khorasani, Manouchehr. 2021. *Jewels and Patterned Crucible Steel: Book of Jewels, Stones, and Metals,* Frankfurt am Main: Niloufar Books.

Moshtagh Khorasani, Manouchehr. 2022. *Aid to Sight: A 17th-Century Persian Treatise on Sword Classification from India,* Frankfurt am Main: Niloufar Books.

Nasrābādi Isfahāni , Mirzā Mohammad Tāher .1938. *Tazakore-ye Nasrābādi*, [In Persian], Annotated by Vahid Dastgerdi. Tehrān: Čāpxāne-ye Armaqān.

Mir Ābedini, Seyyed Abutāleb & Mehran Afðāri (Annotators).1985. Resāle-ye Čāhrom [Fourth Treatise] In: *Ā'in Qalandari: Moðtamel bar Èāhr Resāle dar Bāb-e Qalandari, Xāksāri, Ferqe-ye Ajam va Soxanvari,* [In Persian], [The Rules and Doctrines of Qalandari: Including Four Treatises with the Topics of Qalandari, Xāksāri, Ferqe-ye Ajjam, and Soxanvari], 333–457 Tehrān: Enteðārāt-e Farāravān.

Romanowsky, D. 1967. Tārikhče-ye Aslahe-ye Sard dar Irān [The Short History of Cold Weapon in Iran], [In Persian], In: *Majjale-ye Tārikh va Tahqiqāt-e Irānshenāsi (Irānšenāsi): Nashriye-ye (Našrieye-ye) Setād-e Bozorg-e Arteshdārān (Artešdārān) – Edāre-ye Sevvom-e Amaliyāt,* Consecutive Number 12, 89-112.

Tahvildār Isfahāni , Hossein ben Mohammad Ebrāhim. 1964. *Joqrāfiyā-ye Esfahān: Gografiyā-ye Tabi'i va Ensāni va Āmār-e Asnāf-e Šahr* [The Geography of Isfahan: the Natural and Human Geography and the Statistics on Crafts from the City], [In Persian], Annotated by Manučehr Sotude. Tehran: Čāpxāne-ye Dānešgāh-e Tehrān.

Zeller, Rudolf & Ernst F. Rohrer .1955. *Orientalische Sammlung Henri Moser-Charlottenfels: Beschreibender Katalog der Waffensammlung*, Bern: Kommissionsverlag von K.J. Wyß Erben AG.