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# From the workshop of Touareg silversmith Hamid Kumama in Agadez (Niger)



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## Imprint

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### *Cover photo:*

Hamid Kumama 1973 connecting the crucible filled with silver chunks (below) to the mould (above) with wet clay (fig. 41; see also figs. 37 and 40).

### *Back cover (fig. 63):*

*Various silver pendants from Agadez and the surrounding area.*

*Above: worn pieces, below: Items made by Hamid Kumama, 1973.*

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# A chance encounter

## First Sahara Crossing 1973

On my first Sahara crossing – between 26 September and 26 December 1973 – we had bad luck on the "Hoggar track" between Tamanrasset (Algeria) and Agadez (Niger): one of our two Landrovers conked out with a blocked engine in the middle of the desert! We were a group of five Swiss and had to improvise. Agadez became a place of gathering and "reflection" for several days. During the time spent by my travelling companions in arranging sales formalities for our wrecked car with the police and the city administration, I devoted myself to the silversmiths for whom the city was already famous at that time. Traditional Touareg jewellery was already a household name worldwide.



*Fig. 1: Hamid presented the jewellery at the main market in Agadez on a wicker mat made of differently coloured palm leaf strips.*



On the very first day in Agadez, where we rented a mud dwelling house in the local "quarter" at short notice and lived there for a fortnight, we "visited silversmiths" (diary entry 07.12.1973). On the following day an "extensive walk through the market" led to an encounter with a young silversmith who had a beautiful collection of old, worn "Agadez crosses", and also other newly made items of silver jewellery for prospective buyers (fig. 1). His name was Hamid Kumama<sup>1</sup>, he was then about 20 years old and showed me his own products from his workshop. Since I had already intensively studied arts and crafts and quality criteria in metalworking, I was immediately aware that I had encountered an exceptionally meticulous young silversmith.



*Fig. 2: Hamid Kumama's workshop is located inside the enclosing wall of his courtyard next to the simple mud dwelling house. It is a simple hut built directly on the mud floor. The walls are made of large woven palm fibre mats. Since it practically never rains in Agadez, the walls and roof serve primarily to keep out the glaring Sahel light and to be able to optimally judge the fire and the glowing metal with the eyes at the workplace.*

We began talking, and after admiring his old and new collections I asked if he could make some Touareg silver jewellery for me and my travelling companions within the next few days. Hamid said he had time, and so we arranged that he would fetch me from the market the following day and take me to his workshop where we could discuss everything. I also told him that I had brought old silver from Switzerland to melt down (cf. Figs. 36 and 38) and that I would like to pay him for his work with silver coins. He readily agreed and said that good silver was currently scarce and expensive in Agadez.

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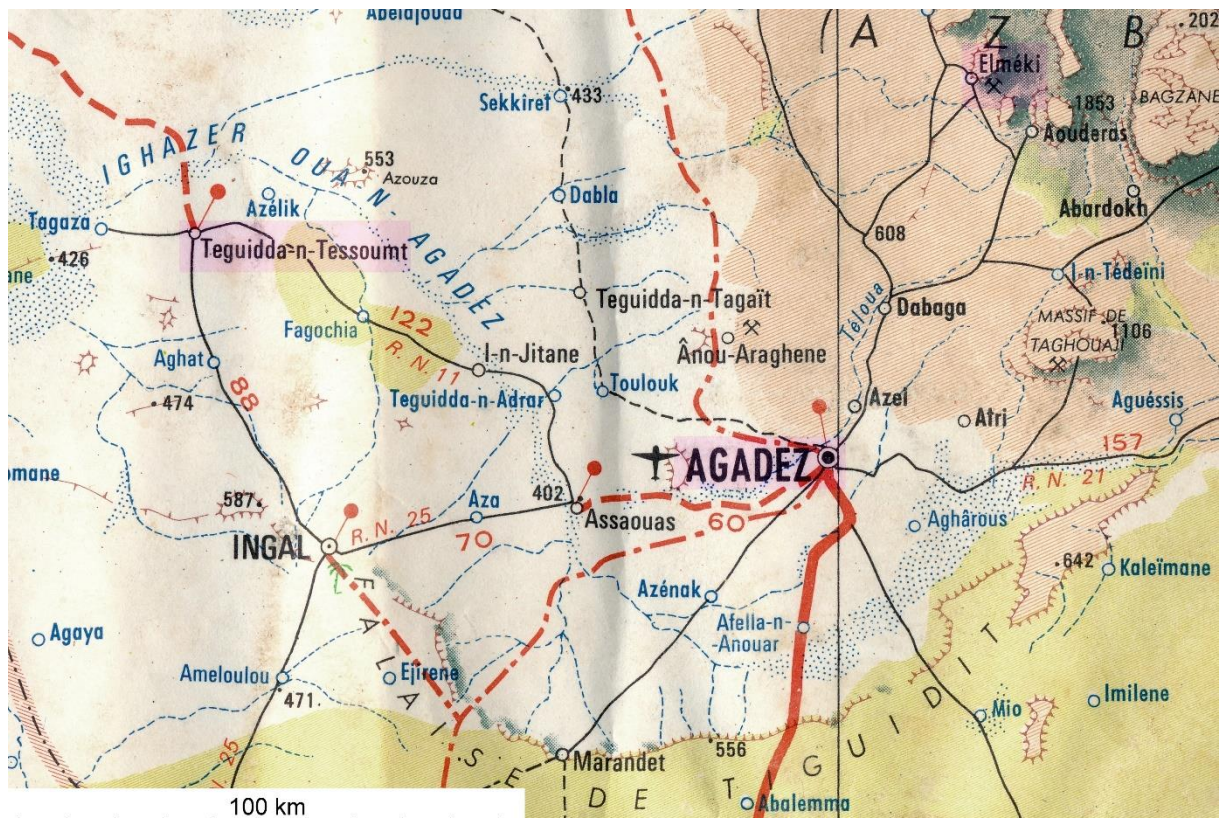
<sup>1</sup> Hamid is a nephew of Mohammed Umama, whose work as a silversmith is described in detail: Gardi 1969.



*Fig. 3:  
Portrait 1973: Hamid in the workshop.*

Thereafter followed a collegial and, for me, extremely instructive time with Hamid. I visited him daily at home in his workshop (Figs. 2–3) and was permitted to take photographs at will.

Diary entry of 15.12.1973: "I spend almost the whole day with Hamid Kumama, who makes an Iférouane cross (cf. fig. 20) on Toni's order. He melts 3 [silver] Swiss two-franc pieces and 1 five-franc piece (cf. figs. 36 and 38). Working time: 7 hours. Wage: 560 Fr CFA = 7.- CHF".



*Fig. 4: Map section of Agadez and surroundings. Right of centre the "desert town" of Agadez, 180 km northwest Tegguidda-n-Tessoumt, northeast the southern foothills of the Air Mountains (dark) and 120 km north the small Air town of Elméki (top right). (IGN, Paris 1977)*

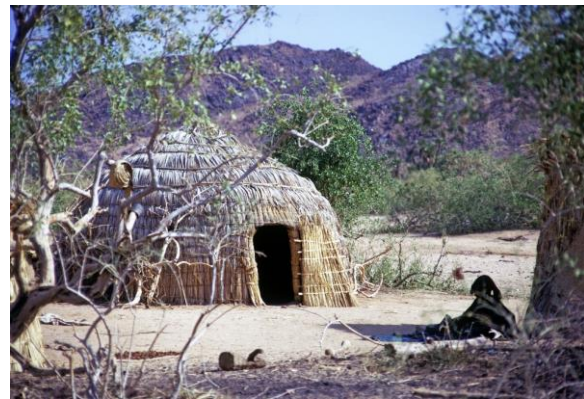


Meanwhile, my companions decided we should get to know the surroundings of Agadez a little better. Since we had arrived in Agadez via Tegguidda-n-Tessoumt (Niger), a salt works in the northwest, we did not yet know the Air Mountains in the northeast (fig. 4). We settled on a two-day excursion, with Hamid as our guide and interpreter. Diary entry of 16.12.1974: "Trip with Hamid as guide to Elméki, in the Air [mountains], 130 km north of Agadez." The workshop had a one-day break.

The six of us drove the 120 km to Elméki on a passable track (Figs. 5 and 6). In Elméki we set about renting camels in order to make a "camel ride" excursion into the surrounding area on the following day. After two hours of palaver with the local bigwigs, Hamid clinched the deal with a handshake, and the animals were brought and saddled the next morning: We were ready to go.



*Fig. 5:  
Hamid Kumama, a Silversmith  
in Agadez, organising an  
excursion and camel ride in  
Elméki at the southern end of  
the Air Mountains.*



*Fig. 6: Impressions from Elméki.*

Upon our return to Agadez, we were able to attend the National Holiday on 18.12.1973. As the many city dwellers and those who had travelled from the "bush" had dressed up in festive attire, there were many elaborately veiled Targi (Touareg men) and pretty women dressed in the typical red and white "Agadez blouse" to admire (fig. 7). The young women, who in those days of the matriarchal Touareg were unveiled, proudly displayed all their silver jewellery on ears, neck and arms – part of their womanly wealth after all (fig. 7). Here,

one could observe in reality and stand in awe, at what had been created for generations in traditional technology within the silver workshops of the area.



*Fig. 7: On Niger National Day in Agadez (18.12.1973).*

## **Second Sahara Crossing 1981**

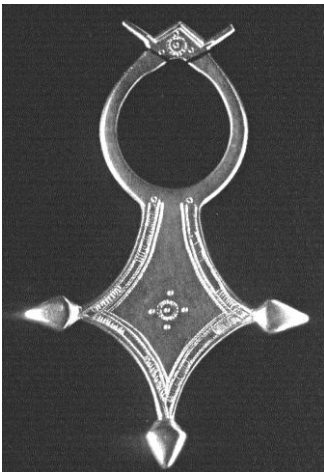
My second West African trip through the Sahara (2x, there and back to Switzerland) lasted just under six months, again in a Landrover, but with two people. We travelled from 16 July to 18 December 1981 via Italy, Libya, Algeria, Niger, Northern Cameroon, Nigeria, Niger, Algeria and France. In September and October, we again spent a few days in Agadez. Of course, and with assistance from a couple of local boys, we went to visit Hamid Kumana in his neighbourhood. On 9 October we had the privilege of attending another big festival in Agadez: the Tabaski festival, the Islamic festival of sacrifice.





*Fig. 8: Hamid Kumama 1981, in the workshop beating a little piece of sheet metal.*

Again we had packed some old silver in our luggage to melt down, and Hamid made several pieces of jewellery for us. Since we were only in Agadez for a week, there was a lot for our artisan friend to do. I was pleased to see that, even after seven years, Hamid was still working traditionally and very carefully. This included, for example, the preservation of the lost-wax casting process and the great care taken in the hallmarking (stamping) and chasing (engraving) of his jewellery.



*Fig. 9:  
An Agadez cross by Hamid Kumama from 1981. Cf. the piece from 1973 (fig. 15; both specimens without a "tourist" eyelet at the top.*

## Reunion 1990

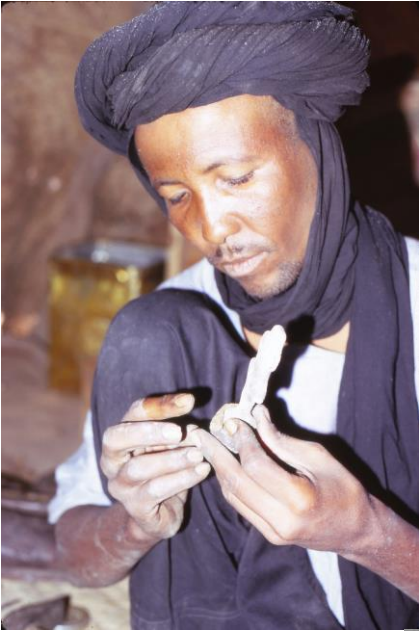
A guided trek in November/December 1990 took me to Agadez twice for short periods. In the interim period (13–30.11.1990) we trekked over the Bagzane Plateau for a few days (fig. 4, top right). Arriving at the northern end of the plateau, everyone in our small group of travellers embarked on a 300 km “camel ride” excursion. The impressive journey took us along the extremely diverse and scenically magnificent border zone between the Air Mountains and the Ténéré sand desert.

Several travelling companions commissioned traditional jewellery from Hamid, which he made to everyone's satisfaction during our Air trek. "Vous m'avez fait travailler très, très dur!"

His residence and workshop still looked similar to previous years, but personally Hamid had "reoriented" himself: He had separated from his first wife (fig. 62) but kept their only daughter in the household and soon married a new wife with whom he now had four children. "Tu sais, ma première femme était si maigre que les gens pensaient que je ne pouvais pas la nourrir suffisamment ; elle ne m'a pas non plus donné un fils."



*Fig. 10: Hamid Kumama with family in the courtyard of his mud house (back right) in Agadez in 1990. The huts made of woven palm fibre mats form the entrance to the house (right), and separately stands the silversmith's workshop (in the middle of the picture).*



*Fig. 11: Hamid Kumama 1973, 1981 and 1990.*



# The Sahel city of Agadez

During its existence, Agadez was an important trading city at the interface between the Sahara in the north and the Sahel strip in the south. The German explorer Heinrich Barth (1821–1865) was the first European to reach Agadez and reported on it in detail in volume 1 of his five-volume work<sup>2</sup>. He stayed in the city from 9 to 30 October 1850. Tobias Mayer summarises his stay<sup>3</sup>:

"On 28 August 1855, one of the most important African expeditions of the 19th century ended in Tripoli, Libya. For five years, the Hamburg explorer Heinrich Barth had travelled 18,000 kilometres criss-crossing the Sahara and the Sahel – through the present-day states of Libya, Algeria, Niger, Nigeria, Chad, Cameroon, Burkina Faso and Mali.



*Fig. 12: Ideal image of the city of "Egedesh" (Agadez). Colour lithograph after a sketch by Heinrich Barth dated 12 October 1850. In the background the Great Mosque (cf. Figs. 13 and 14). (after Barth 1857, p. 448 f.)*

Heinrich Barth travelled on behalf of the British government. England wanted to establish trade relations with the peoples of the Sahara and the Sudan [= today the Sahel region], to

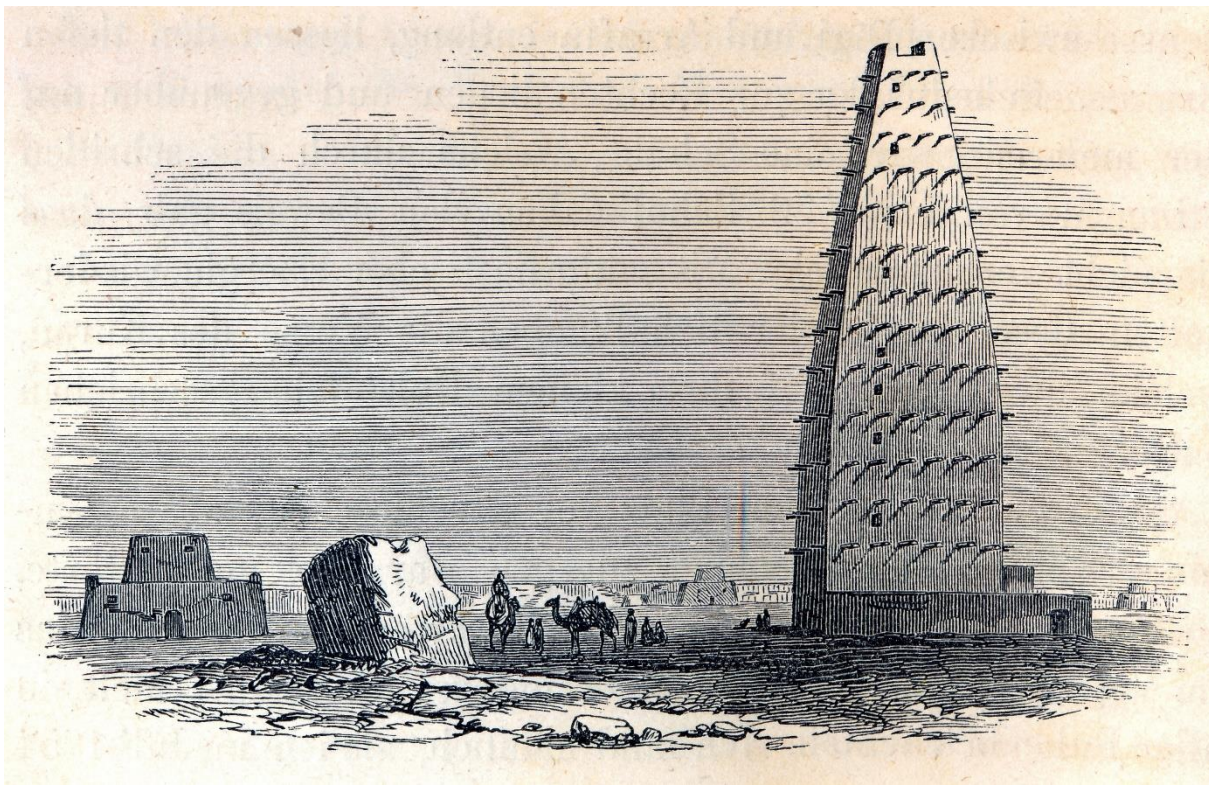
<sup>2</sup> Barth 1857–1858, vol. 1, 434–526.

<sup>3</sup> Mayer 2010.



stop the slave trade and to explore the region scientifically. In the spring of 1850, the caravan left the Mediterranean coast. ...

After the adventures in the Sahara, the caravan reached Niger in October 1850. In the trading city of Agadez, the strangers were warmly received. Ibrahim Oumarou, the acting Sultan of Agadez, reports: *'The memory of Barth is still very much alive here in Agadez. People still talk about him. When I was very young, I myself experienced older people who knew him personally and talked about him.'* ... It took Heinrich Barth and his local companions seven months to reach the Niger River ... Back in Germany, he set about publishing his account of the journey. He wrote a monumental standard work for generations of Africanists. Heinrich Barth died in 1865. In Europe, his fame faded very quickly. In Mali and Niger, however, he is highly respected and unforgotten to this day."



*Fig. 13: The Great Mosque of Agadez around 1850 (cf. fig. 14).  
(after Barth 1857, p. 492 f.)*

**Population figures for Agadez:**

1850: 8000 persons  
1926: 2436 persons  
1970: 6125 persons  
1977: 20'643 persons  
2001: 76'957 persons  
2012: 110,497 people (in the city centre)

In the 20th century, the city of Agadez flourished, even though it was repeatedly hit by droughts. The caravan trade between Air, Bilma and the Haussa land – especially with salt

from Bilma through the Ténéré desert to Agadez – still functioned until the end of the century. Long-distance goods transport by lorry over endless tracks through the Sahara to Libya and Algeria was also active.

The long colonisation of Niger by France (1890–1960) at least led to the abolition of slavery for the Touareg subjects. The Touareg tribes experienced much oppression during the long colonial years, and with the post-colonial independence of Niger, they had to politically cede their former power to the black Haussa societies.

In the years I visited Hamid in Agadez (1973, 1981, 1990), the entire Sahel strip suffered from the "grande sécheresse", which brought countless farmers and itinerant herders to the edge of their existence. In those years, however, the demand for the coveted, classically beautiful Touareg silver jewellery also increased in Europe. The markets and boutiques of Europe were filled with it, and many wanted to visit the Touareg and their silversmiths in their homeland: Individual Sahara tourism was then at its peak.

Today, the region is a country damaged by economic crises, Islamist rebels, refugees, smuggling and corruption. I could not find out How the hundreds of local silversmiths are doing economically. An attempt to contact Hamid Kumama and his two eldest sons by letter was unfortunately not successful.

The artisans and silversmiths from Agadez have made a virtue of this hardship and reorganised themselves as cooperatives with international contacts:

#### **The Agadez Artisan Service (Service Artisanat d'Agadez)**

Handicraft activity is of great importance to the population of the Agadez region. It is the main source of income for the nomads who lost their herds during the dramatic droughts of the 1970s and 1980s.

To coordinate this traditional activity, improve the quality of the items produced and market them in Europe, the Service Artisanat d'Agadez (SAA) brings together some 3000 women and 500 men in 45 cooperatives in the region.

In addition, the SAA works to improve the living conditions of these very poor population groups and offers literacy courses or health lessons.

Contact the Artisanat d'Agadez service:

B.P. 82, Agadez, NIGER, Tel.: 00227/ 440 281

<https://www.club-des-voyages.com/niger/le-service-artisanat-d-agadez-12201.html>





*Fig. 14: Impressions of the city centre of Agadez, 1973 and 1981. Top: the large mosque, centre right: the "small mosque".*

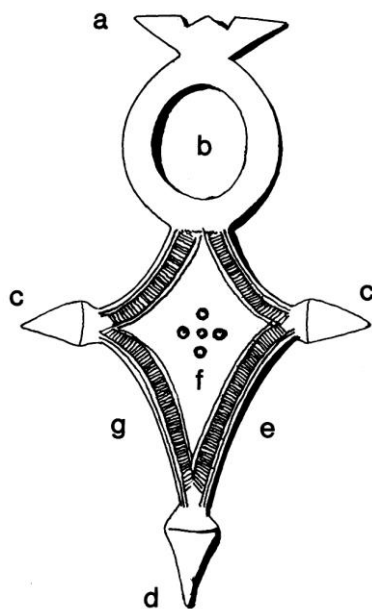
## The Agadez Cross (*le "croix d'Agadez"*)



*Fig. 15: "Croix d'Agadez", made by Hamid Kumama. Height 9.5 cm.*



The best characterisation of the Agadez (fig. 15) and other silver 'cross' pendants that I know of is given by the German ethnologist and Touareg expert Gerhard Göttler<sup>4</sup>: "There are two pieces of jewellery in particular that have made Tuareg jewellery so well known to us: 'cross' pendants (fig. 63) and amulet containers (fig. 17,1).



*Fig. 16: The parts of an Agadez cross.*

- a:** *tchimouzouguen* (the ears)
- b:** *taganzé* (the opening)
- c:** *ijran* (the shoulders)
- d:** *eraf* (the head)
- e:** *idoum* (the face)
- f:** *tcha ten taout* (the eyes of the chameleon)
- g:** *adiriz n'gour* (the paws of the jackal).

(after Gabus 1986, fig. p. 442)

Both are worn by men and women, but 'crosses' have practically disappeared among men today and amulet containers (except those made of leather and worn as turban jewellery) are rare. The 'crosses' are called *tenerelt* (Agadez; fig. 15) or *sakkat* (Iferouane; fig. 20) by the Tuareg themselves, depending on the region or form. It was not until the French colonial period that the term 'cross' was used for these pieces of jewellery. In accordance with the types common in the respective regions (Figs. 17,2-6), they were also given the names of the most important localities, which in the meantime had attained a certain importance. The 'cross of Tahoua' (fig. 17,2), is indeed quite common in the Tahoua area, but is not worn in Iferouane, where the 'cross of Iferouane' is common (fig. 20). On the other hand, the Tuareg of the regions concerned call this ornament *tenerelt*. Over the years, the designations by place have become widely accepted. More recently, region-specific variants have been given place names based on quite different facts: now there is a 'Cross of Bilma', a 'Cross of Air' and even the small earring *tassegurt* ('hanging from beads') or *tassikbilt* ('small pendant') is called 'Cross of Bagzane'. All these names, together with other fanciful names, can be found on a tableau of the '21 Crosses of the Niger' published by the Craftsmen's Centre of the National Museum in Niamey. Nevertheless, in Bilma there are resident Kanuri who do not wear Tuareg crosses at all, in the Air several different types of

<sup>4</sup> On these 'crosses' in general: Gabus 1982, 441-542; Göttler 1989, 244-248 (citations) figs. 118-120.

crosses are worn (the type called the Air cross is a uniform badge), and while the Bagzane mountains may well have gained some attention among tourists, the *tassikbilt* is uncommon there. However, for the most common variants (one must almost call them standard crosses) the place names have become so naturalised that they can no longer be dispensed with at all.



*Fig. 17: Some of the Touareg jewellery forms mentioned in the text: 1 amulet container (tcherot); 2: cross of Tahoua; 3: "cross" of In Gall; 4: carnelian pendant (telchatimt); 5: cross of Zinder; 6: small form of the Agadez cross (tassengralt). Size of the right-angular pendant on the left: 71 × 63 mm.*

Much (too much) has already been written about the symbolic content of crosses. The authors, all of whom come from a Christian cultural background, have probably always placed too much focus on the idea of the cross. It seems clear to me that all crosses are nothing more than stylistic variants of the equilateral triangle, the basic shape in almost all Tuareg objects, which do not have to be designed differently due to functional constraints. Various crosses (especially the Timia form) still show this 'classical' triangle. In others, the derivation is obvious or it can be deduced either from knowledge of their development in completely different functional areas, ... or from knowledge of designations in other regions of the Tuareg area (the designation *sakkat*, for example, is also used in the West for the strictly triangular agate pendant *telchatimt*). Sexual symbols can even be discerned in the end knobs of the crosses: Gabus interprets them as phallic. This would be acceptable if one assumes that a triangle also symbolises the phallus, and I can recognise nothing else in these end knobs or their outline. Further triangles (knobs) may be attached to the tips of a triangle (cross base form).

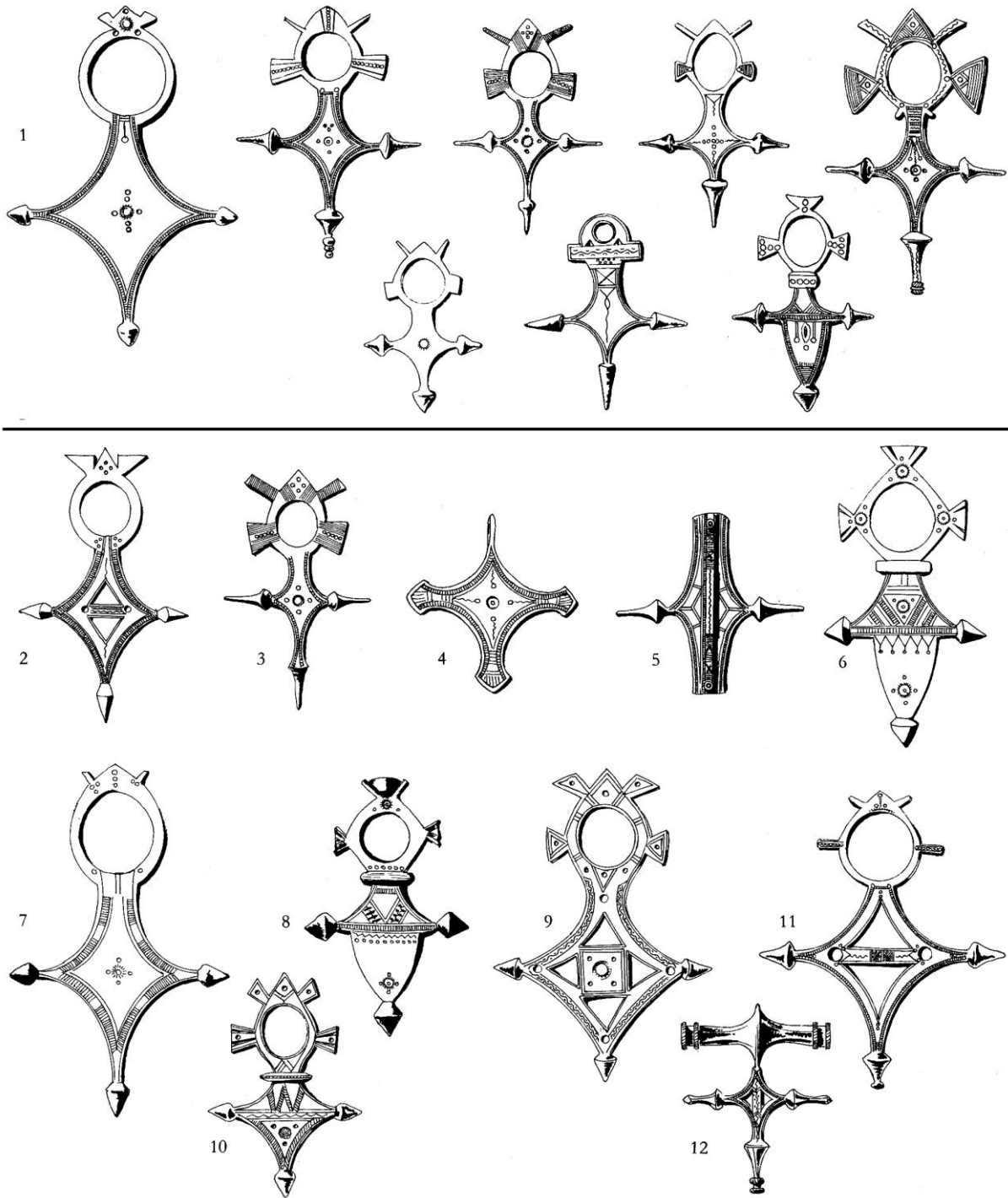


Fig. 18: Top: Variants of the Agadez cross. - Bottom: Silver pendants of various places and oases in the Agadez-Air Mountains area (Niger). (after Gabus 1982, fig. p. 461).

Needless to say, the 'Cross of In Gall' (fig. 17,3; where does this piece in particular get its name 'cross'?) also represents nothing other than a triangle. In this case it is even a real one, a red triangle made of glass, cast with a slotted hole on one edge. Such glass triangles are popular souvenirs of Mecca pilgrims and are therefore called *mekkawi*. Fastened with a wire and encased in wax, the silver sheet and the silver suspension eye appear to be the appropriate setting for these triangles of red glass. The In Gall cross should not be confused

with rings, which are found in the western Tuareg region: the In Gall cross is always set in red glass, the *mekkawi*, while in other cases, it is the tip of the carnelian *telchatimt* (fig. 17,4), which – predominantly when broken – still receives a special honour when set in this way.

Apart from this In Gall cross, all other crosses are made by the lost-wax casting process. They are usually worn on leather strings as necklaces (fig. 7), with certain cross sequences being particularly popular, such as the Zinder cross (fig. 17,5) / In Gall cross/Zinder cross or the Iferouane cross (fig. 20) / In Gall cross/Iferouane cross, inter alia. In such hangings, the *telchatimt* also appears again and again in alternation. The Tahoua crosses in particular are also worn woven into cotton cords, a way of wearing that is (only) rarely seen with all other crosses. In the southwest of the Tuareg region, in the transitional area to the *chomeissa* form of jewellery, very small crosses *tassengralt* (fig. 17,6) in the form of the Agadez cross are also worn as forehead jewellery."



*Fig. 19: Chasing in the workshop of the silversmith Ahdouane Attako, Agadez 1973 (see fig. 55): Tribute to the European markets and to the taste of tourists: A small Agadez cross forms the end of the handle of a long-handled coffee spoon.*



## The production of a "Croix d'Iférouane"



*Fig. 20: "Croix d'Iférouane", made by Hamid Kumama. Height 8.8 cm.*



*Fig. 21: Agadez, 1973: The first step is to make the positive model of an Iférouane cross from beeswax, which is later encased in a clay mould in the "lost wax process", then melted out of the mould and finally cast in silver in the cavity. The contours of the moulded wax platelet are cut out with a small metal spatula heated in the fire.  
(On the production process in general, see also Furger 2017A, 79 fig. 130)*



*Fig. 22: The wax spatula is sharpened with the file in between.*





*Fig. 23: Hamid Kumama drips some liquid beeswax onto the small, separately formed wax cone, in order to subsequently attach it to the "shoulder" of the future silver ornament (cf. fig. 16,c.d).*





*Fig. 24: Similarly, the crossbar is "glued" to the plate of the casting model with a few drops of wax.*



*Fig. 25: The hand-modelled casting model made of beeswax is finished and covered with clay, which will later form the fireproof mould. Note the thin sprue, also moulded in wax, at the lower end of the cross. Hamid uses "his" clay directly from the ground outside his workshop.*





*Fig. 26: The clay mould is finished and carefully smoothed. It is still wet.*



*Fig. 27: The sprue funnel is modelled at the lower end of the Iférouane cross, in extension of the sprue funnel.*



*Fig. 28: The clay mould is finished and completely fitted with the sprue funnel (right). It is placed in the sun to dry for a few hours. The thin wax funnel is visible in the centre of the clay funnel.*



*Fig. 29: In the meantime, Hamid stokes the charcoal fire again and prepares it to melt out the wax and then to pre-fire the empty cast mould.*



*Fig. 30: The clay mould is gently heated in the fire, and the crucible (Figs. 38 and 39), which has also been formed from clay in the meantime, is dried and pre-fired.*



*Fig. 31: Small fire tongs for fine forging of silver jewellery and for holding red-hot crucibles, moulds and lumps of charcoal. Made by Hamid Kumama from thin reinforcing iron. Length: 36 cm.*





*Fig. 32: The still damp mould is gently heated on the edge of the hearth fire. The thin funnel is already dry.*



*Fig. 33: As soon as the valuable beeswax in the mould is liquid, it is poured out in water and reused later.*



*Fig. 34: Now it's time to fill the crucible with silver. We have brought along pieces of Swiss silver francs to be remelted. These have to be crushed with a chisel on the anvil so that they fit into the small crucible.*



*Fig. 35: For many decades, the Touareg silversmiths considered the Maria Theresa thalers to be "very good silver" for reuse in jewellery. They were minted in Vienna (Austria) from 1741 onwards in an 833 alloy and were such a sought-after payment and recycling good in the Sahel region that in the 20th century – in addition to Vienna – they were allegedly also copied in Saudi Arabia in the same quality for the African market and brought to the Sahel by Mecca pilgrims. The illustrated specimen was acquired at the Agadez market in 1973. Natural size.*



*Fig. 36: Tourists also liked to bring other silver money to the Touareg smithies to be melted down, such as Swiss 1, 2 and 5 franc pieces. They were made of an 835 alloy (cf. fig. 38).*



*Fig. 37: The silver pieces are filled into the dry and pre-fired crucible. Then, with the help of some wet clay, the mould and the crucible are joined together to form a whole: the crucible with the silver at the bottom, the hollow mould at the top (see fig. 41).*





▲ *Fig. 38: The small crucible is pre-fired and loaded with chopped silver coins. Next, the finished mould will be cemented onto the crucible with clay (see fig. 41).*



◀ *Fig. 39: A similar crucible for silver casting, also from the workshop of Hamid Kumama. The "spout" formed on the rim shows that this crucible was intended for casting in an open mould, i.e. crucible and mould were separate. Agadez 1981.*







*Fig. 40: The mould is fired – still without the attached, filled crucible.*



*Fig. 41: Hamid Kumama connecting the crucible filled with silver chunks (below) to the mould (above) with wet clay. See figs. 37 and 40.*





*Fig. 42: Now – for the actual casting – the fire must be stoked to particularly high heat. A lot of charcoal is put on (left) and the bag bellow is started up vigorously (right).*





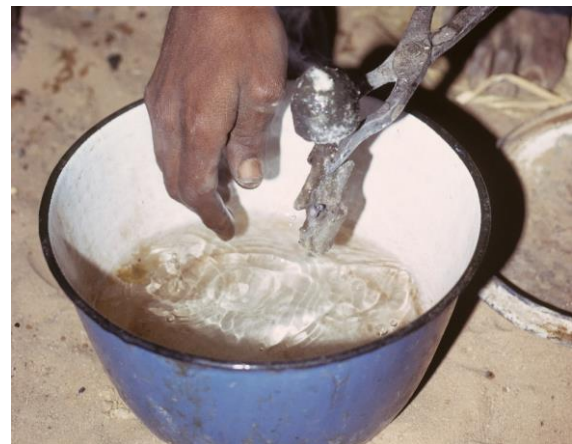
*Fig. 43: Now the mould is fired "upside-down" in a hot charcoal fire – like ceramics. Only in this way will it survive the heat shock of pouring in the liquid silver at around 900–1000° C without bursting. The crucible is hidden at the bottom in the glowing charcoals; the mould attached to the top protrudes but is also heated thoroughly.*



*Fig. 44: The first highlight in the traditional production of a Touareg ‘cross’ using the lost wax process: The casting mould with the crucible attached at the bottom (see fig. 41) is removed from the fire when the silver at the bottom of the crucible has become liquid. The experienced caster recognises the right moment by the colour of the fire and the glowing mould. He carefully removes the object from the fire with the tongs, recognises from the slight sloshing that the metal is really liquid, and quickly turns the object 180 degrees with the tongs. The contents of the crucible – the liquid silver – have flowed out of the crucible into the mould, which is now at the bottom (photo)! The closed mould-crucible system prevents oxygen and any contamination from entering and creates a reductive atmosphere inside, thus significantly reducing the risk of oxidation and casting errors. This closed casting technique is widely used by silver and bronze casters not only in many African countries, but also in Asia.*



*Fig. 45: First, still gentle cooling: The hot mould, with the empty crucible on top, is placed in the sand of the workshop floor (centre of picture) and cooled for a few minutes in the air.*



*Fig. 46: Second, more brutal cooling: The still hot clay mould is grabbed with the fire tongs and cooled down with splashes of water until the mould can be taken in the hand.*





*Fig. 47: The second highlight in the traditional production of a Touareg cross using the wax melting process: The clay mould is knocked away with a hammer and the casting emerges: casting successful! (Casting failures occur when, for example, the metal solidifies too early due to insufficient temperature before it has completely filled the cavity). The term "lost wax casting process" becomes obvious: the mould can only be used once; each wax model leads to a unique piece.*

*Fig. 48: Another "Cire-perdu" mould after primary firing of the clay. It is fired but empty inside. Because it broke during firing (fig. 40), it could no longer be used for casting – all the work on the wax model and mould making was in vain! Natural size.*



*Fig. 49: The silver casting is exposed and shows the rough, yellowish "casting-skin". This must now be filed and polished. First, the sprue funnel (casting pin; Figs. 25 and 28) is cut off with the chisel (photo).*





*Fig. 50: The raw casting is briefly annealed in the charcoal fire (dark red) so that the casting structure of the silver alloy is homogenised.  
(On this recrystallisation process, see also Furger 2017B, 29 f. fig. 3).*



*Fig. 51: In order for the red-hot piece to recrystallise homogeneously, it is not quenched in water but placed in the sand of the workshop floor and allowed to cool slowly there. The crucible and the fragments of the mould lie on the floor in front.*





*Fig. 52: With the cast blank, the work on an Agadez or Iférouane cross is only half finished! Now the piece has to be elaborately "trimmed", first by fine filing of all surfaces (photo), then by fine grinding, "white boiling" and polishing. Fine sanding is done with sandpaper, which has to be bought on the market.*



*Fig. 53: Old file from the tool collection of Hamid Kumama (1973). The small tool, made by hand, was made from a steel rod with a parallel cut and in places with a cross cut and then hardened (see also Furger 2020, 18 fig. 8). It was already no longer in use at that time. The smiths preferred the much harder industrial products from France instead of such files made by hand. Scale 1:1 (length: 16 cm, detail 3× enlarged).*



*Fig. 54: Filing takes hours. The filings are valuable and are to be melted down again later. Therefore, a black collecting mat is placed around the anvil stuck in the ground. The mat is cut out of an old car hose; the anvil is part of an old car cardan shaft.*



*Fig. 55: After filing, the piece of jewellery is slightly annealed in the fire to darken the silver surface. This makes it easier to observe the chasing work that now follows with the graver (cf. fig. 19). The graver has a sharp, lancet-shaped end with which very fine zigzag lines can be engraved into the silver (fig. 20). To do this, the graver must be pushed back and forth with a measured amount of force: A "tremolo" stitch is created.*





*Fig. 56: Thanks to the surface being darkened in the fire, the work with the tremolo graver can be easily observed. A small board with a step (left) serves as a handle in which the jewel sits. The small board – the engraving aid – finds support in a mandrel inserted in the anvil (outside left) during vigorous engraving.*

*On the left end of the pendant the "eyes of the chameleon" (fig. 16,f) are struck with five punches. Hallmarks are steel stamps with different patterns (fig. 57) which are hammered – "stamped" – into the metal surface.*



*Fig. 57: Selection of decorative punches used to decorate Touareg silver jewellery. The specimen on the left comes from the Thaoua area (Niger, 1992), the others from the workshop of Hamid Kumama (Agadez, 1973):*

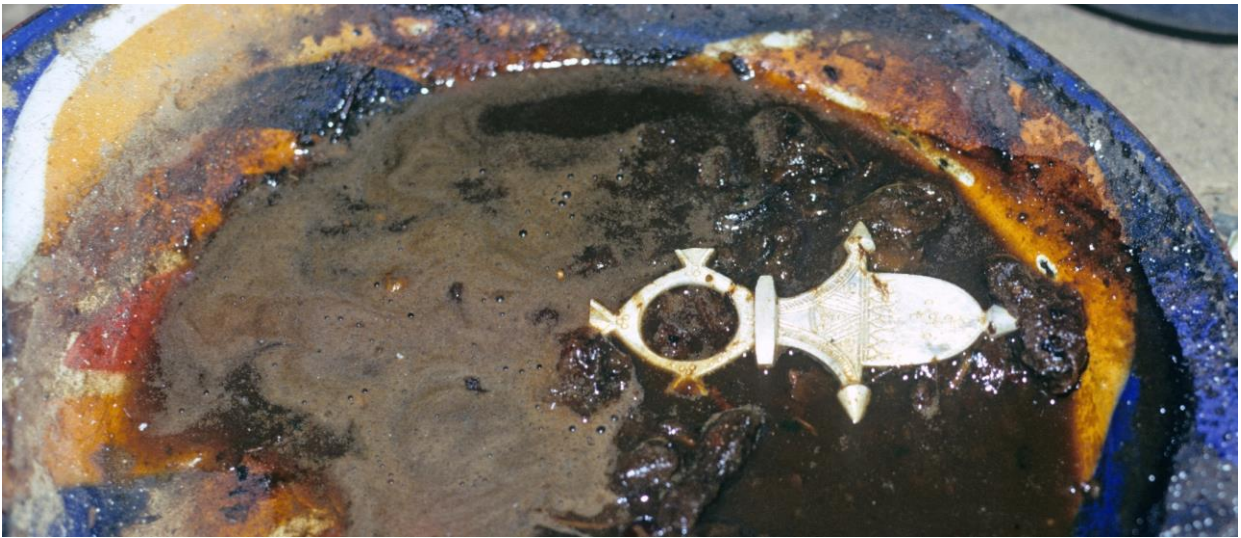
1. «patte de chacal» (jackal's paw)
  2. ?
  3. «dents des petits chiens» (small dog's teeth)
  4. «tgubut» (hat; repoussé punch).
- Scale 1:1 (details M. 2:1).*





*Fig. 58: After filing, grinding, engraving and hallmarking, the shape and ornamentation of the piece of jewellery are actually finished. The silver alloy of a good 80% fineness is very hard and resistant, but its colour tends slightly towards light grey. To increase the fineness and thus the shine of the silver on the surface of the object, the copper is dissolved away in an acid. This process is called "white boiling". The Touareg silversmiths used to use the boiled juice of tamarind pods as an acid. These are boiled up and crushed and squeezed with a wooden stick.*





*Fig. 59: The "Cross of Iférouane" has become completely white and shiny in the boiling tamarind acid.*



*Fig. 60: After "white boiling", the silver object is "scraped" in a soapy water with a brush and brought to a high gloss. Hamid: "L'Omo [detergent] de Nigéria polit mieux que l'Omo du Niger".*



*Fig. 61: A cross from Iférouane made by Hamid Kumama. In contrast to the piece in figure 20, this one has a cast eyelet for suspension from the neck.*



*Fig. 62: Hamid's other family members often spend time in his workshop: Daughter, mother and first wife.*

## And today?

I cannot answer the question because travelling to Niger and the Sahara has become impossible for security reasons, and because a current contact with Hamid's family could not be resumed.

If one compares today's equipment and jewellery objects used or produced by Touareg silversmiths in and around Agadez, one notices many "modernisations" and facilitations of work, and also new forms and decorations that enrich the traditional handicraft.

### *Neue Bedürfnisse, Technologien und Einrichtungen:*

- Modern new designs
- Manufactures in the collective
- Workshops in permanent houses
- Serial work
- Silver semi-finished products (sheets)
- Polishing motors
- Blower motors
- Gas soldering lamps
- Fire bricks
- Industrial anvils
- Steel castings
- Industrial crucibles.



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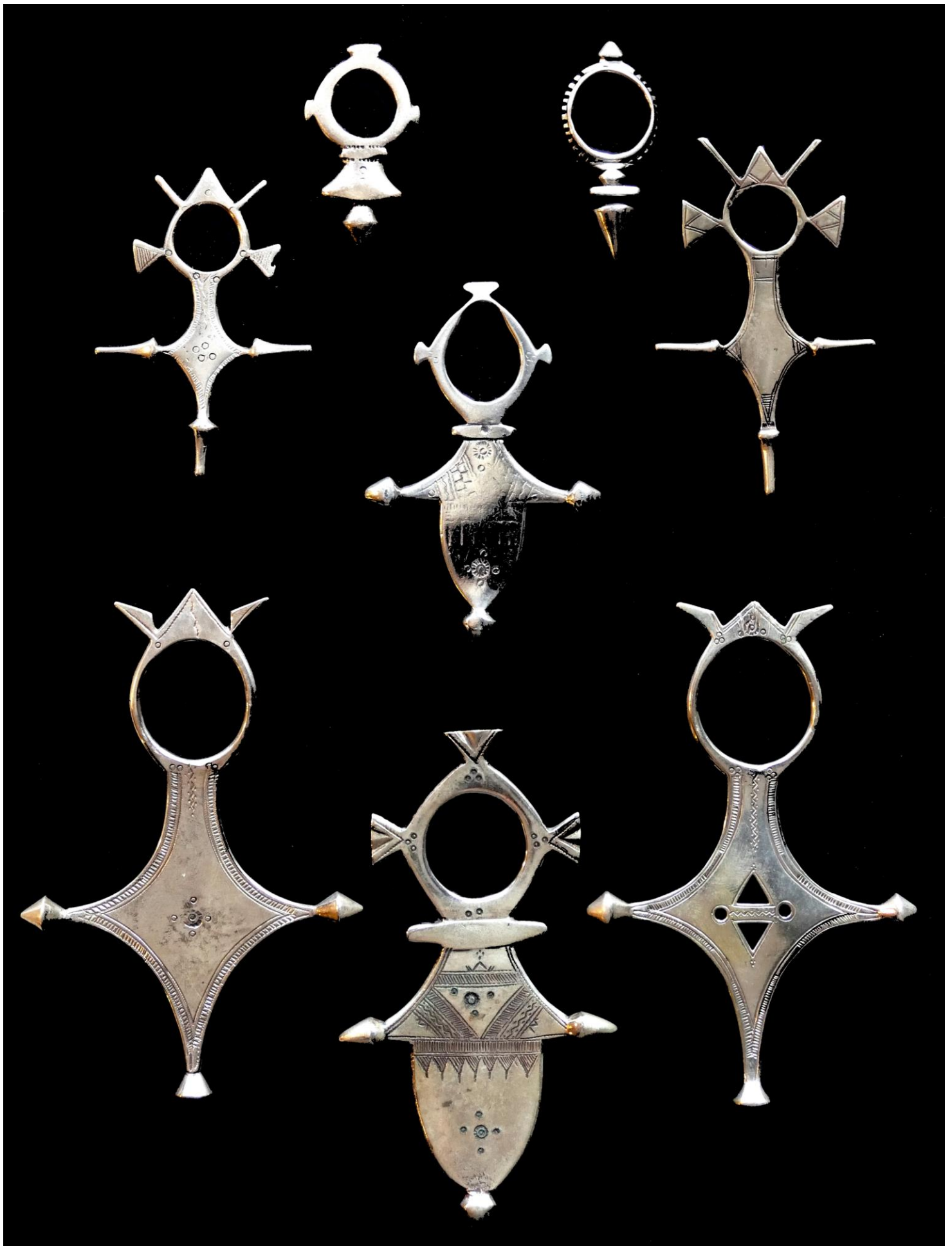
## Film documentaries

One of the rare film documentaries showing the traditional production of Touareg crosses by hand is the film "Lost wax casting - Agadez cross Abdoullah" by "Pekine":

<https://www.youtube.com/watch?v=aHwAUbOSHHg> (17.09.2022)

Also worthy of mention is the artistically valuable film "Tuareg Jeweler of the Desert" about the silversmith Elhadji Mohamed Koumama by Christian Peacock (2009):

<https://www.youtube.com/watch?v=LcehaHLwL1Y> (17.09.2022)



*Fig. 63: Various silver pendants from Agadez and the surrounding area. Above: worn pieces, below: Fabrications by Hamid Kumama, 1973.*