Middle Assyrian jewelry of Tell Sabi Abyad, Syria

Jewelry from Tell Sabi Abyad in comparison to other Middle Assyrian sites.

Author: Rita Kremer

Photo: Golden earring from Tell Sabi Abyad

Sabi Abyad Archive

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Rita Kremer

s0835978

BA3 Thesis, Universiteit Leiden

Supervisor

Dr. B.S.Düring

Archaeology of the Near East, Leiden University

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Introduction

Tell Sabi Abyad

Tell Sabi Abyad is located in north Syria along the Balikh River, about 1100 km north-west of the ancient capital of Aššur (Figure 1). It comprises 4 mounds designated Tell Sabi Abyad I – IV. Nineteen excavation campaigns between 1986 and 2010 yielded habitation layers belonging to the Neolithic, Mittani, Middle

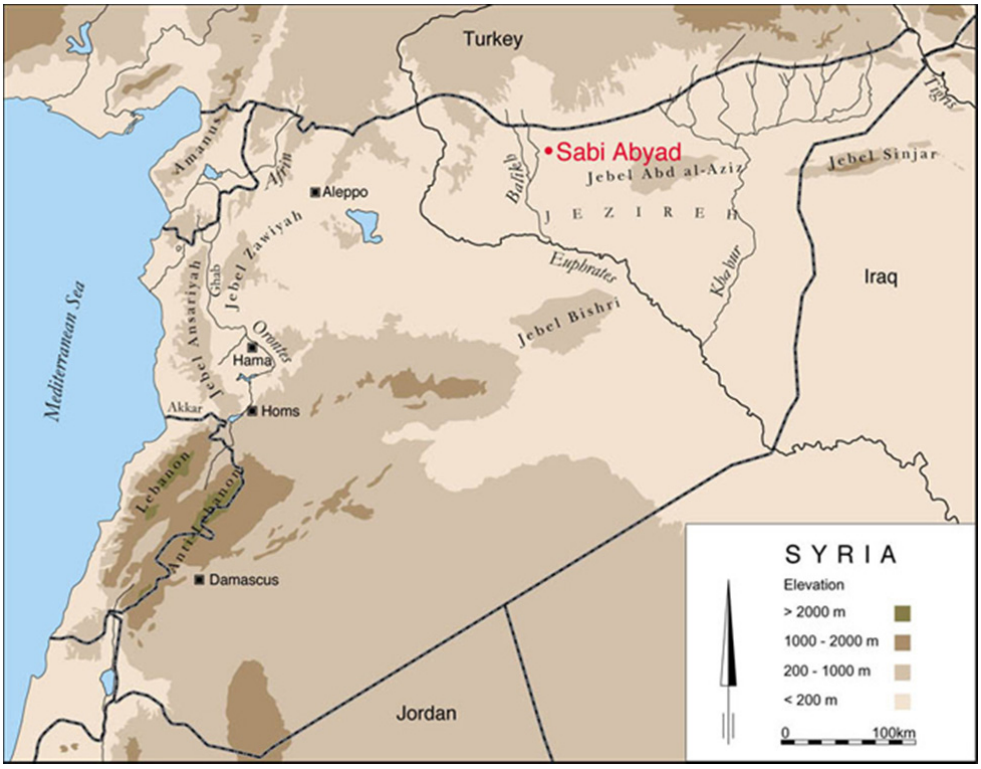

Figure 1: Location Tell Sabi Abyad in Syria (http://www.sabi-abyad.nl/Page.aspx?pageType=page&pageID=363)

Assyrian and Hellenistic/Seleucid periods. The final layer contains an Islamic graveyard of the 17th/18th century AD. In total 8 different layers could be identified. The 4 Middle Assyrian layers yielded, beside structures and graves, a lot of finds like ceramics, cuneiform tablets and metal finds and beads.

Research aims and methodology

This thesis aims to investigate Middle Assyrian jewelry from Tell Sabi Abyad I only. I investigate

1) What is the context of the jewelry?
2) Is there a difference between the jewelry assemblage in cremation and inhumation context?
3) Was the jewelry produced locally or were the materials and jewels obtained from other sources?
4) How were the jewels worn and is it possible to assign them to gender?
5) How is the relation to ornaments from other sites in the same region in that period?

This research is based on photos, drawings, object forms and publications, because apart from very few exceptions all finds are stored in Syrian museum which are, due to political unrest, not accessible at the moment. The research is mainly based on 760 object forms, with in some cases numerous objects per form. The number of photos and drawings is comparably small. The objects in the text are marked with master file numbers. BN stands for burial number, B for beads, M for metal, S for stone and Z for seal. The dating of the objects is based on the dating of the level where they are found.

1 Sabi Abyad in historical and regional context

1.1 Historical background

Around 1500 BC the state Aššur covered only a relative small area on the Tigris, mainly north of the city Aššur (Figure 2). Aššur was a vassal state of the northern kingdom of Mittani and obliged to pay tribute (Duistermaat 2008, 24).

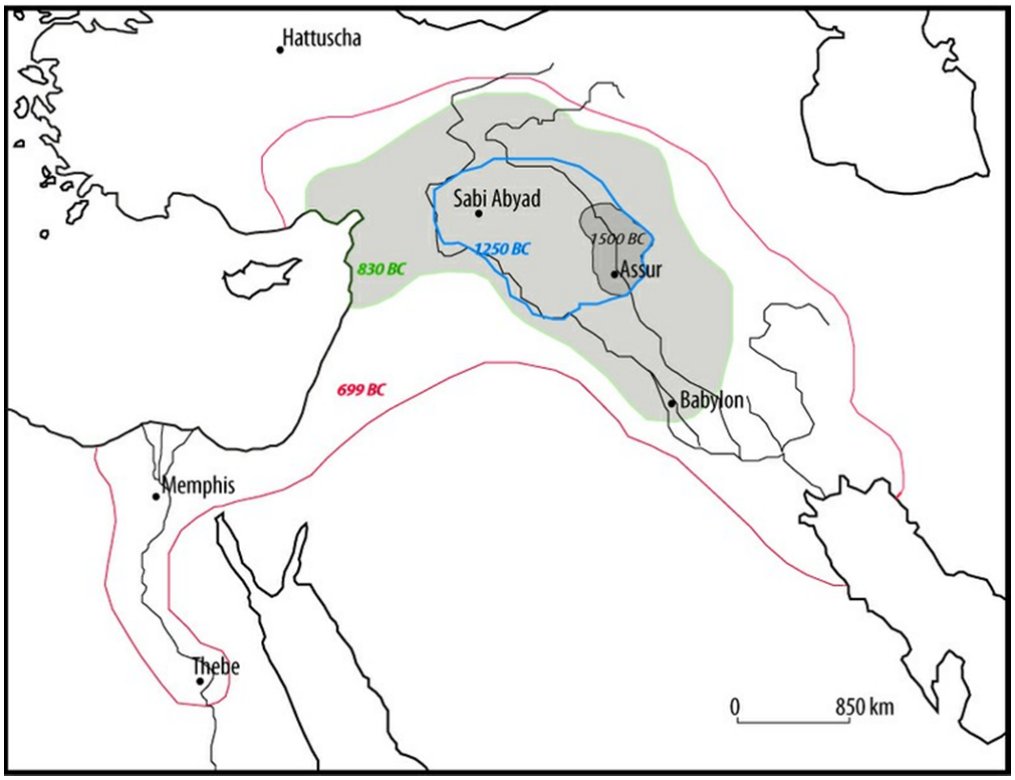

Figure 2: Extension of the Assyrian Empire. Dark grey= 1500 BC; blue = 1250 BC; green and red= 830 BC and 699 BC (Bleda Düring)

This situation changed dramatically in the late 14th to the early 12th century BC. The Assyrian territory expanded to the north-west. In the 13th century under the reign of Adad-narari (1285 – 1280 BC), the kingdom of Mitanni/ Ḫanigalbat became a vassal state of Assyria. About 20 years later, under the reign of the

Great king Shalmaneser I (1263-1234 BC) several palaces and administrative estates (dunnus) were founded by Assyrians in this area (Duistermaat 2008, 24 - 26). However under Shalmaneser I Ḫanigalbat did not become an Assyrian province, but remained a foreign country with widespread Assyrian settlement. (Harrak 1987, 190-205).

It was only under his successor Tukulti Ninurta I (1233 – 1197BC) that the Middle Assyrian Empire reached its climax and Ḫanigalbat became a regular semi-independent Assyrian province (Duistermaat 2008, 26; Akkermans and Wiggermann in prep, 1). The provinces in the west were especially important for agricultural production, as a passage for trade routes to the west and for its setting as border region (Duistermaat 2008, 26, 27). In the province Ḫanigalbat the fortified farmstead Tell Sabi Abyad was established in 1225 BC.

Eight successive kings ruled in the capital Aššur during the Late Bronze Age (LBA) settlement on Tell Sabi Abyad (TSA) (Wiggermann 2010, 59). The settlement on Tell Sabi Abyad is a dunnu which is a fortified farmstead. A dunnu had various functions like border control, taxing or military action. These functions had to be fulfilled in duty of the kings of Aššur by the Grand Viziers who were members of the royal family (Duistermaat 2008, 27). They were very powerful leaders of the provinces and the dunnus. A dunnu could be the property of the Grand Vizier (Duistermaat 2008, 28). The dunnu Tell Sabi Abyad was property of Aššur-Iddin (1233 – 1200 BC) and later of his son Ilī-padâ (ca. 1196 – 1185), who were Grand Viziers and called ´King of Ḫanigalbat´ (Duistermaat 2008, 28). Inferior to the Grand Vizier was the local supervisor (abarakku), a high ranking official with the obligation to administrate the dunnu.

1.2 Significance of Sabi Abyad

Sabi Abyad had a special significance based on its location. It is located:

- Close to the Hittite border
- Along trade routes

- On the edge of the dry-farming zone.

First, Tell Sabi Abyad lays in the very far west of the empire close to the Hittite border, which made it important for border control and diplomatic contacts with the Hittites (Duistermaat 2008, 28). “It was a center for political and military intelligence and a base camp for army operations and border patrols” (Akkermans and Wiggermann in prep, 22).

Second, it is situated along trade routes from Aššur to northern and western regions, which enables it to control the caravans and to participate in exchange networks.

Third, the main function of Sabi Abyad was agricultural production. In the south of the Assyrian Empire dry-farming was precarious, but in the north it was possible. Therefore the northern provinces were important for agriculture. Sabi Abyad is just on the threshold of it. The tell had a size of 5 ha only and was merely partially covered by habitation, but the mainly agriculturally exploited area surrounding it was much larger and comprised an estimated 3600 ha (Wiggermann 2000, 177). It is likely that agricultural production on Sabi Abyad happened without irrigation or by application of small channels only (Duistermaat 2008, 23).

Consequently the dunnu at Sabi Abyad had various important functions which were border control, military action, tax collection, distribution and control of the caravans and agricultural production (Duistermaat 2008, 26, 27).

Therefore the relevance of this small village in such an important region should not be underestimated.

1.3 Time setting

The Middle Assyrian period in Syria dates from 1350 to 900 BC. This period comprises the final part of the Late Bronze Age and the beginning of the Iron

Age. In Syria the Late Bronze Age lasted from 1600-1200 BC and the Iron Age from 1200-330 BC (Akkermans and Schwartz, 2003, 327, 360).

The Middle Assyrian dunnu at TSA was raised on a location occupied already during the Late Neolithic in the 7th to early 6th millennium BC (level 8) (Table 1). After a period of abandonment a Mitanni tower existed during about 1350– 1250 BC (level 7). Thereafter the tell was abandoned again (Akkermans and Wiggermann in prep, 2).The Middle Assyrian habitation continued from 1230 BC to at most 1115 BC. This period can be divided into the levels 3 - 6. In the period 1230 – 1197 BC the dunnu was constructed (level 6). At the end of the 13th century BC the dunnu was in a bad condition which was followed by a period of renovation in the years 1197 – 1180 BC (level 5). In the period 1180 – 1125 BC the dunnu was partly in use only (level 4 and 3). After a period of abandonment a Hellenistic/Seleukid settlement was founded on the tell (level 2), and finally the tell was used in the 17th-18th century as an Islamic graveyard (level 1).

Level 8	Late Neolithic occupation	7th- early 6th century
Level 7	Mitanni tower Abandonment	1500-1350 BC
Level 6	Construction of first Middle Assyrian fortress. Middle Assyrian fortress in bad state.	1225 BC – 1197 BC end 12th century BC
Level 5	Period of renovation. Dunnu partially destroyed by fire.	1197 – 1180 BC 1180 BC
Level 4 and 3	Reconstruction and decay of the dunnu. Dunnu partly in use only. Abandonment	1180 – 1125 BC
Level 2	Hellenistic /Seleukid settlement	
Level 1	Islamic graveyard	17th/19th century

Table 1: Time setting of TSA, based on Akkermans and Wiggermann in prep.

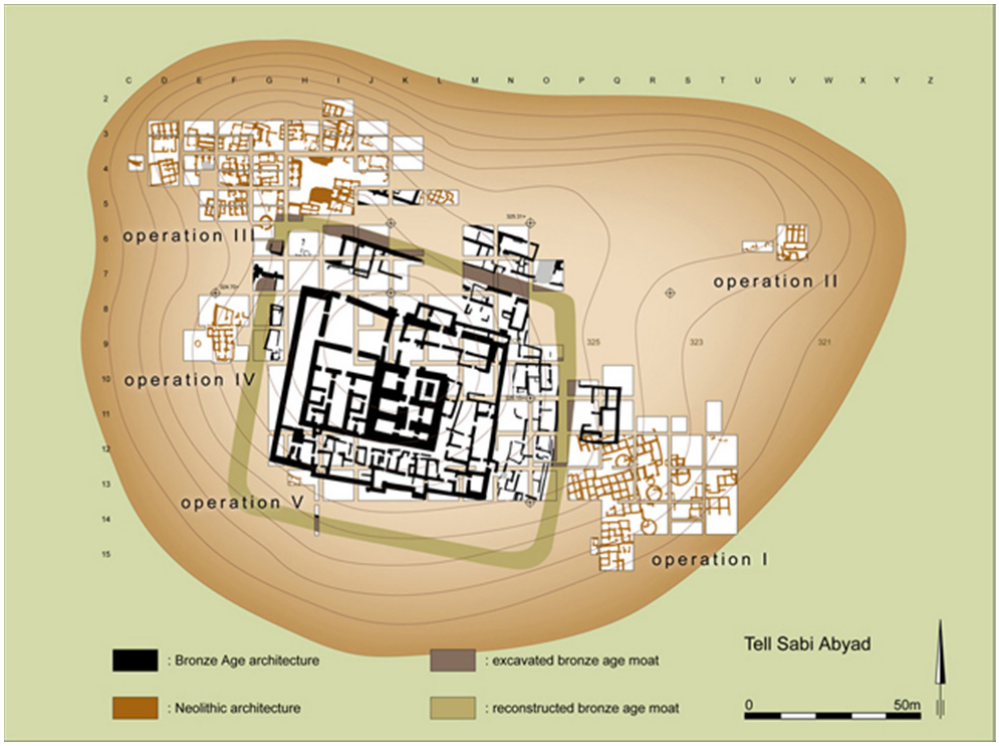

Figure 3: Map of Tell Sabi Abyad (www.sabi-abyad.nl)

1.4 Occupation

During the 110 years of Middle Assyrian occupation, the tell was partly covered by a dunnu (Duistermaat 2008, 23). The walled dunnu embraced an area of 60 x 65 m^2 with a strong, central tower of 18 x 21 m^2 and an adjacent palace of nearly the same size (Akkermans and Wiggermann in prep, 3). It was surrounded by a dry moat (Figure 3). Houses were located between the moat and the fort walls, inside the fortress and outside the moat. Several houses within the fortress and between the moat and the fort were workshops of craftsmen.

1.5 The inhabitants

About 900 people belonged to the dunnu Sabi Abyad. The inhabitants can be divided into two groups with different status and tasks - the `šiluhlu´ and the `ālaju ´. The 400 `šiluhlu´ had principally foreign names and were agricultural

workers, sometimes also craftsmen. 440 inhabitants called `ālaju´ were free-born people with Assyrian names. They did not get rations as compensation for their work as the ` šiluhlu´ but got fields for their own subsistence. The administrative and domestic staffs who were generic Assyrians comprised 30 – 60 people. They lived inside the dunnu compound. Also specialists and artisans belonged to the group of the domestic staff (Wiggermann 2000, 190). They lived inside the dunnu where their workshops were located. "Professions that were attested in the texts include potters, brewers, oil-pressers, builders, leather-workers, bakers, perfume makers, hairdressers, singers, dressmakers, a smith, merchants, gardeners and shepherds, servants of the Temple of Aššur and scribes." (Wiggermann 2000, 190-191). This list shows that Sabi Abyad is more than a poor farmer's village with the main purpose of paying tax to the king of Aššur. The wealthy inhabitants consumed luxury products and enjoyed leisure time. The wealth of this small village was based not only on the agriculture surplus but on networks as well.

1.6 Assyrian networks

Accordingly Sabi Abyad functioned within larger trade and diplomatic networks with the capital Aššur, with Harran at the frontier to modern Turkey, Carchemish on the Euphrates and distant locations like Sidon and Canaan on the Mediterranean coast (Akkermans and Wiggermann 1999, Akkermans 1997). Sabi Abyad was an important custom post for traders coming from North Syria and the Levant (Akkermans and Wiggermann 2011, 21). In the Middle Assyrian period North Syria had a vital role as a mediator between the Mediterranean coast, Anatolia and Assyria. In the 14th and 13th century traders coming from

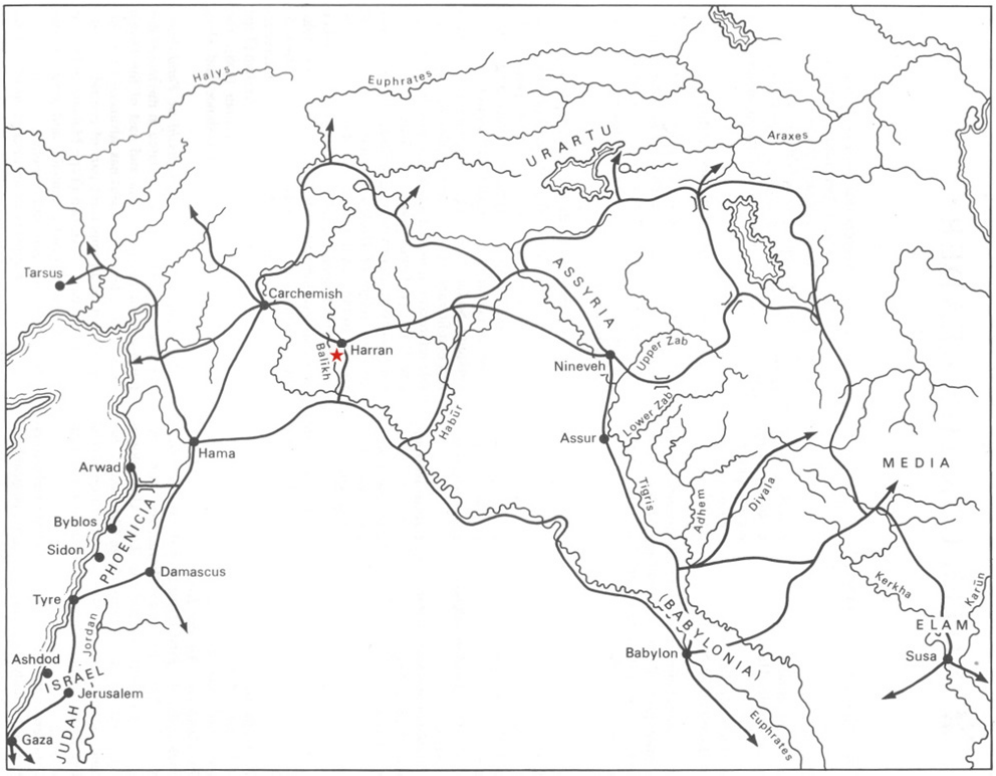

Figure 4: Tell Sabi Abyad (red asterisk) and lines of contact within Mesopotamia and her periphery (Moorey 1994, pl. XX)

Sidon and Canaan crossed the Euphrates via the important Hittite trading cities Carchemish and Emar and headed to the Khabur region and to Aššur (Akkermans and Wiggermann 2011, 22) (Figure 4). On the south route up the Balikh heading to Harran they passed Tell Sabi Abyad.

Since the extension of the Assyrian territory into the Khabur region political tensions between Assyrians and Hittites complicated the trade sometimes, but for both sides the trade was so important that they maintained the commercial contact (Faist 2001, 66).

From cuneiform tablets found in Sabi Abyad we know a lot about this trade. Predominantly they do not deal with the trade itself but were administration documents mentioning import and export of goods concerning trade expeditions (Faist 2001, 9).

1.6.1 Metals

Assyria had no metal sources on her own territory, so imports were essential. Gold came from Egypt (Nubia) and Anatolia. It was traded in form of gold nuggets, dust, small ingots or spiral bowed wires and as manufactured articles in form of vessels or jewelry (Faist 2001, 61).

In contrast to the Old Assyrian period, there was a shortage of silver in the 2nd half of the 2nd century. The reasons for that remain unclear. Even more puzzling is that cuneiform tablets describe silver exchange in the south-western cities Ugarit and Emar. Silver was occasionally used for jewelry and must have been used in small amounts for alloying gold as well. Silver, as well as copper and tin derived from south-east Anatolia, which belonged to the Hittite territory. Copper could be imported also from Cyprus and tin from Afghanistan (Faist 2001, 61). Copper and tin were essential for bronze production. Normally tin was traded in blocks and alloyed in Assyria in a relation tin to copper 1:8 with a melting point of 1000 °C (Faist 2001, 61). Consequently only little tin was required compared to the amount of copper. There is evidence from cuneiform texts that lead, called AN.NA BABBAR in the Akkadian language was traded as well. It was added in small amounts to the bronze in order to increase the fluidity which facilitated the casting of high-quality products (Hodges 2000, 69).

1.6.2 Stones

In middle Assyrian jewelry a wide range of local and non-local stones was processed. The most important ones were lapis lazuli, carnelian, agate, malachite, onyx, jasper, rock crystal and serpentine (Maxwell-Hyslop, 1974, 170). Further common stones were limestone, basalt, gabbro, gypsum, dolerite, obsidian, sandstone and marble.

Non-local stones could have been received by exchange or by expeditions. From some sorts of stones the origin is known from cuneiform texts concerning trade. Lapis lazuli derived from Badakshan in Afghanistan over Iran to Assyria (Maxwell-Hyslop, 1974, 179). A state expedition for wood into the north Zagros and the

Armenian Taurus mountains is mentioned in a report concerning the construction of tomb 45 in Aššur. In this report lapis lazuli, carnelian, hematite and obsidian are mentioned as well, because they were to some extent part of the booty. Hematite and obsidian are mentioned as booty from Nairi countries on the Armenian plateau, which are likely to originate from that location (Faist 2001, 67- 68).

2 Jewelry on Tell Sabi Abyad in context

In this chapter I investigate middle Assyrian jewelry on Tell Sabi Abyad in view of its context. The jewelry derived from various contexts. Many items which were spread in room fills or on walls were possibly not in primary context. Jewelry in different contexts is described successively in the next sections. The contexts are graves, the tower with 3 necklaces, locations with hundreds of unfinished beads and raw material and one structure with more than 200 mollusks (Akkermans and Wiggermann in prep, 5).

2.1 Graves

In total 39 Middle Assyrian graves containing 47 individuals were found on the tell. About 80 % of them were inhumations (30 burials). Only 20 % included cremations (8 burials) which was not an Assyrian tradition (Akkermans and Wiggermann in prep, 12). About 1220-1200BC cremation on Tell Sabi-Abyad was implemented at a moderate degree which is consistent with the relatively small number of cremations (Akkermans and Smits 2008, 255). Most graves contained funerary gifts like ceramics, jewelry or other items (Akkermans and Wiggermann in prep, 12). Some do not contain any gift at all and those with gifts do not always contain jewelry. In total 25 graves included jewelry, of which 21 were inhumations and 4 were cremations (BN88-01, BN02-15, BN98-01, BN03-03). Grave BN03-03 is omitted as it yielded one single drilled shell only. BN88-01 contained a small amount of objects. The wealth of the other two cremations is remarkable because the other cremations contain few or no objects at all (Akkermans and Wiggermann in prep, 13).

2.1.1 Cremation graves

BN88-01 included six beads of dentalia, carnelian and probably serpentine. Moreover a scarab of limestone was found (Akkermans and Rossmeisl 1990, 17).

The other two cremation burials with jewelry had rich grave goods. The remains of the funeral ceremony BN98-01 were stored in an urn and the remains of BN02- 15 were put in an unlined, shallow pit (Akkermans and Wiggermann in prep, 12). The similarity of the assemblage of ornaments in these two graves is striking.

I will describe grave BN98-01 and BN02-15 subsequently.

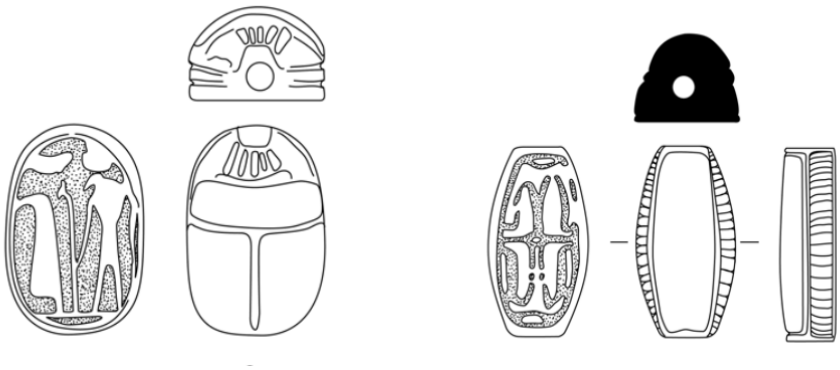

Figure 5: Faience scarab and seal from grave BN 98-01 (Akkermans and Smits 2008, 259)

Figure 6: Faience scarab from grave BN02-15 (Sabi Abyad archive)

Grave BN98-01 comprised the remains of two burned skeletons placed together in one urn: a female and a male between 20 and 40 years old. Beside the ash, the sealed vessel contained numerous ornaments: beads, pendants, gem settings, rings and bracelets of various materials. The majority of the finds were stone beads (455 pieces) made of light-greyish, sometimes whitish or black, veined stone and limestone. More seldomly precious stones like rock crystal are present. The beads must have belonged to several necklaces. The beads occurred in a wide range of shapes: spherical, biconical, conical, cylindrical,

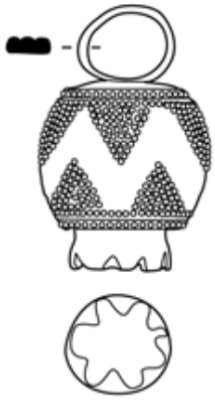

Figure 7 : Golden pendant in shape of a pomegranate from grave BN98-01
(Akkermans and Smits 2008, 259)

Figure 8: Golden fragment from grave BN02-15
(Tell Sabi Abyad archive)

ribbed, octagonal, triangular, rectangular, circular but flattened, lozenge or figurative (Akkermans and Smits 2008, 253). The figurative beads had the shape of an abbreviated frog, a duck, a pomegranate and a scarab with incision of a Horus falcon (Figure 5 and Figure 6). The faience scarab was worn on a necklace but could have been used as a seal as well. Another faience seal was used as a bead in a necklace as well (Akkermans and Smits 2008, 253). Moreover 14 semi-manufactured stones were placed in the grave (S98-436).

In addition the urn contained 14 golden, 6 bronze and 4 iron objects. The golden objects comprise two rings, one earring, three pendants, one bead, five gem settings and two ear ornaments (Akkermans and Smits 2008, 253). They are all

made very accurately and display a high standard of handicraft skills. This includes working with very thin sheets or wire of gold as well as knowledge and skills in granulation. The most elaborated objects are a hollow pendant in shape of a ball, two crescent shaped objects which might have been worn on the auricle, a hollow bow-shaped earring with 3 groups of wire decoration, two folded rings and the granulated pendant (Figure 7)(Akkermans and Smits 2008 , 259, fig. 11). Also remarkable are three large iron objects, consisting of two bracelets or ankle rings and one open ring (M98-136, -137, M98-140). In general iron is quite rare on Tell Sabi Abyad and appears after 1200 BC as small objects only (Akkermans and Smits 2008, 254).

Grave BN02-15 contained the ashes of a skeleton with unknown age and sex. In addition, there was also burnt timber and a huge amount of jewelry. As in the other cremation grave, the majority of finds were beads in various shapes (1200 pieces) and materials (Figure 9). Most are made of grey-white veined stones, limestone and rock-crystal, others of faience or even of gold (Figure 8). Precious and semi-precious stones are rare. The beads occur in 39 different shapes, even more varieties than in grave BN98-01. Here again

Figure 9: Veined stone and rock crystal beads from grave BN02-15 (Sabi Abyad archive)

figurative beads are encountered in shape of a frog, possibly a duck weight (M02-63 compare B98-24), a pomegranate and a scarab with an incised bird (Figure 11 and Figure 12). It is not clear what the meaning of the scarab was (Figure 6). It might represent an exotic Egyptian fashion in this period or it might be an amulet carrying symbolic meaning like protection, fertility or good luck. It is striking that all scarabs from TSA were found in cremation graves (Akkermans and Smits 2008, 253). Egyptian scarabs could have been used as funeral gifts in the cremation ceremony.

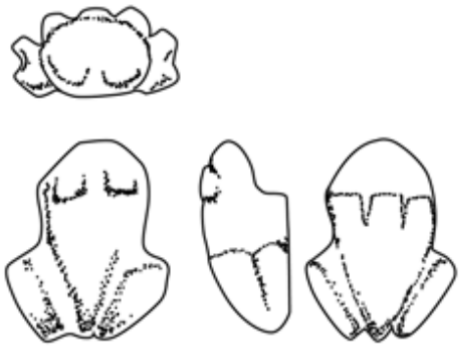

Figure 10: Faience bead in shape of a frog from grave BN98-01 (Akkermans and Smits 2008, 259)

Figure 11: Faience bead in shape of a frog from grave BN02-15 (Sabi Abyad archive)

Figure 12: Pomegranate pendant of stone out of grave BN02-15 (Sabi Abyad archive)

Figure 13: Golden pendant from grave BN-02-15 (Sabi Abyad archive)

Other objects are parts of gold and bronze rings, granulated beads, one golden earring , a bronze and a golden pendant (Sabi Abyad archive) (Figure 13). Further 51 lumps of bronze and 2 lumps of iron were found in the grave, which were heavily corroded (M02-61). I will discuss their origin in chapter 3.1.

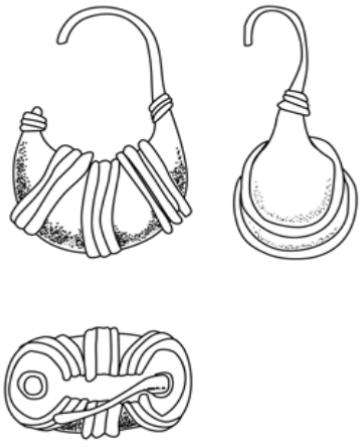

Figure 14: Golden bow-shaped earring from grave BN98-01 (Akkermans and Smits 2008, 259)

Figure 15: Golden bow-shaped earring from grave BN02-15 (Sabi Abyad archive)

Some golden objects have remarkable similarities with objects of grave BN98-01. The granulated pendant is similar to a fragment with granulated triangles (M02-81 B) in the other grave. (Figure 7 and Figure 8). The folded golden ring (M02-80) (Figure 39 and Figure 40) and the hollow bow shaped earring (M02-53) resemble in detail those in burial BN98- 01 (Figure 14 and Figure 15). Both graves contained one single bow-shaped earring only. This might have to do with funeral rites. Did the relatives keep one earring in remembrance of the deceased?

There are two bone fragments, one with a dotted guilloche pattern and the other a rectangular plate with two holes (Akkermans and Smits 2008, 259, fig. 24 & 25). They are very similar to bone objects in grave BN 02-15 (I02-50). The function is not quite clear. They might have been combs, hair ornaments or were fixed on garments (Akkermans and Smits 2008, 254; Hattum 2012, 54).

2.1.1.1 Gifts or personal ornaments

Several ornaments had been blackened by fire or even molted or deformed by the heat (Akkermans and Smits 2008, 253). This indicates that the individuals were embellished with jewelry before the cremation. The jewelry could be their personal property as Akkermans and Smits suggest (Akkermans and Smits 2008, 253). In view of the particularity of the assemblage, it is more likely that the jewels were at least partly funeral gifts. The jewelry assemblages in the two cremation graves resemble each other a good deal more than those in any inhumation. It is likely, that the deceased on the pyre were more embellished than ever in his life. After the cremation the ornaments were placed in a jar or in a pit together with the ash. It cannot be precluded that further gifts were given into the grave after cremation during the funeral ceremony.

2.1.1.2 Pyre temperature

The pyre temperature of grave BN02-15 can be reconstructed from the condition of the gold, bronze, bone and stone. The granulated fragment (M02-81 B) allows conclusions on the standard of this golden object, which must be 750/000 or

higher. 750/000 means that 75% consist of pure gold and 25% consist of various metals, usually silver and copper. Granulation requires a minimal temperature of 889 °C for the diffusion process in order to create a solid connection between the granules and the recipient (Nestler and Formigli 1993, 36). The melting interval of gold with 750/000 lies between 850 °C and 920 °C, which makes it suitable for granulation. Higher standards are even better usable as the melting interval is higher. The pyre should have reached a minimum of 850 °C to damage the golden earring by melting. One earring was partially melted; other golden items were not damaged by the heat at all. This means that the objects had higher standards than the earring or were exposed to less severe heat. Grave BN02-15 yielded an undamaged bronze ring and 55 lumps of bronze. Bronze has a melting point of 1000 °C. It needs further investigation to determine whether the lumps were molted or corroded objects, in order to conclude whether the temperature could have been higher than 1000 °C. Bone analyses suggested that the pyre was hotter than 450 °C, maybe more than 800 °C (Akkermans and Smits, 2008, 252). Even stones have limited heat resistance, so they could be used for determination of the temperature as well. Further research would be needed to conclude from damaged beads on the temperature they had been exposed to, and whether they were actually worn by the deceased on the pyre. This examination is out of scope of this thesis. It should be kept in mind, that a pyre is an open fire with different temperatures on different spots. Analysis of the material allows deducing minimum and maximum temperature only. It can be concluded, that it is likely that the pyre had reached a heat of minimal 850 °C as it damaged the gold and likely not more than 1000 °C on the hottest spots as it did not damage the bronze ring.

2.1.1.3 Who was buried in the rich cremation graves?

Diverse interpretations are conceivable for such wealthy cremation graves. From 1220-1200 BC cremation began at a small scale. It seems that the mainly Assyrian population had adapted funeral rites of Levantine and West-Syria (Akkermans

and Smits 2008, 255). It is also conceivable that foreigners are buried here. In general they seem to have occupied lower ranks than the Assyrians. In general the administration staff in responsible positions carried Assyrian names and workmen and craftsmen had either Assyrian or foreign names. The chief steward `Tammitte´ belonged to a small number of high-ranking people with non-Assyrian names (Duistermaat 2007, 30). It is credible that the two rich cremation burials derive from this kind of persons.

2.1.2 Inhumations

The inhumations with jewelry are described here. Graves with jewelry not associated with the body are mentioned at the end of each section only.
11 inhumations with ornaments associated with specific parts of the skeleton are characterized. They allow conclusions on how and by whom the jewelry was worn. It remains unclear if the ornaments worn by the deceased were gifts or personal possessions. I will describe the position and kind of ornaments in the inhumation graves. Other burial objects are omitted here.

2.1.2.1 Child graves

The child in grave **BN88-02** was 2-3 years old. The rich grave contained more than 100 stone, rock-crystal and shell beads, 2 bronze anklets, 2 bronze bracelets and 5 hair ornaments. Both bracelets are placed around the right arm and the anklets are worn on the right and left ankle. Most of all beads were located around the neck, few spread in the burial soil. The beads are so numerous that the necklace must have been double-rowed or consisted out of two strings. The small black and white beads were part of the strings and the large beads of rock-crystal, stone and shell were pendants.

Burial **BN93-03** included a child in a jar. The child wore a bronze ring on his right ankle.

The child skeleton in a jar (**BN96-05**) had an iron ring placed on the thorax. It could be positioned there for the funeral ceremony but more likely it represents a pendant worn on a string of perishable material during lifetime.

BN99-12 is the grave of a small child. Under the mandible were found five beads of different shapes and sizes. This is probably part of a necklace which consisted previously of more beads, or the five beads were worn on a perishable string.

Child grave **BN01-05** was embellished with 6 open bronze rings. One ring was placed to the left and one to the right of the pelvis, the other 4 rings lay at the backside of the flexed legs. The rings are likely no finger rings as the sizes are too large for a children's finger. All rings were located at pelvis and thigh which can indicate that they were part of a waist belt or fixed on the garments. Fragments of a bronze earring were found and a stone pendant, which was a reused prehistoric object (Akkermans and Wiggermann in prep, 6).

The child graves **BN88-03, BN96-06, BN03-02** and **BN03-09** yielded beads of stone and shell as well as bronze rings and bracelets which were not associated with the body.

2.1.2.2 Adult graves

Female

The female in burial **BN99-15** was discovered with beads on the throat and upper vertebras along with textile fragments. The two bronze rings are placed on the left hand - one on the ring finger and one was discovered below the hand.

BN 03-11 is a quite rich burial of an adult woman. Due to the robust skeleton she was called `Medusa´ by the excavators. She wore one single earring on her right ear and none on the left. It was made up of bronze with a cover of gold (M03-

69). In the same grave was found a further earring with similar dimensions (M03-61) (Figure 41). In both cases does the diameter of the wire comprise 0,2 -0,3 cm and the diameter of the entire earring 1,5 cm. Both rings have a bead shaped thicker ornament embracing the wire. It is tempting to assume a pair,

Figure 16: Big toe with ring in grave BN 03-11 (Sabi Abyad archive)

but they are made out of different materials. The material of ring M03-61 is most likely as a silver- gold combination and of M03-69 as a bronze- gold combination. For material determination further research on the actual objects is required.
Her left hand with 4 rings on her fingers lay beneath her belly. Two of them are now attached to each other. The iron ring on the thumb had a remarkably large diameter (2,5 cm)(M03-65). The other 3 rings were made of bronze. (M03-63, M03-64, M03-67) There was no ring on the right hand.
Both big toes had bronze rings (Figure 16). Beneath her upper right arm plenty of beads and a pendant of black stone were found which belonged to a necklace (Figure 17). Next to her one object of shell, one of incised stone and an arrowhead next to her wrist was found. In view of this and the number of other finds it can be concluded that she must have inhabited a special function.

Figure 17: Beads next to upper right arm of the skeleton (Sabi Abyad archive)

The female graves **BN99-14** and **BN07-59** yielded one single bead each, which was not associated with the body.

Male

The male in burial **BN02-03** had a ring placed on his left hand and a needle was found near his cervical vertebrae.

Unknown sex

Burial **BN96-09** is a grave of an adult. A bronze bracelet is placed on the right upper arm. It might have been an upper arm bracelet which is frequently worn by male on Neo-Assyrian reliefs.

The adult skeleton **BN97-01** wore rings, an earring, hair decoration and a necklace of faience beads. The rings of bronze and limestone, now corroded together were found on the hand. To which hand they belong to is not clear because the hands were folded. The single earring was encountered on the left side and the hair decoration on the right side of the skull. It could have been a headband made of disc shaped beads. The necklace on the thorax appears in situ as well.

The juvenile or adult female skeleton **BN01-04** wore one bronze toe ring on the left and one on the right foot on the 2nd toe from left.

The adult graves **BN96-10, BN03-03, BN03-10** and **BN08-12** yielded ornaments which were not associated with the body, but found in the burial soil. The different kinds of ornaments are not specified here because in view of the lacking information concerning gender they do not assist gender specific analysis.

2.1.2.3 Burial gifts

Ornaments placed on the body can be gifts or possessions of the deceased. Analysis of use wear traces provides information if the jewels were worn already during lifetime, but not if they were worn by the deceased or another person. Often the items are encountered in the burial soil, associated with the burial but not with the body. Items in the burial soil might have been donated as a gift into the grave during the ceremony. But it is also possible that objects were displaced from the body due to taphonomic processes. In addition detailed information can be lacking in the excavation reports. I conclude that probably the ornaments were more often placed on the body than the archeological evidence reveals.

Even if a deceased is wearing ornaments in the grave, this fact does not prove that the person wore it in daily life as well. Child grave BN88-02 for example contained 2 ankle rings on the left leg, 1 lower and 1 upper bracelet on the right

arm and a lot of beads which could have been part of approximately 2 necklaces. It is neither likely that a child was wearing all these items in daily life nor that it possessed those. Further examples are unbaked clay beads which are encountered in some graves. They are so fragile that they could not have been designed for long-term use. They might have been grave gifts from relatives given during the funeral ceremony, similar to the frequently encountered ceramic vessels.

Ornaments in graves can be personal possessions or gifts. This is difficult to distinguish, because even jewelry worn by the deceased might be a gift and might have use wear.

2.2 Phallus necklaces and combs inside the tower

Inside the tower of the Assyrian fort in room 6 and 13 (square L 11) a concentration of beads and pendants was encountered which could be reconstructed to three necklaces. They were produced from mollusks, glass paste, glass and one bead was made of stone. No precious stones or metals were used. The majority of these are beads of glass paste performed in various shapes and colors (yellow, green, white, grey, blue). Some are even bicolor and made of glass with a glass paste inlay (B92-22, B91-22D).

The mollusks consisted of three different species, not all of them were pierced. The small shells were used as beads on a string and in view of their drilling the three bigger ones must have been pendants. The function of the un-pierced shells is unknown. Most striking are the eight phallus shaped glass paste beads. In the reconstruction they were stringed as pendants, but given their holes, which are lengthwise, it is more likely that they were stringed as beads (Figure 18). The presence of phallus beads suggests that the necklaces were possessions of prostitutes (Wiggermann 2010, 52).

From cuneiform tablets it is known that in Middle Assyrian times compliance to morals was an important concern. Married women had to wear a headscarf,

whereas unmarried women, slaves and prostitutes were by law forbidden to do so. If a prostitute broke the law she would be punished, but her ornaments would not be taken away. This implies that prostitutes actually wore ornaments, in contrast to slaves where no ornaments are mentioned. Moreover a Sumerian hymn makes a link between prostitutes and jewelry. It tells about the goddess Ianna (Ištar), who is prostitute as well as patron of them. The text mentions the "beads of the prostitutes" (Cooper 2006, 14 in Wiggermann 2010, 52). Presumably these ornaments were worn by concubines; maybe they were even their symbol showing which status they inhabited within the community, comparable with the head scarfs for the moral women.

The use of non-precious materials in the necklaces and the 2 combs found in the tower can be linked to the prostitutes as well (Figure 19). The combs were found inside the tower together with beads of the phallus necklaces. The context and the piercings indicate that they were worn as a pendant, suspended on a string, maybe together with other beads. A function as hair decoration or implement is not conceivable because the toothing is quite short which limits the utility. The prostitutes were not allowed to cover their hair (Wiggermann 2010, 52). They might have emphasized their attractive visible hair by wearing a sign associated with hair; in this case a comb as a pendant. These combs could have been emblems of the prostitutes like the phallus beads. A use-wear analysis could reveal which function a comb actually had (Hattum 2012, 54). This investigation is out of scope of this thesis because all artifacts are kept in Syria. Confusing is the location where the `possessions of the prostitutes´ were found. The tower inside the fort is an official building. Did the concubines belong to the high-ranking officials living here? In view of the massive walls they could have been even in captivity.

Figure 18: Reconstructed phallus necklaces (Sabi Abyad Archive)

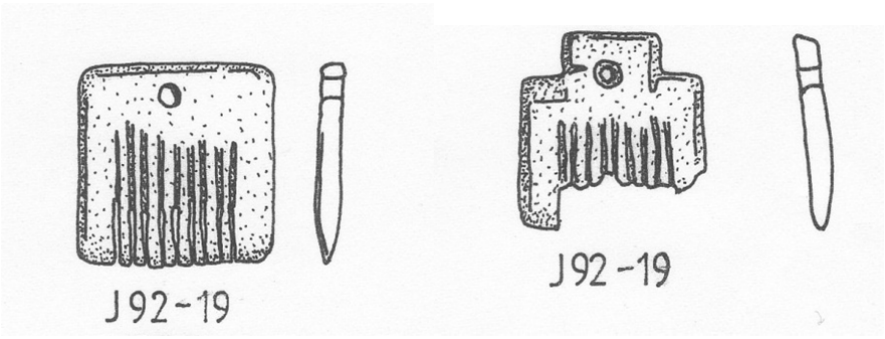

Figure 19: Combs from the tower (Sabi Abyad archive)

Similar phallus models like in the necklaces were found in temples of Ištar and Anu-Adad and in the palace of Tukulti-Ninurta I in Aššur. They were made of ivory, bone, faience, clay or stone and used as ornaments in necklaces as well (Wiggermann 2010, 49). In light of the occurrence in temples also a religious meaning is possible. It could embody the wish for fertility and virility because Ištar is the goddess of sexual longing and warfare.

3 Production

There are indications for different kinds of craft workshops on the tell, for example a brewery, a pottery or a jewelry workshop. In this thesis I will describe potential jewelry work spots only. In succession I analyze metal, clay, shell and stone manufacturing on the tell.

3.1 Metal

Written records suggest processing of bronze on Sabi Abyad. On a cuneiform tablet a smith working on the tell is mentioned (Wiggermann 2000, 190). It is not clear if this implies amongst others the fabrication of jewelry. Unfortunately the texts do not mention the profession of a goldsmith or a stone grinder.
Another tablet mentions a merchant called `Kidinnija´, who got the order to buy tin (ANNA.BABBAR) and furthermore blocks of tin are mentioned in this text. (*Tall Sabi Abyad* T98-80 in Faist 2001, 65).
Does the large quantity of bronze lumps provide evidence for bronze processing? (Figure 20) Their sizes range from 0,3 to 2,5 cm, and mostly 2 - 4

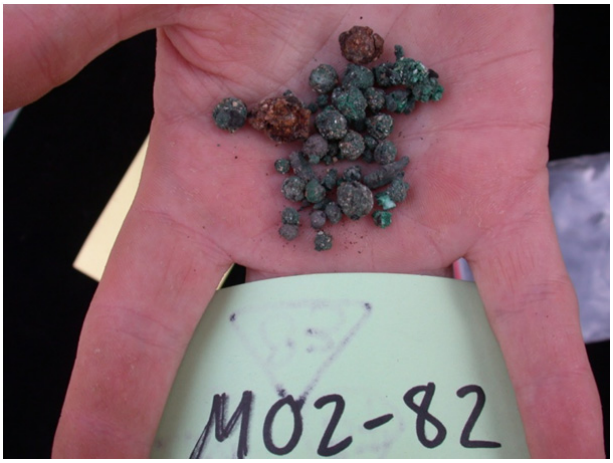

Figure 20: Lumps of bronze (Tell Sabi Abyad archive)

pieces were found per square of 9 x 9 m^2. Exceptions are the squares J7 with a cluster of 17 lumps and K7 with a cluster of 55 lumps. Both are located on the north side between the fort and the surrounding moat. In square K7 the

cremation grave is situated; accordingly it is conceivable that they derive from jewelry worn by the deceased on the pyre (M02-82, M02-61). Then the pyre must have reached a temperature of at least 1000 °C on the hottest spot, which is possible. Further investigations concerning the pyre temperature are discussed in chapter 2.1.1.2 on cremation graves.

Beside the 17 lumps of bronze, square J7 yielded a lot of grinding tools, hammers and polished stones from solid material such as basalt or gabbro. This might be an indication for metal working, because the lumps can be remains of bronze casting and the stone tools could have been used for hammering and grinding metal objects. But the tools could have been used for other kinds of purposes as well, like for example grinding seeds or flaking stones. Also distinct objects like semi-finished jewelry, metal blocks, ingots or melting crucibles are missing and the cluster of 17 lumps is too small for indicating any form of metal working. Hints for gold, silver or iron processing are completely lacking. It can be concluded that the current investigations of the material discoveries give no clear evidence for metal processing on the tell.

3.2 Clay

Only 16 clay beads were found, some of them simple, others very elaborate. One is `formed shallow biconical´ (type 22, bead chart II, Sabi Abyad archive) and decorated with incisions in a geometrical pattern on the surface (B04-25). Another one consists of unbaked clay and has the shape of a pumpkin (B02-07) (Figure 21). On the exterior of two beads (B02-15, B99-16) the craftsman left his fingerprints and on another one fingernail impressions are still visible (Figure 22). Others are simple cylindrical or spherical. The local pottery workshop must have had an important function in the fabrication of vessels. Technologically they were able to produce baked and un-baked clay beads as well, but in contrast to the vessels the production was not significant.

Figure 21: Unbaked clay bead B02-07 in shape of a pumpkin (Sabi Abyad archive)

Figure 22: Clay bead B02-15 with fingerprints (Sabi Abyad archive)

3.3 Shell

One spot yielded shells which were likely pierced on the spot.

In square H10 (level 6) on the west side inside the fort, 216 pierced and un-pierced white shells were found (V99-034) (Figure 23). 211 of them are local river shells of the type Nassarius sp and 5 are of a different type. Most of them are pierced through the lower thicker part. They were clustered in a room near floor level, together with several stone fragments (S99-348) which might have been used as raw material for bead production. Even though tools were missing, in view of their quantity and working traces it is likely that on this location the

shells were pierced for use as ornaments. Maybe bead processing was performed as well, but due to the small number of stone fragments the evidence is weak.

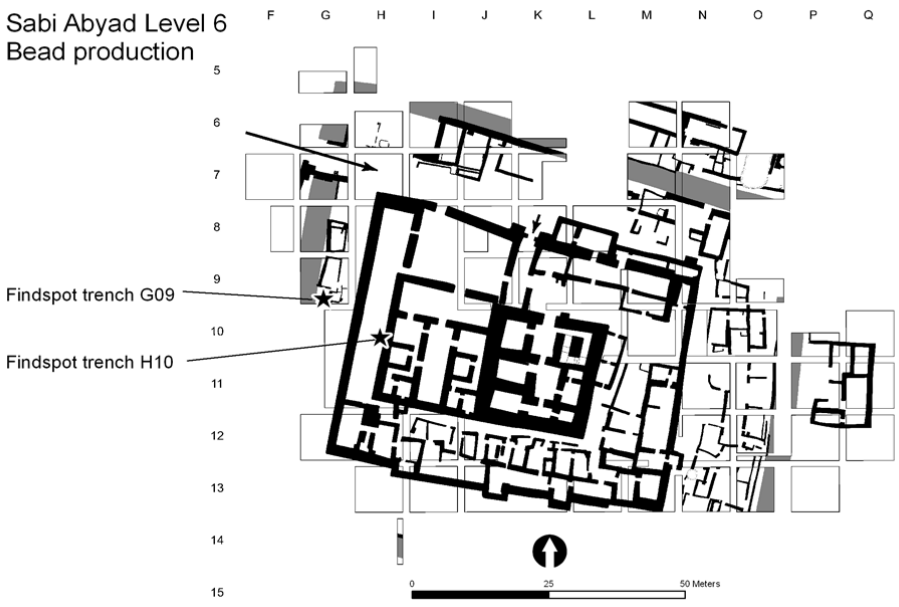

Figure 23: Map of the middle Assyrian dunnu TSA with findspot H10 and G09 (Victor Klinkenberg)

3.4 Stone manufacturing

Although not mentioned in the cuneiform texts, there is material evidence that craftsmen worked inside the dunnu on stone for jewelry and seal production. No clear distinction can be made between stone bead and seal production, because they were made out of the same raw materials and require partly the same skills and tools; accordingly they may have been created by the same craftsmen. Moreover pierced seals were occasionally used as beads in necklaces.

The evidence for production derives from different contexts which are graves and spots with tools and unfinished products.

3.4.1 Unfinished beads in graves

Semi-finished beads in graves give evidence for local manufacturing, because trading unfinished jewelry is not very likely. A jar yielded, amongst abundant jewelry, 14 unfinished beads (BN98-01).The jar belonged to a very wealthy cremation grave of a man and a woman. It is tempting to link the unfinished products to the profession of the male deceased who could have been a stone cutter. On the other hand one could debate the likelihood of a craftsman being that wealthy.

3.4.2 Stone manufacturing spots

Two find spots with numerous unfinished stone beads and raw material point to stone manufacturing. They were associated with tools which can be linked to stone processing.

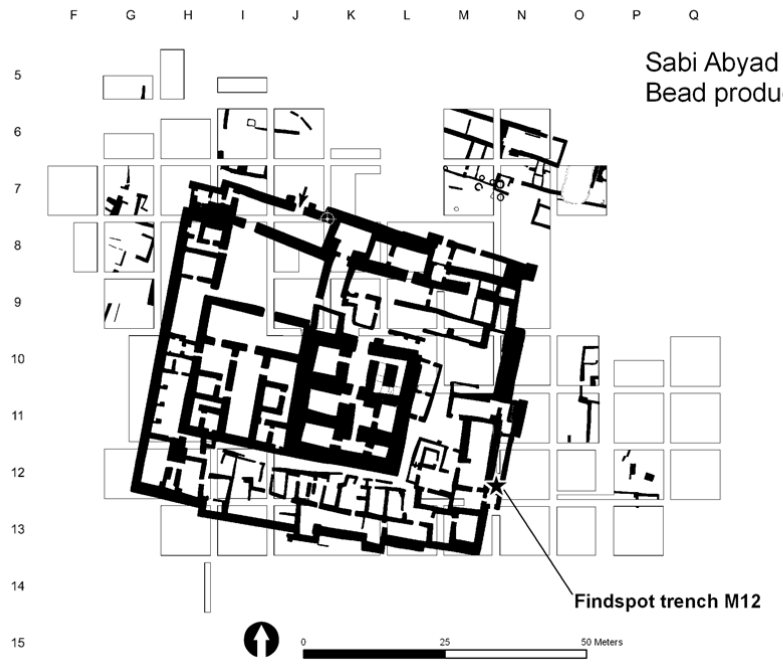

Figure 24: Map of the middle Assyrian dunnu TSA with findspot M12 (Victor Klinkenberg)

Find location M12 is situated on the east side, inside the fort in level 5b (Figure 24). The spot G9 is located on the west side between the fort and the moat (Figure 23).

The structure M12 is likely to be a narrow house stairway. For production on the spot the room is too small. Somebody might have lost or stored his material here. Beside several pieces of raw material for bead production, also grinders, hammers and axes were found there (S03-799). Some were re-used Neolithic tools (S03-796, S03-797).

In level 6 inside house G9 gem stones were clustered in two accumulations, one located on room floor O, locus 20 and the other one on room floor Q in locus 23. Room floor O yielded, along with the gemstones, also grinding tools, chisels and fragments of stone vessels. The fragments of various stone vessels are ambiguous in this context as the vessels can be created in the workshop or the sherds might have been re-used for bead production (S01-295, S01-299, S01-305, S01-330, S01-332, S01-339). One rim fragment of a stone vessel of grandorite shows working traces on the edge which could derive from using the piece for grinding purposes (S01-294, S01-339). On room floor Q a small amount of raw material and semi-finished gem stone objects were found as well, but tools were lacking.

The gemstones comprise rock crystal, marble, limestone, gypsum, basalt, gabbro, iron hydroxide concretion, iron hydroxide, band agate, amethyst, chalcedony (B96-10), obsidian (B02-09) and dolerite. Some tools consist of the same type of stone as the gemstones, which are marble, limestone, gypsum, dolerite or basalt. Additionally quartzite and sandstone is used for tools.

Not only the association of various tools and raw stones make local production likely, but also the work traces on these items. The work process is discussed in the next section.

3.4.2.1 Work process

The work traces on the gemstones result from flaking, grinding and polishing, which correspond with the battering, grinding and polishing traces on the found tools. Some tools had multiple functions, which is visible in battering traces along with grinding traces on the surface of the same stone (S01-398).

The first work process for shaping a stone is flaking. An example for that is the marble like stone S01-301 which is more or less disc shaped with a rough rim, shaped by chipping off small flakes.

The next step is grinding, which was performed by a hand held abrader or by hauling it over a big grinding slab (Wright 2008, 148). Perforated discs and cylindrical beads could be treated more economically by putting them, single or in groups, on a stick and then rubbing them over the grinding slab. They will show striations at rectangles to the flat side like the disc B02-03 (Figure 25). Sand and water could be added to achieve a more even surface (Foreman 1978; Moholy 1983, 298 in Wright 2008, 148).

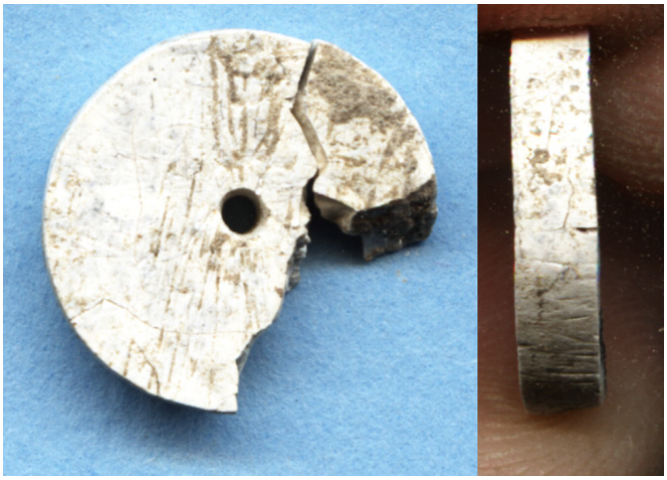

Figure 25: Bead of gypsum with scratches on the surface (B02-03) (Sabi Abyad archive)

It is known from ethnographic remarks that polishing could be performed by placing plenty of beads in a leather bag together with an abrasive and rolling and shaking it for a long time (Allchin 1979; Kenoyer 2003 in Wright 2008, 150). This

technique works for rounded beads only, because edges get abraded while moving the bag. Beads with sharp edges have to be polished separately; leather or wood is used with an abrasive like fine sand or chalk and with water. Another option is polishing with wool and animal grease (Kenoyer 2003, 20 in Wright 2008, 150). These are possible techniques which could have been applied on Sabi Abyad, but due to the use of perishable materials there is no evidence for that. I conclude that flaking and grinding leaves traces on the stone tool and object, whereas polishing leaves traces on the stone object, but if a perishable tool is used the traces are lost.

3.4.2.2 Turning

Some round objects are likely to be cut of a longer cylinder that was shaped and polished while turning (S01-285, 286, 287). Small cylinder or conical shaped objects with very smooth surfaces can have been made in this way (ø 0,65-0.95 cm, h= 0,4-0,5 cm). Often one end is a bit wider than the other and can have an extended edge. The objects might have been mounted with the wider side in a rotating device. One of the cylinders has rotation traces on one plain side as if the tool had scratched over the surface while turning. A sharp pointed object seems to have been held against the cylinder while it was rotating (S01-284, -285, -286, -289). The designation of the small cylinders is not clear, as they can be unfinished beads or tokens. They are made of gypsum, limestone, marble and possibly of gabbro as well. The hardness of stones is specified in the scale of Mohs from 1 to 10. The scale bases on the possibility to scratch one stone with another one and not on the absolute hardness of a stone. The chisels of gabbro with 4-6 on the scale of Mohs could have been useful instruments for shaping a rotating object (S01-336, S01-337). There is no evidence for a turning machine on Sabi Abyad, but turning lathes driven by a bow (bow-lathes) were already in use in the late prehistoric period (Gorelick and Gwinnett 1981, 28). Two examples from the 3rd millennium which yielded evidence for use of lathes should be mentioned here. The first are Sumerian sites which yielded vessels turned on a

lathe (Kohl 1982, 24). Second is the Tarut Island off the coast of eastern Saudi Arabia which yielded `vessels smoothed and finished on a lathe´ (Kohl 1975, 22). This knowledge may have been conveyed to Assyria. Also a local invention is imaginable. It is a small technological step from a turning potter´s wheel and a bow drill to a lathe.

Figure 26: Unmodified pebble with piercing (B02-14) (Sabi Abyad archive)

3.4.2.3. Unmodified pebbles with drilling

Several unmodified pebbles were used as beads or pendants. B02-14 is pierced with a drill of 0,1 cm diameter. Other pebbles are naturally pierced (B97-10, B97-12). Only the piercing made the pebble ready for use as an ornament. The time consuming work of grinding and polishing was avoided (Figure 26). Due to lack of wear traces or context, sometimes it is not possible to determine whether the stone was used as an ornament or not (B91-14, S98-07).

3.4.2.4 Drilling

Objects with unfinished drillings give evidence for local production. One example is an object in grave BN 98-01, which is likely an unfinished pendant. The 2 depressions on the back side look like beginnings of drill holes (S98-436). Also object B02-22 has an initial hole in one side. It is a two colored red-white stone, maybe an agate (Figure 27). The form is barrel shaped with rounded edges and a

rough surface. The drilling on one side is 0,1 cm deep and 0,35 cm wide. This is very likely the beginning of a drill in a flaked blank. For drilling a bead was probably fixed with bitumen or a mixture of beeswax and clay on an anvil (Wright 2008, 148). The surface will be smoothed and polished after finishing the precarious drilling process.

Figure 27: Beads and pendants with different kinds of drillings B02-22, B02-56, B02-09 (Sabi Abyad archive)

The shape of the drilled holes is caused by the applied technique, which depends on size and hardness of the object. This will be explained in the following three paragraphs.

3.4.2.4.1 Cylindrical drillings

Hollow drills cause cylindrical or slightly conical piercings with a diameter not less than 0,4 cm. The bores consist of wood, bone or a metal tube. Due to the low hardness of the drill an abrasive must be added, which is most commonly quartz with a hardness of 7 on the scale of Mohs (Hodges 2000, 106). Drilling was possible into stones with the same hardness, for example rock-crystal (Mohs 7) or carnelian (Mohs 6, 5- 7) or more easily in less hard stones like gabbro (Mohs 4-

6) or obsidian (Mohs 5, 5). Use of instruments harder than Mohs 7 like diamond or corundum was not in use in the Late Bronze Age. Drilling with a hollow drill is faster than with a solid one because less material has to be removed. Hollow drilling of bigger objects like adzes, produces a cylindrical core which could be used for production of beads (Hodges 2000, 106).

3.4.2.4.2 Hour-glass drillings

Drillings in flat stones often have the shape of an `hour-glass', less often slightly conical. They are made with a solid auger of wood or bone tipped with a piece of flint (Mohs 7) or another hard stone (Hodges 2000, 107). During the process of drilling the tip will abrade into a more tapering shape, which causes a conical bore hole. After drilling half way into the stone, the stone is turned and drilled from the opposite side, which prevents the edges of the borehole from getting damaged when the bore bounce through the stone. This technique causes an hour glass form with a sharp edge inside the hole (Wright 2008, 144). Moreover it avoids high friction in the bore hole which accelerates the process of drilling. This technique was used at Tell Sabi Abyad. Examples are beads B02-8, B02-56 or B02-62. Occasionally the holes are smoothed by a third drilling, which is especially useful for beads. The sharp edge would otherwise damage the string soon.

3.4.2.4.3 Narrow cylindrical drillings

Noticeable at TSA are stones pierced with long narrow, cylindrical drillings like the obsidian pendant B02-09 (Mohs 5). It has a bore hole with a diameter of 0,3 cm and a length of 3,7 cm. The polished artifact is broken along the hole (Figure 27). A very similar pendant is B96-10, made of chalcedony (Mohs 6, 5 – 7), with a diameter of 0,35 cm and a length of 3,1 cm. The hole is drilled from one side with a slender and from the other side with a less slender drill. The pendant was broken during drilling, just before the two holes would have met. This is a characteristic moment for breaking either the bore or the stone, because at the last bit the material suffers the strongest pressure. It is astonishing that both

pendants were completely finished before starting to drill. Even the surface was polished. The drilling would have been easier and safer if it had been done before finishing the final working process. Thicker side walls would have provided more resistance against the pressure, and inaccuracy in the direction of the drilling would not have led to perforation of the side walls. Moreover the time consuming work of grinding and polishing would not have been in vain if it had been done after boring. In the Neolithic the work process was already practiced in this sequence. It started with flaking a nodule, followed by rough grinding, perforation, further grinding and in the end the object got its final polishing (Wright 2008, 140). But what kind of bore did the LBA craftsmen use for such slender drillings?

3.4.2.4.4 Experiments concerning slender drillings

Diederik Pomstra did some drilling experiments to create holes with diameters less than 0,4 cm. It turned out that drilling with an abrasive is not successful due to the small amount of sand which can be placed between the drill point and the stone. More successful was drilling with a copper thread fixed in a wooden stick, which he rotated within his hands. After drilling for one minute the tip was worn and had to be sharpened and hardened by hammering it flat. Within a few minutes he drilled a hole of 0,3 cm deep. Improvement of this method could be a bore tip made of the tougher bronze and using a bow drill in order to fasten the speed of the drilling. Imaginable is also a slender wooden stick with a hard point as it is used in the Indus Valley for penetrating carnelian (Aruz 2003, 395). For answering this question analysis of the work traces in the bore holes and further experimental investigation would be required.

I conclude that beads must have been processed on the tell. Different techniques with different kinds of bores were applied. The long and narrow holes must have been performed with a metal bore of copper or bronze which could have been equipped with a stone tip or a wooden/bone bore with a solid point. The two broken pendants suggest, that the craftsmen were experimenting how to drill

long slender holes. Bow-drills with microlith drill bits were probably already in use in the PPNB (Pre-pottery Neolithic B) in the Near East which fastened the drilling process considerably (Rosen 2012, 247).

I conclude that the beads were pierced with different drilling techniques. The technique depended on the size of the hole and probably on the skill of the craftsmen.

4 Sources of raw materials

4.1 Shell

Twelve different types of mollusks could be identified on Sabi Abyad. They comprise local freshwater shells and exotic shells from the Mediterranean or Red Sea, which implies that they were imported from distant places hundreds of kilometers away. The distinction between the Mediterranean and Red Sea cannot always be made as some sorts of shells live in both waters. Dentalia (B96-23), Cowrie (B97-41, B01-30), Glycymeris (B02-10), Conus mediterraneus (B91-22B, B03-74), Aconthocardia sp. (B92-22A), Thaise sp.(B03-60, B97-21), Strombus spp. B02-67 and Columbella (B02-52) shells derived from the Mediterranean (Figure 29). The Strombus spp. B02-67 is found as a copy made

Figure 28: Faience shell Strombus spp. B02-67 (Sabi Abyad archive)

of faience only (Figure 28). Dentalia and Strombus spp. can originate from the Red Sea as well (Bruening ,www.fosa.nl). Only Unionidae (02-34), Nassarius sp. (B98-16, B04-60, B92-15, 17) and Melanopsis sp. (B02-13) are freshwater mollusks out of the region.

Figure 29: Columbella shell B02-52 with incisions (Sabi Abyad archive)

Figure 30: Pierced Melanopsis sp. shell B02-13 (Sabi Abyad archive)

One Oyster was encountered which could be a fossil from a nearby lime bed (B02-55). The mollusks Unionidae, Nassarius sp. and Melanopsis sp. are local freshwater shells from the Balikh River (Figure 30). Different kinds of fossilized shells like for example an oyster were collected from the nearby lime bed and

Figure 31: Pierced local Oyster B02-55 (Sabi Abyad archive)

fashioned or given unmodified into the graves (V98-34, B02-55) (Figure 31). I received this information from Dr. Rer. Nat. Canan Çakırlar in Groningen.

4.2 Local stones

I consider stones which can be obtained within a day journey as local stones. The closest source of stone is a Marl deposit, just on the opposite side of the river Balikh. The nearest beds of limestone are located within a distance of 3 km and gypsum beds within a distance of 6 km (Figure 32). Moreover sandstone and small amounts of flint and quartzite could be found in the Balikh Basin (Huigens 2010, 24). Additionally there was the river repository for pebbles of basalt and granite which were transported by the current from the Anatolian Taurus Mountains to the Balikh Valley (Huigens 2010, 27). These were small amounts only, but for bead production it could have been sufficient. Also implements from Neolithic layers were reused in the LBA. In the fill of room 3 (square M12/N12), re-used Neolithic axes were found along with hammers, sand and raw material likely for bead production (S03-796, S03-797, S03-799). Among the raw material were also semi-precious stones as band agate and a lump of faience. The Neolithic adzes made of dolerite and limestone were reused as tools. Bead production out of former implements is conceivable as well, because LBA beads were partially made of the same stones as Neolithic tools, which are basalt, dolerite, serpentinite, grandorite and chlorite (Huigens 2010, 26). Unfortunately there is no evidence for that.

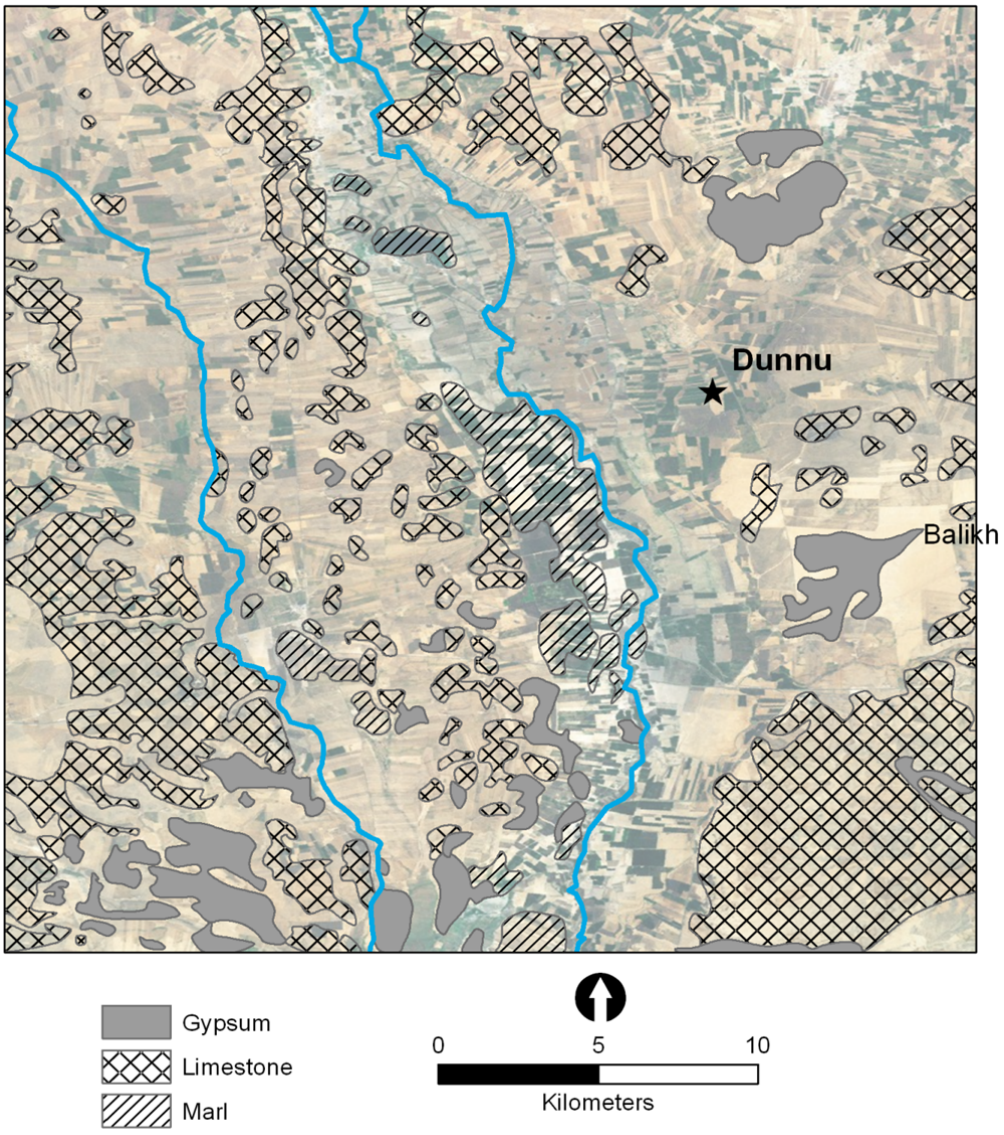

Figure 32: Mineral provenance Tell Sabi Abyad (Victor Klinkenberg)

4.3 Non-Local stones

All other materials must have been transported from distances more than a day journey. I define these as non-local. The nearest basalt sources are situated 50 km northwest of Sabi Abyad and another one 60 km southeast at the volcano Mankhar Gharbi. Further basalt sources along with dolerite are located between Urfa and Diyarbakir, near Gaziantepe and in the Anatolian Taurus Mountains

(Figure 33). Even the nearest ones are more than 100 km away (Huigens 2010, 27). Serpentinite can be found north of Latakia and in the Taurus Mountains, over 200 km away. Further sources are located in the Pontus Mountains (Huigens 2010, 28). Chlorite appears in the Taurus Mountains as well. Grandorite could derive from the region of Malatya, about 200 km north of Sabi Abyad (Huigens 2010, 28). Sources of hematite and obsidian are the Nairi countries on the Armenian plateau (Faist, 2001, 67).

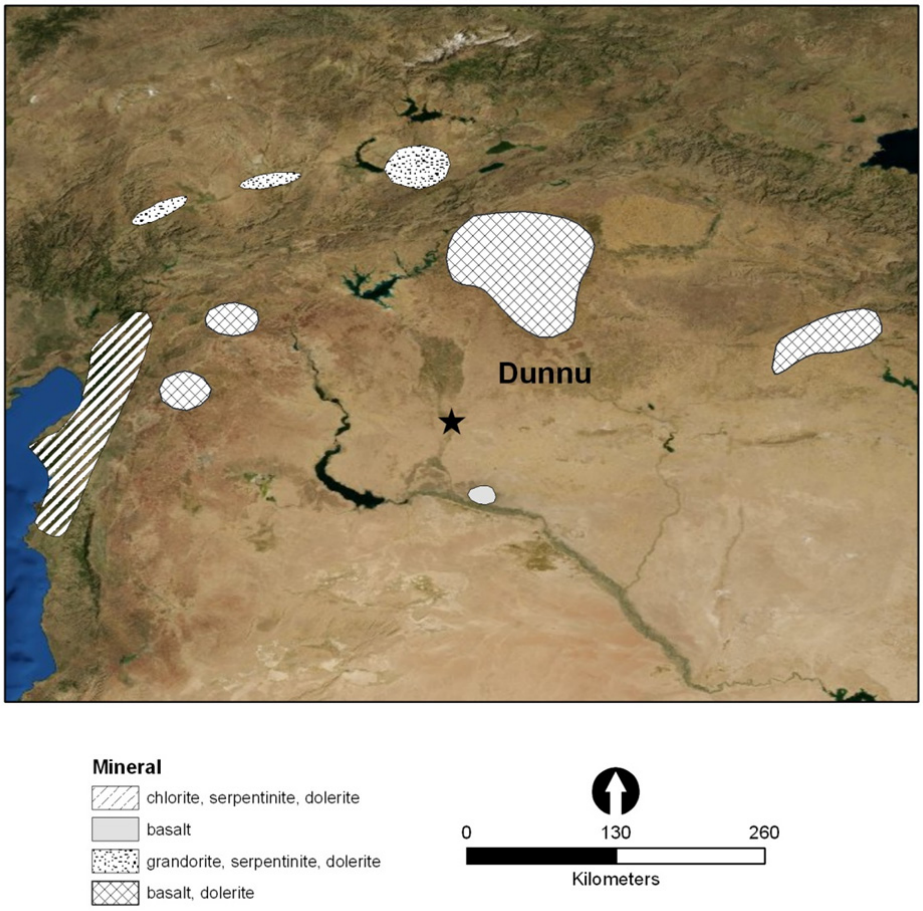

Figure 33: **Mineral Provenance Tell Sabi Abyad** (Victor Klinkenberg based on Huigens 2010. Fig. 17)

The acquisition of materials could have happened by expeditions or by trade. Tell Sabi Abyad lay on an important trade route from Assure to Anatolia, to the Levant and to Egypt which simplified obtaining finished products or raw materials.

4.4 Types of stone manufactured on the tell

Tell Sabi Abyad had a stone and likely a shell workshop, described in chapter 3.4. This does not imply that all sorts of stone were manufactured on the tell. Semi-finished products give an indication which kinds of stones were manufactured on the tell. On the room floors Q and 0 in square G9 a lot of semi-finished products and raw material were found. Local stone found on the floor was gypsum only and non-local stone sorts were shale, gabbro, dolerite, marble, gypsum/limestone/marble, iron hydroxide, soft stone with iron hydroxide, rock crystal, calcite crystal, and band agate. Although not found in the workshops the most frequent gem stone found on Sabi Abyad is the local limestone. Due to its provenance and properties local manufacturing of this stone is plausible. It has a hardness of about 4 on the Mohs scale, whereby it is easily workable with stone tools of flint (Mohs 7), quartzite (Mohs 7), gabbro (Mohs 6), basalt (Mohs 4-6) or sandstone (Mohs 5); but hard enough for wearing it as an ornament. I conclude that local and non-local stones were fashioned in the jewelry workshops and the raw material must have been traded or great efforts were made to receive these stones by expeditions. It cannot be established any more whether also manufactured stones reached the tell. Stones which were not found as semi-finished products were amazonite, alabaster, carnelian, chlorite, chalcedony, hematite, and a jasper-like stone. It is conceivable that there was a local production as well as an import of finished stones.

4.5 Types of shell manufactured on the tell

In house H10 a cluster of 216 white shells with similar shape was found. Most of them are river shells belonging to type Nassarius sp., which is a local fresh water shell. Three shells are not identified. Most were pierced through the lower, thicker part so that they could be stringed (V99-34). It is highly evident that these shells were pierced and integrated in jewelry locally.

From the evidence it cannot be concluded that all shells were worked on the tell. Others may have been imported from the Mediterranean or Red Sea as manufactured article. Often shells were collected which have already a natural hole caused by animals or wave action, so that drilling was not required. I received this information from Dr. Rer. Nat. Canan Çakırlar in Groningen. Moreover Dentalia shells could be thread without drilling as they have a hole naturally. Whereas they were plenty in the Neolithic, in Middle Assyrian times they were scarce. In addition to being pierced, the mollusks are often also modified on the surface. The apex is frequently smoothed and the body can be decorated with incisions (B02-52).

The evidence indicates that local shells were manufactured on the tell. Likely exotic shells were imported as finished products.

5 Typology of the jewelry

There was a wide range of jewelry types at Tell Sabi Abyad: beads, pendants, amulets, bracelets, rings, earrings, pins, combs and applications for garments. I will analyze them consecutively in the following paragraphs.

Spherical (type 1)

Barrel (type 2)

Melon (type 3)

Short cylindrical (type 5)

Biconical (type 4)

Rounded oval (type 13)

Flat oval (type 17)

Flat biconical (type 28)

Figure 34: Typology of beads (Sabi Abyad archive)

5.1 Beads

The various materials and shapes of beads are investigated in this section. All necklaces consist of beads, which can be made out of local- or non-local stones,

mollusks, clay, faience, glass, gold (BN02-15) or bone (B97-52, B03-62a, I07-51). All beads are pierced lengthwise for suspension on a perishable thread. In face of the numerous beads and necklaces in situ it is likely that strings were entirely covered with beads.

The **stone beads** vary considerably in hardness and feature. So far 28 different sorts of stones have been identified, occurring in many variations. The non-precious stones are much more abundant than the precious ones. Various sorts of lime stones and basalt are very common, whereas the more precious stones like rock-crystal, carnelian (B99-47, B04-14), serpentinite or jasper are very rare (see table 9.1 Sources of stone). The most common shapes of stone beads are spherical, barrel, melon, short cylindrical, cylindrical, rounded oval, flat oval, biconical and flat biconical. (Figure 34) Figurative stone beads are seldom, but do exist for example in shape of a duck-weight (B98-24).

Small **mollusks** were pierced for stringing if necessary; this was not required for shells with holes caused by animals or Dentalium shells with a natural hole lengthwise.

Clay beads can be baked or unbaked and appear in different shapes, like the flower type 11 (B02-07) or the flat biconical type 26 (B02-15) where the fingerprints of the production are still visible. The piercings were made with a stick. In total 17 clay beads were found. For seven of them it was not determined whether they are baked or unbaked. One baked clay bead out of seven is found in grave context (B99-03 in BN-99-12). The three unbaked clay beads are not found within a particular context. It is not possible to conclude whether unbaked clay beads were linked to a particular context.

Faience beads are plenty and appear in modest or quite elaborate forms. They can have a bright blue glaze (B99-44) or may have gold inlays (B99-47). They can be shaped in form of objects like frogs, pomegranate, seals or phallus symbols (B02-46, B02-47,BN02-15, B91-22).

One bead is a copy of a 2.4 cm long shell called Strombus spp.(B02-67) and another one is a replica of a Nassarius sp. (B98-25) (Figure 28).

Glass beads are very rare and of small size (B97-53).

The **golden beads** are hollow and made of thin gold plate. They were fashioned as a cob, a flower or a pumpkin.

Beads of bone are quite seldom on Tell Sabi Abyad. They can be round or cylindrical with parallel incisions on the surface (B91-24b, B91-13, B02-16).

Section 9.2 summarizes the typology of beads.

5.2 Pendants

In contrast to the beads, the pendants are larger and have a piercing on one side only, so that they protrude from the necklace. In general pendants are made out of the same materials as the necklaces; a few consist of bronze (M02-62, M02-63).

One pendant of a green/black stone, likely serpentinite, in shape of a cylinder seal was found. It is pierced with a small hole of 0,2 cm diameter across the very upper part of the cylinder so that it is hanging when it is strung. It is likely that this seal was worn as a pendant. Incised is a typical Assyrian scene with two persons in long dresses, one standing, one sitting and facing each other. Above them a sun is engraved (Z96-02).

Stone pendants can be quite heavy and large, so that it is sometimes difficult to decide whether they were used as ornaments or fishing weights, especially in case they were found out of context. This sort of pendants consists of unmodified flat stones with a short drilling through the thin side. It is performed from two sides with a solid, stone auger. The hole is cone shaped on both sides. (B02-96, B02-62)

Pebbles were used as pendants as well (Figure 26). B02-14 is a pebble which is drilled with a hollow drill.

Only two golden pendants were found on Tell Sabi Abyad. One is a spherical fragment with granulation (M02-81). The 21 tiny beadlets have a size between 0,2 – 0,7 mm only. The original shape of the item can be concluded by comparison to a golden granulated pendant from grave BN98-01 (Akkermans 2008, figs. 3, 11) (Figure 7 and Figure 8). The hollow sphere is decorated with the same triangle design.

The second pendant is a hollow cylinder with two suspension loops crosswise on the top (Figure 13). The body might have been decorated with granulation as well because triangles with remains of beadlets are visible on the body. They might have been abraded by wearing, but more likely they are ground systematically, as beadlets have vanished from less prominent parts as well and the beadlets on the suspension were ground in shape of a roof.

The pendants are parts of the necklaces, so it is plausible that they occur in the same materials. If they were always integrated in bead strings or were worn solitary on strings is not detectable any more.

5.3 Amulets

Amulets with piercings were used as ornaments. The amulet in cremation grave BN02-15 is fashioned like a mask with two eyes, indicated by two shallow drillings on the front side and a drilling for suspension on the back (Figure 35). The scarab in grave BN02-15 with the depiction of a Horus falcon and an Ureaus snake might have been worn not only for their spiritual forces but also for prettiness as part of a chain (Akkermans 2008, 253).

Figure 35: Mask shaped amulet (Tell Sabi Abyad archive)

5.4 Bracelets

Bracelets are made up of bronze, iron or bone (Figure 36). Bronze bracelets are the most common and iron and bone ones are rare. There is only one bone bracelet which is fragmented and not very well documented on the object form (SAB88-107 in BN88-03). It was found in grave context and consists of 6 fragments of one half of a bracelet. The remains are 5,6 cm long and have a diameter of 0,5 cm (Hattum 2012, 35). Four iron bracelets were recovered on

Figure 36: Bronze bracelet found in an oven (Sabi Abyad archive)

the tell. Two were arm or ankle rings found together in a burial jar of a cremation grave (M98-136, M98-137.) The two others were wrist bracelets found out of context (M96-46, M97-009).

Bracelets can be worn on the wrist, the upper arm or the ankles. The last two have larger diameters than wrist bracelets. The bronze wrist bracelets are the most common ones. Bracelets can be closed rings or open with overlapping ends allowing easy adjustment of size. Especially an upper arm ring must fit very well to avoid dropping down.

5.5 Rings

Rings are preferably made of bronze, but rings of iron, tin or gold do exist on a small scale as well. The bronze rings are closed or spiral shaped with two open overlapping ends (M02-21) (Figure 38). The ends can be tapering and accurately bent against each other (M99-64). Most rings are plain with an oval profile, made of one solid piece; others consist of two twisted wires (M99-25). The closed ones

Figure 37: Bronze ring with 'head' M02-54 (Tell Sabi Abyad archive)

Figure 38: Open bronze ring M02-21 (Tell Sabi Abyad archive)

could have been finger or toe rings, but cannot have been earrings because soldering a ring at the ear is impossible due to the required high temperature. Open rings can be worn on the fingers, the toe or in the ear. Some rings have sizes somewhere in between ring and bracelet (M03-65). They might have had functioned as a pendant on a leather string (BN96-05) or an attachment on cloths (BN01-05). Due to heavy corrosion the cross sections are sometimes inexplicit, but as far as they are identifiable the massive rings have a round or oval cross section. Extraordinary are two bronze rings which resemble modern signet rings by their wide, flat ´heads´ (M02-54, M03-18) (Figure 37). The rings might once have carried an engraving which is not detectible anymore. One of the rings is open at the backside, which makes it adjustable. The other one is unclear because it is a fragment only. The golden rings are technically more elaborate and delicate, whereby thinner plate could be used and precious material could be saved. The fragments of golden rings are not massive, but

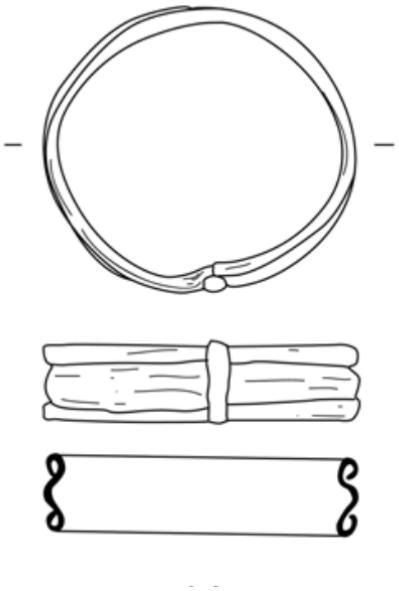

Figure 39: Folded gold ring from grave BN98-01 (Akkermans and Smits 2008, 259)

Figure 40: Folded gold ring from grave BN 02-15 (Sabi Abyad archive)

made of thin plate with rolled up rims, which do not only function as an ornament but give stability to the fragile ring (Figure 39 and Figure 40). Rings with the combination of two different sorts of metals or with stone settings have not been found.

Rings show a great deal of variations concerning material and skillfulness. They could be finger-rings, pendants or maybe ornaments worn on a belt. The open rings could have been earrings as well.

5.6 Earrings

Figure 41: Silver earring with golden ornament M03-61 (Sabi Abyad archive)

They are made of bronze, gold and in one case of a combination of silver and gold. (M03-61) (Figure 41). Earrings cannot always clearly be distinguished from rings. Based on their shapes or positions on the skeletons, merely eight earrings can clearly be identified. Two are of bronze; one of these is covered with a gold

layer and has a thicker part like a bead (M03-69). The earring is an open loop like M03-61.

The golden earrings form the largest fraction of the earring assemblage and witness very high technical skills in metallurgy. They are crescent shaped, hollow and fabricated out of thin gold plates. The body and the suspension were made out of one single plate of gold. The plate was cut in form, hollowed and soldered along the short side of the crescent only. Due to the fact that the form had to be very accurate it is likely that a template was used. After hollowing the body and folding the hanging, corrections were hardly possible. The body is decorated with 3 sets of golden rings. Each set is made of three thin golden wires. The intersection between the body and the suspension is decorated with golden rings as well (M99-65, M02-53). Presumably the thin wire of the suspension could be plugged into a hole in the tip on the other side which avoids losing the precious earring (Figure 42).

Figure 42: Hollow, bow-shaped earring M02-53 (Sabi Abyad archive)

The silver earring with a hollow, golden ornament (M03-61) is open at the top, so the earring must have been clamped in the earlobe. A piercing in the ear was

not necessary but it would have been quite painful. Maybe the tips were covered with small pieces of leather, but there is no evidence for that.

5.7 Labrets or tokens?

Some objects are short, round plugs with a wider diameter on one side. They are found in middle Assyrian context. S03-886 derives from the cremation grave BN02-15. The objects can be made of clay or stones like for example dolerite or gabbro. They have a diameter of 1,2 – 1,4 cm at the narrow part and 1,6 cm at the wider head and are about 0,9 -1,3 cm high (O02-169, S03-886) (Figure 43). Their function remains unclear, but they could have been labrets or tokens. Even though found in Assyrian context these kinds of labrets derive probably from the Neolithic.

Figure 43: Labret or token from clay (O02-169) (Sabi Abyad archive)

5.8 Needles and pins

Numerous fragmented pins were excavated on Sabi Abyad. They consist mainly of bronze and very seldom of bone (I98-1). They vary considerably in shape and size. They can be thin or thick, long or short; can have an eye or a knob. Due to their bad state often the original feature cannot be determined anymore. In view of the various designs, they must have had different functions.

Some look like big sewing needles with an eye bended in the tapering end, a length between 12 and 15 cm and a diameter of approximately 0.7 cm (M98-49, M98-53, M98-56). Due to corrosion, the diameters cannot be measured exactly anymore.

Another type is the `toggle pin´ which is pierced and has a spherical knob. They were used to fasten garments. The function of the knob was to prevent the needle from gliding through the tissue (M98-88). Maxwell-Hyslop suggests for an Early Dynastic (3000- 2750 BC) pin with a hole, that the piercing was used to place a metal ring in the hole. In that a thread was fixed for fastening a bead or a seal (Maxwell-Hyslop 1974, 12). More likely is that a string with a stopper was fastened in the hole. The stopper avoided injuries from the sharp tip of the needle and prevented the needle from sliding out of the cloth. It was undoubtedly very embarrassing if garments loosened accidently. Cuneiform texts depict the loosening of a pin which holds the garments as a metaphor for sexual intercourse, especially in combination with marriage (Wiggermann 2010, 52). Toggle pins with knob are very rare on TSA, maybe due to bad preservation. Often only the tip is found, but plenty of small bronze pieces, which might have been knobs.

5.9 Bronze object

It is a disc shaped object with a diameter of about 5 cm (M02-83). The knob on the front was created by battering from the rear and a loop was soldered on the backside. In the center of the knob there is a piercing. It is not clear whether the object was used to fix the garments by pushing a needle through the loop and the cloth or if it was used as an application which could be mounted by yarn on the fabric (Figure 44).

Figure 44: Bronze object M02-83 (Tell Sabi Abyad archive)

5.10 Application for garments

Object B02-55 has a size of 2,8 x 1,7 cm^2, is crescent shaped and has 3 drillings on the shorter side(Figure 31). It is made out of an abraded Oyster. In view of abrasion on the margins the oyster might have been used earlier as a tool. The secondary function of the object was decorative. This is very unlikely a pendant, because then 2 bore holes would have been sufficient for suspension. Probably it was sewn on garments by using the 3 holes. Neither the context nor other similar artifacts provide us with further information concerning the function of this unique object.

5.11 Combs

Six combs were recovered in the LBA layers of Sabi Abyad. They vary in design and size, which indicates different functions (Hattum 2012, 30). The combs have been investigated in detail and drawn in the thesis of Ijk van Hattum. They will be mentioned here only shortly because two of them are likely to be ornaments whereas the others belong to the implements (Figure 19). Their function is not always easy to verify. They can have been used for combing hair, as an instrument for processing wool, as a hair ornament or for ritual purposes. Rijkelijkhuizen suggests a function as an implement to prepare the deceased for burial or cremation. (Rijkelijkhuizen 2011, 200 in Hattum 2012, 54). It is more

conceivable, that combs found in grave context were personal possessions which could be hair ornaments or implements. However two combs found on the tell are likely to be ornaments. They are pierced through the upper part and are of small dimensions. One has the size of 2,7 x 2,7 cm^2 and the other 2,5 x 2,7 cm^2, which is too small for a serving as an implement.

6 Use of jewels in comparison with other Middle Assyrian sites

6.1 Who wore the jewels?

Graves and images provide evidence that children, males and females wore jewelry. Unfortunately in many graves of TSA and Aššur the sex of the buried persons is not determined, and accordingly often the ornaments cannot be assigned to gender.

Children

Children were encountered with bronze anklets, 6 open bronze rings around the pelvis and with beads of stone, shell, clay and faience. One child wore an iron ring on the thorax. Children's graves in Aššur yielded moreover bracelets, finger rings and one single bead of gold.

Beads and bronze rings are the most common jewelry type in children's graves.

Men

Only one grave on TSA gives evidence what kind of jewelry was worn by men. The man was found with an iron ring on his left hand and a needle near his cervical vertebrae (BN02-03).

A relief on the cult pedestal of the god Nuska from the Ištar Temple in Aššur provides further information about men's jewelry. Tukulti-Ninurta I wears an earring and a bracelet, which are both ornaments, probably made of metal (Figure 45). There is no evidence for men wearing necklaces in Middle Assyrian times, whereas this became very common in Neo Assyrian times. It is in Neo Assyrian times only, that we get good evidence from reliefs about the abundant jewelry which was worn by men.

Figure 45: Cult pedestal of the god Nuska. Tukulti Ninurta I with earring (Staatliche Museen zu Berlin)

Women

The female BN03-11 on Tell Sabi Abyad wore one earring, four rings on one hand and toe rings on both thumbs. Plenty of beads made of stone, shell and bone were encountered beside her thorax (Figure 17). The burial soil yielded a cylinder seal, a stone pendant, an earring of silver and gold and an iron ring. We get more information about the female use of jewelry from Aššur. The two skeletons in tomb 45 were likely two female priests from the adjacent Ištar temple (Musche 1992, 176). They were embellished very richly with different types of ornaments (Figure 46).

One had a heavy necklace of square shaped gold and Lapis lazuli elements, whereas the other woman wore several chains consisting of colorful precious stones (Haller 1954, 125ff) (Figure 49 and Figure 50).

The head ornaments from tomb 45 and from Tell Rimah were encountered only in connection with women yet.

Figure 46: Earrings from tomb 45 in Aššur (Harper 1995, pl. 11)

The variations in wealth mirrored by the amount of jewels are considerable. The wealthiest graves on Sabi Abyad are the two cremation graves, whereas the wealthiest graves in Aššur are the inhumations in tomb 45 with two adult females. The graves are rich in relation to the amount of jewelry, the exotic items, the elaborate objects and the precious materials like gold and iron. Items like the scarab and the pomegranate show connections with western regions.
I conclude that men, women and children wore jewelry, but it is likely that head ornaments were worn by women only. There is no evidence for men wearing necklaces consisting of beads. Iron, silver and gold occur rarely in graves, whereas bronze rings and necklaces made of beads are most common.

6.2 How were jewels worn?

The jewelry on the skeletons allows a good reconstruction of the part of the body where they were worn during the funeral and very likely during lifetime as well. This does not imply that a person wore all their ornaments simultaneously in daily life like in the grave. The funeral is an extraordinary event where a

particular rich adornment is conceivable. Jewels worn on the pyre which are likely no funeral gifts, give an indication how much a single person possessed during life time.

Most inhumation yielded less than ten jewelry items, only one grave yielded 19 items. Whole necklaces are counted as one item here. It remains unclear if a rich grave implies a rich person. In view of the rich graves of the two priests in Aššur it is tempting to assume that the rich endowment is linked to the status a person one had.

6.2.1 Necklaces and pendants

Necklaces with stone beads are very frequent in burials. Often they are found in situ around the neck, on the upper vertebrae or beside the thorax. Merely one figurine gives evidence how an ornament is worn. It wore a necklace around its neck (Figure 48). The oblique impressions indicate one sort of bead only which covers the whole string. In view of the rough completion it is ambiguous whether there was an intention to copy a definite kind of necklace. It is more a symbol for an arbitrary necklace.

Strings must not always have been covered all over with beads. Small numbers of beads or single pendants could have been worn on perishable threads around the neck. There is no evidence for bracelets consisting of beads.

It is difficult to identify the most preferred stones on Sabi Abyad because the majority of the gem stones has not been determined and sometimes not even counted. Based on the defined material it can be established that faience (n= 706) and shells (n= 279) were most often used in jewelry production and lime stones were by far the most frequent natural stones (n= 265). In much lower quantity hematite (n= 24), alabaster (n= 19), serpentinite (n= 13) and dolerite (n= 11) occur. All precious stones are even less frequent. Even wealthy graves show few precious stones, despite the presence of elaborate golden jewels. In the capital Aššur agate and lapis lazuli are quite common stones, whereas on Sabi Abyad agate is rare and lapis lazuli is completely lacking.

Figure 47: Mask of Tell Rimah (Cacan de Bissy 1980, pl.129)

Figure 48: Figurine F02-16, Tell Sabi Abyad (Sabi Abyad archive)

In Aššur necklaces with two or three strings held together by a “Schieber” were worn (Figure 49). There is no single example of this on Sabi Abyad. Regarding the amount of beads in some graves (BN-98-01 contained 455 and BN02-15 contained 1200 beads) it is conceivable that more than one necklace was worn on the pyre, but they were not connected by a `Schieber´ (Figure 50).

Figure 49: Woman's necklace from Aššur with 'Schieber' (Harper 1995, pl.10)

Figure 50: Necklaces from TSA (Sabi Abyad archive)

Tell Rimah and Aššur provide evidence for choker necklaces which lay tight around the neck. The little mask from Tell Rimah wore such a necklace (Figure 47). In Aššur the necklace in tomb 45, with alternating golden and lapis lazuli squares was very likely worn in the same way (Figure 51). I do not agree with Haller and Maxwell- Hyslop, who suggest an arrangement of a necklace lying on the chest (Maxwell-Hyslop 1974, 177; Haller 1954, table 28). The necklace was found on the upper vertebrae of the skeleton which point towards wearing it on the neck and not on the chest. Moreover the necklace elements have double piercings and the elements are squares which make a belt like design most logical. The 'dog collar' necklaces from Ur in the Early Dynastic period are a good example for such a necklace (Maxwell-Hyslop 1974, 6).

Figure 51: Reconstruction necklace of tomb 45, Aššur (Harper 1995, pl. 28)

The phallus necklaces found in the tower of Sabi Abyad have parallels in Aššur. Grave 748 yielded phallus beads as well (Haller 1954, 63).

In the LBA layer VIII, the nearby Tell Hammam Et-Turkman I yielded a similar stone assemblage like Tell Sabi Abyad. They consist of shells, limestone, faience, alabaster, carnelian and rock crystal. One bronze ring was given into a children's grave, but precious metals are missing (Meijer 1988, 654 - 657).

6.2.2 Head ornaments

Unlike Tell Rimah and Aššur, the evidence for ornaments worn on the head is on Sabi Abyad weak. One single head decoration was found in grave BN97-01. It consists of 114 white disk shaped beads. The mask from Tell Rimah has an elaborate head decoration consisting of different kinds of beads. It wears the same kind of chain around its neck as around its head. One female of tomb 45 in Aššur had very rich head ornaments consisting out of a chain around her head and a chain with five strings over her vertex (Figure 52 and Figure 53). A

decorated spiral ornament covered her forehead and the chains were embellished with golden pendants and precious stones (Musche 1992, 179).

Figure 52: Elements of head ornament of Aššur (Harper 1995, pl.9)

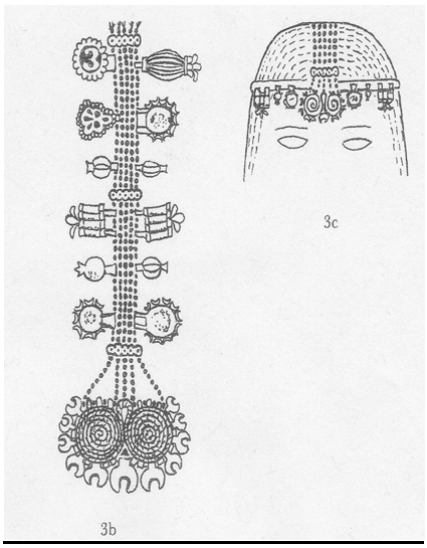

Figure 53: Reconstruction of head ornament of Aššur (Musche 1992, 179)

6.2.3 Earrings

Sabi Abyad yielded golden bow-shaped earrings which belong to a very common type widespread in the Near East not only during the Middle Assyrian period but earlier and later as well (Pecorella 2008, 130). The differences between contemporary bow-shaped earrings occur in the decoration. Whereas the earrings on Sabi Abyad are decorated with 3 groups of thin rings, the ones of Tell Barri are piled with u-shaped wires (Pecorella 2008,131 c) (Figure 54). From the capital Aššur different designs are known. Golden earrings from tomb 1 and 51 (Haller 1954, plate 20 and 37) (Figure 55) have the same design with the 3 groups of wires

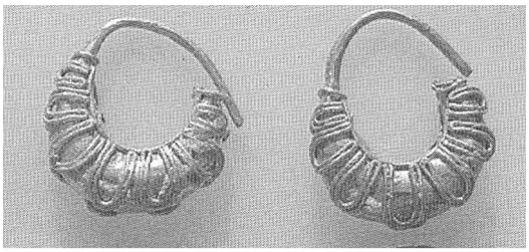

Figure 54: Bow- shaped earrings from Tell Barri
(Pecorella 2008, 131)

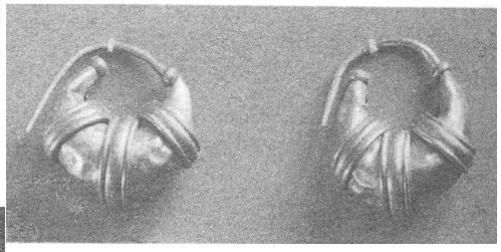

Figure 55: Bow- shaped earrings from Aššur
(Haller 1954, tbl.20)

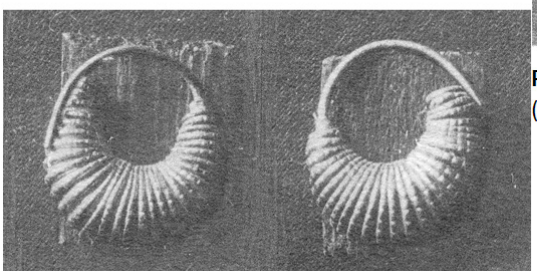

Figure 56: Bow-shaped earrings from Aššur
(Haller 1954, tbl. 36)

like in Sabi Abyad, but the earrings from tomb 45 are all over covered with wires and others are embellished with hanging pendants and stone settings on the face side of the earring (Haller 1954, plate 36, I,k,l,n) (Figure 56).

There are also differences in how the earrings were worn. In Aššur and on Tell Rimah several earrings were worn in one earlobe. One mask from Tell Rimah has four piercings on each ear and another one has three piercings on each ear which were likely designated to place earrings in (Cacan de Bissy 1980, 117; Gubel 2008, pl. 458) (Figure 58). A slightly earlier example is a figurine from Amlash with 2 piercings in each ear (Maxwell-Hyslop 1974, pl.126). On Sabi Abyad no single mask or figurine with pierced ears was found (F02-16, F92-12). Likewise the ear ornaments in graves give no evidence for more than one earring in each ear; in contrast to one female in Aššur (tomb 45) who wore 5 earrings in each ear, whereof the 2 lowermost were extraordinarily rich (Figure 57). Each of them consists of 3 hollow crescents with 3 hanging pendants of stone and on the

upper part a rosette covering the intersection of earring and earlobe. Sabi Abyad does not have any grave with such elaborate ornaments.

Figure 57: Reconstruction of earrings from tomb 45 in Aššur (Musche 1994, 183)

Figure 58: Mask with several earrings from Tell Rimah (Gubel 2008, fig. 258)

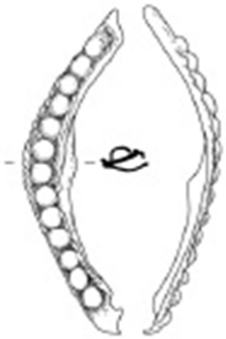

Figure 59: Golden crescent-shaped objects (M98-127 and M98-128) (Akkermans and Smits 2008, fig.3, no.9)

Two golden crescent-shaped objects might be emulations of the fashion wearing plenty of earrings on one auricle (Figure 59). They are about 4 cm long and 0.6 cm wide and each of them is decorated on one side with 13 golden humps. They might have decorated the margins of the auricles when worn (Akkermans and Smith 2008, 254).

Except for the pair of crescent-shaped earrings (M98-127 and M98-128), on Sabi Abyad single earrings are found only. The skeleton in grave BN97-01 wore one earring on her left ear and the female in BN03-11 wore one earring on her right ear. There is further no evidence whether earrings were worn predominantly left or right. The two cremation graves (BN02-15 and BN98-01) contained one single bow-shaped earring. It is striking that both cremation graves yielded one single bow-shaped earring only. Aššur and Tell Barri yielded pairs of bow-shaped earrings in inhumations. Maybe it was a custom specific to Sabi Abyad to give only a single earring into the grave.

The open spiral shaped rings can have been finger rings, toe rings or earrings. Evidence for such earrings can be found in a Middle Assyrian relief of Tukulti Ninurta I and on Neo Assyrian wall paintings.

6.2.4 Rings

Open spiral and closed circular rings were in fashion as finger and toe rings. The open rings beard the advantage, that the size could be modified easily by pressing the ring, thus not even a specialist was required for that work. They were worn on different fingers and toes and sometimes several on one hand or foot, but all the rings were worn on the left hand, never on the right hand. The right hand could have been the ´working´ hand. A ring can be disturbing and can be damaged during physical work with the right hand. For the feet left or right does not make any difference. Toe rings were detected on the left and the right foot.

Grave BN01-05 yielded 6 open bronze rings the sizes of which were definitely too large for a child of only 88cm tall. Maybe they were carried on a belt as they were spread around the pelvis and thigh. Supposedly these were funeral gifts. Very rare are rings made of two different metals. There is a ring of silver with a clamp of gold (M03-061). In one case two different rings were worn on one finger (M97-56). One ring consisting of limestone and one of bronze were corroded together and found on the same finger of the skeleton.

I conclude that Aššur and Tell Rimah yielded a wealthier jewelry assemblage than TSA. The stone assemblage in Aššur includes more precious stones and even stones which do not occur on TSA like lapis lazuli or are very seldom like agate and carnelian. Also distinct types, like head ornaments or `Schieber´ are missing on TSA. Moreover use of more than one earring per ear was not in fashion on TSA.

7 Conclusions

1. In this thesis I investigate the context of jewelry on Tell Sabi Abyad. The jewelry is out of context or it derives from three different kinds of context, which are graves, the tower or production spots.
2. It could be demonstrated that there is a difference between the jewelry assemblage in cremations and inhumation. The cremation graves were endowed wealthier than inhumations and in the light of the similarities between the two cremations; it is likely that cremation ceremony was associated with a particular jewelry assemblage. The assemblage included expertly made golden rings, pendants and earrings. Characteristic are also figurative and exotic items like Egyptian scarabs. No single inhumation yielded an Egyptian scarab. Both graves contained one single bow-shaped earring only which points to a ritual related to the funeral ceremony.
3. Jewelry was partly produced on the tell and partly received from other sources. Local and non-local stones and shells were processed on the tell. It remains unclear whether beside the manufactured ornaments also finished or semi-finished stone beads were brought to Sabi Abyad. The provenance of the stones shows how far reaching the connections were.

   Processing of bronze is questionable. The metal objects were presumably obtained from Aššur and other sides.

4. Inhumations give evidence how jewelry was worn. The skeletons were endowed with jewelry which was placed on the body or in the burial soil. The items on the body indicate that bronze rings were worn on the hand, the foot, the wrist, the ankle and on the ear. The finger rings were worn on the left hand only and one single earring was worn per ear.

There is some evidence how specific types of jewelry depend on gender. Female, male and children: everybody possessed jewelry. Abundant are necklaces of beads, likely worn by children and women only. From Aššur it can be concluded that women possessed the majority and most splendid jewels. Man owned bracelets, earrings, necklaces, rings and needles.

The phallus necklaces and comb pendants in the tower might have been possessions of prostitutes.

5. The jewelry assemblage on Tell Sabi Abyad has relations with that of other sites in the region. Tell Sabi Abyad was involved in an important network in west Asia, which is reflected in the jewelry assemblage. The items on TSA are embedded in the Assyrian jewel tradition, resembling in design jewels from sites like Tell Rimah, Tell Barri and Aššur. On the other hand, the Sabi Abyad assemblage features differences in wealth and variety of the jewelry. The Tell Rimah and Aššur assemblages were richer and yielded more different types of ornaments. Also the people seem to have been embellished richer than in the small village Sabi Abyad. They wore several earrings on one ear and the head could be embellished with stone chains.

Additional investigation of other sites in that region could shed light on gender specific use of jewelry. It needs further investigation to find out how exchange influenced the jewelry assemblage on TSA. Especially the figurative beads point to connections with Egypt and the Mediterranean.

Summary

This thesis investigates the Middle Assyrian jewel assemblage from Tell Sabi Abyad, which comprises a period of about 110 years from 1225 BC to at most 1115 BC. The dunnu with only 900 people belonging to it was quite a small village; however its significance was based on the location. Its significance is demonstrated by the fact that the dunnu was ruled by powerful, high ranking officials who were members of the royal family. The western provinces of the Assyrian empire were essential for agricultural production. Moreover the tell was not only situated close to the border of the Hittite empire, but was also located at an important trade route from the Levant, North Syria and Anatolia to Aššur. This is mirrored in the jewelry assemblage, which shows far reaching trading connections with raw stones, shells and manufactured products. There is evidence for stone and shell processing for jewelry purposes, but metal items were likely received from bronze working centers like Tell Brak, Chuera or Aššur. On Tell Sabi Abyad graves with cremations and inhumations were encountered. Often the graves yielded, beside various objects, jewelry. Not all graves contained jewelry and the graves with jewelry showed considerable variations in abundance. Two cremation graves have striking similarities in abundance and types of jewelry. Especially figurative, exotic types such as scarabs, frogs, duck weights and pomegranates are found in this context.

Jewels were worn by females, males and children and often given into their graves. Women possessed likely the majority, but also man owned bracelets, earrings, necklaces, rings and needles.

Striking is the find of two necklaces inside the tower of the fort. Some beads of the necklaces were in shape of phallus symbols and two small combs were likely pendants. Possibly these items belonged to prostitutes who lived in the tower, perhaps in captivity.

The design resembles that of other treasures from that region; but Tell Rimah and Aššur show more variety and more wealth than those of the small village Sabi Abyad. Jewels from Sabi Abyad are not exceptional but are designed in Assyrian style typical for that region and period.

Samenvatting

Deze scriptie analyseert de assemblage van Middelassyrische sieraden op Tell Sabi Abyad. De Middelassyrische bewoning omvat de periode tussen 1225 v. Chr. tot hooguit 1115 v. Chr. De dunnu met slechts 900 bij de tell horende bewoners, was een vrij klein dorp dat haar betekenis ontleende aan de bijzondere locatie. De westelijke provincies van het Assyrische rijk waren essentieel voor de agrarische productie en de tell lag vlak bij de grens met het Hittitische rijk hetgeen van belang was voor politieke en strategische doeleinden.
Significant was ook zijn ligging aan belangrijke handels routes van de Levant, Noord Syrië en Anatolië naar Aššur. Dat weerspiegelt zich in de sieradenassemblage, welke duidt op betrekkingen met verre streken door het gebruik van exotische goederen zoals ruwe stenen, schelpen en eindproducten. Op de tell zijn aanwijzingen voor steen- en schelpbewerking in verband met de productie van sieraden; metalen producten werden waarschijnlijk betrokken van dorpen waar brons werd bewerkt, zoals Tell Brak, Chuera of Aššur.
Op Tell Sabi Abyad werden graven met crematies en inhumaties aangetroffen die vaak naast andere objecten sieraden bevatten. Niet alle graven bevatten sieraden en de graven met sieraden laten grote variaties in aantaal en rijkdom zien. Twee crematie graven hebben een opmerkelijke overeenkomst in rijkdom en soorten van sieraden. Vooral exotische vormen zoals scarabeeën, kikkers of granaatappels komen in deze context voor.
Vrouwen, mannen en kinderen bezaten sieraden, en vaak werden deze ook in het graf meegegeven. Vrouwen blijken de meeste sieraden bezeten te hebben, maar ook mannen hadden armbanden, oorbellen, kettingen, ringen en spelden. Opmerkelijk is de vondst van twee kettingen met phallus symbolen en twee kleine kammen in de toren van het fort. Mogelijk zijn deze afkomstig van prostituees die in de toren leefden en misschien daar gevangen waren.

De sieraden op Tell Sabi Abyad lijken in ontwerp op andere sieraden in deze regio en periode, maar Tell Rimah en Aššur laten meer rijkdom en variaties zien dan het kleine dorp Sabi Abyad. Juwelen van Sabi Abyad zijn niet bijzonder maar vervaardigd in overeenstemming met assyrische stijlen, die typisch zijn voor deze regio in deze periode.

Bibliography

Akkermans, P.M.M.G. and F.A.M. Wiggermann, in prep. West of Aššur: The life and times of the Middle Assyrian Dunnu at Tell Sabi Abyad, Syria, in: O. Rouault and M.G. Massetti –Rouault (eds), *After the Empire: Crisis of the State and of the Monarchy in Northern Mesopotamia and in Anatolia (XIIIth – Xth centuries BC).* Lyon.

Akkermans, P.M.M.G. and K. Duistermaat, 1997. Of Storage and Nomads: the clay Sealings from Late Neolithic Sabi Abyad, Syria. *Paléorient* 22/2:17-44.

Akkermans, P.M.M.G. and G.M. Schwartz, 2003. *The Archeology of Syria: From Hunter-Gatherers to Early Urban Societies (ca. 16,000 – 300 BC)*. Cambridge University Press.

Akkermans, P.M.M.G. and I. Rossmeisl, 1990. Excavations at Tell Sabi Abyad, Northern Syria: a Regional Centre on the Assyrian Frontier. *Akkadica* 66, 13-60.

Akkermans, P.M.M.G. and E. Smits, 2008. A Sealed Double Cremation at Middle Assyrian Tell Sabi Abyad, Syria", in: D. Bonatz, R.M. Czichon & F.J. Kreppner (eds.), *Fundstellen – Gesammelte Schriften zur Archäologie und Geschichte Altvorderasiens ad honorem Hartmut Kühne*. Wiesbaden: Harrassowitz Verlag, 251-261.

Aruz, J. and R. Wallenfels, 2003. *Art of the first cities: the 3rd mill. B.C. from the Mediterranean to the Indus.* New York : Metropolitan Museum of Art ; New Haven [etc.] : Yale University Press.

Cacan de Bissy, A. 1980. *Sumer, Assur, Babylon,* chefs-d'œuvre du musée de Bagdad.

Duistermaat, K. 2008. The pots and pottery of Assyria: technology and organization of production, ceramic sequence and vessel function at Late Bronze Age Tell Sabi Abyad. *Palm* vol. 4, Turnhout : Brepols.

Faist, B.I. 2001. *Der Fernhandel des assyrischen Reichs zwischen dem 14. und 11. Jahrhundert v. Chr.* Münster : Ugarit-Verlag.

Gorelick, L. and A.J. Gwinnett, 1981. The Origin and the Development of the Ancient Near Eastern cylinder seal: A Hypothetical Reconstruction. *Expedition* 23(4).

Gubel,E. and B. Overlaet (eds), 2008. *Kunstschatten uit het oude Nabije Oosten en Iran : van Gilgamesh tot Zenobia Kunstschatten uit het Nabije Oosten.* Brussel : Mercatorfonds.

Haller, A., 1954. *Die Gräber und Grüfte von Assur*. Berlin : Mann.

Harper, P.O. and E. Klengel-Brandt, 1995. *Assyrian origins: discoveries at Ashur on the Tigris : antiquities in the Vorderasiatisches Museum, Berlin.* New York : Metropolitan Museum of Art.

Harrak, A., 1987. *Assyria and Hanigalbat. A Historical Reconstruction of Bilateral Relations from the Middle of the Fourteenth to the End of the Twelfth Centuries B.C.* Hildesheim.

Hattum, I.v. , 2012. *The worked bone assemblage from Late bronze Age Tell Sabi Abyad, Syria.* BA thesis.

Hodges, H., 2000. *Artifacts: an introduction to early materials and technology.* London: Duckworth.

Huigens, O.H., 2010. *Axes, Adzes and Chisels*. BA thesis.

Kohl, P.C., 1975. Carved Chlorite Vessels: A trade in Finished Commodities in the Mid-Third Millenium. *Expedition* 18(1).

Kohl, P.C., 1982. *The First World Economy: External Relations and Trade in West and Central Asia in the Third Millenium BC*. in Nissen H.J. and J. Renger (eds). 1982, Mesopotamien und seine Nachbarn. Berlin. 23-31.

Maxwell-Hyslop, K.R. , 1974. *Western Asiatic jewellery, c. 3000-612 B.C.* London : Methuen.

Meijer D.J.W. in Loon, M.N.,1988. *Hammam et-Turkman I : report on the University of Amsterdam's 1981-84 excavations in Syria.* Istanbul: Nederlands Historisch-Archeologisch Instituut; Leiden: Nederlands Instituut voor het Nabije Oosten [distr.].

Muscarella, O.W., 1988. *Bronze and Iron, Ancient Near Eastern Artifacts in the Metropolitan Museum of Art.* New York : Metropolitan Museum of Art

Nestler, G. and E. Formigli, 1993. *Etruskische Granulation*. Controofset, Siena.

Szuchman, J.J., 2007. *Prelude to empire: middle Assyrian Hanigalbat and the rise of the Aramaens.* Proefschrift University of California, Los Angeles.

Pecorella, P.E. and R. Pierobon Benoit (eds), R., P., 2008. *Tell Barri/Kahat, La Campagna del 2003.* Firenze: University Press.

Rosen, A.S., in Potts 2012. *A Companion to the Ancient Near East.* Oxford: Wiley-Blackwell.

Wiggermann, F.A.M., 2000. *Agriculture in the Northern Balikh Valley. The Case of Middle Assyrian Tell Sabi Abyad.* Istanbul: Nederlands Historisch-Archeologisch Institut.

Wiggermann,F.A.M., 2010*. Wein*, Weib und Gesang in een Midden-Assyrische nederzetting aan de Balikh. *Phoenix* no. 56, 1-2, 2010.

Wright,K.I. and P. Critchley (eds), 2008. Stone Bead Technologies and Early Craft Specialization: Insights from Two Neolithic Sites in Eastern Jordan. *Levant* 40(2): 131-165.

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List of Figures

Annex

Sources of stones

type	amount	Nearest sources
agate	2	unknown
alabaster	19	unknown
amazonite	5	unknown
basalt	5	60 km Mankhar Gharbi and 100 km in Taurus Mountains
calcite crystal	5	unknown
carnelian	5	unknown
chalcedony	1	unknown
chlorite	3	200 km near Mediterranen Sea
dolorite	11	100 km in Taurus Mountains
gabbro	6	unknown
granodorite	3	200 km in Taurus Mountains
granite/porfiry	1	local
gypsum	14	6 km
gypsum/limestone/marble	8	unknown
hematite	24	Armenian plateau
iron hydroxide concretion	2	unknown
iron hydroxide and soft stone	1	unknown
jasper-like	4	unknown
limestone	265	3 km
obsidian	9	Armenian plateau
porfirite	2	unknown
quartzite sandstone	2	unknown
quartzite	1	local
rock crystal	9	unknown
serpentinite	13	200 km in Taurus Mountains, Mediterranean Sea
sandstone	2	local
schali	1	unknown
turquoise	1	unknown
faience	710	unknown
shell	279	local, Mediterranean and Red Sea
clay objects	32	?
not identified	1031	?
necklaces	7	?
collection of shell beads	?	?
uncounted left overs	?	?
non definded fragments	?	?

Typology of beads

Type	Description
1	spherical
2	barrel
3	melon
4	biconical
5	short cylindrical
6	flat square
7	biconical
8	flattened oval
9	cob
10	lentoid
11	flower
12	pumpkin
13	rounded oval
14	pomegranate
15	frog
16	semi-spherical
17	flat oval
18	semi-spherical
19	cylindrical
20	nutshell

21	disk
22	shallow biconical
23	elliptical
24	facetted cylindrical
25	short facetted cylindrical
26	flat biconical
27	boat shaped
28	flat biconical
29	Flat rectangular
30	triangular
31	flat rectangular
32	ringed
33	cup
34	biconical incised
35	dateshaped incised
36	teardrop
37	biconical incised
38	geometrical incised
39	mask
40	duck-weight

The types flat biconical, flat rectangular and biconical are mentioned double. I kept this because these types are on the object forms also mentioned with 2 different numbers.

I added 40 – duck-weight