THE INTRODUCTION OF COTTON IN THE NEAR EAST: A VIEW FROM ELAM

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If you will take your map of Asia and trace the Euphrates River from the Persian Gulf a short distance up the river, you will come to the site of the ancient city of Babylon. In the days of Nebuchadnezzar, about 575 B.C., it was the most celebrated city in the world. All the trade of unknown India and China going westward flowed through its streets. Silk and cotton goods of finest texture were brought in by traders. But where did these beautiful and costly goods come from? (E.C. Brooks, The Story of Cotton, 1911: 20)

This article is presented as a continuation to the valuable study of S. Mo'taghed: *Textiles Discovered in the Bronze Coffin of Kitin Hutran in Arjan, Behbahan* (1982: 74-138).[1] Because S. Mo'taghed's study was originally written in the Persian language, a summary and commentary on the findings will first be presented.[2] The second part of this article is directly related to the significance of this discovery. The exceptional survival of cotton textiles from southern Iran, their conservation, and study invites the opportunity to reassess past views and offer new ones regarding the origins of cotton and its introduction into the Near East.

I. Context of the Find

In 1982 a burial was found in the vicinity of an area known as Argūn, the location of the ancient city of Arjan (Arrajān), an important agricultural and commercial emporium during the Sassanian and Medieval periods. Arjan lies between 7.5 and 11 km northeast of the present-day city of Behbahān, close to the border between the provinces of Khuzestan and Fārs. This region stood on an ancient crossroads, linking the Iranian highlands, Mesopotamia, and the Persian Gulf (Gaube 1973; 1986: 519). The Arjan tomb included a number of unique masterpieces of superior artistic value and rare craft. A bath-tub bronze coffin contained the skeletal remains of an adult male lying on his back. He was dressed in his most valuable garment, a cotton garment decorated with gold rosettes and disks. At his side lay an iron dagger decorated with precious stones and gold

[1] The present summary is based on the restoration work and study of the clothes by Susan Mo'taghed (Mo'taghed 1982: 74-138), head of the restoration and laboratory facilities at the National Museum of Iran. The author is most grateful to Ms. Mo'taghed for her warm reception and gracious help.

[2] The author is most indebted to Ms. Azita Kheradvar for providing me with an English translation of this article and to the guidance of professor D. Stronach, for reading and commenting on this paper. Needless to say, all errors are my own responsibility.

filigree. Finally, his right arm was bent in the direction of the chest, resting on top of a fabulous golden "ring" bearing emblems of Elamite power.[3] Afterwards, a lid was placed over the coffin and was firmly secured by ropes to the handles on the sides. Outside the coffin a number of precious items of ceremonial and functional value completed the catalogue of objects from the tomb. Four objects inside the tomb—the bronze bowl and candelabrum, a silver vase, and the gold "ring"—are bearers of an inscription in Neo-Elamite language reading: "Kiddin-Hutran son of Kurluš."[4] The chronology for the Arjan tomb falls within the last part of the 7th century BC and the beginning of the 6th century BC.[5] This chronology closely matches that of the late Neo-Elamite period or Neo-Elamite IIIA (ca. 647-585 BC),[6] which corresponds to the period between the sack of Susa and devastation of western Elam by Assurbanipal and the earliest date assigned to the Neo-Elamite tablets found at Susa.

An undetermined number of textile remains were folded in layers and placed inside the bronze coffin. Their original location and relationship to the skeleton and related funerary goods remain a matter of guesswork. Based on statements made by the first investigators many textiles were found crumpled at the end of the coffin, next to the bent feet of the skeleton.[7] There is also reference to some fragments of fabric folded beneath the skull (Tohidi and Khalilian 1982: 261). The existence of more textiles can also be deduced from the presence of large quantities of gold-made bracteates distributed in the vicinity of the skeleton's torso. They may have been originally sewn to a fabric covering the upper body of the deceased.[8] Examination of the quantity, type, condition,

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[3] Most materials found in the Arjan tomb remain unpublished. Of those published only the Arjan bowl has received full attention (see references below, n. 4). A full treatment of all the objects and an evaluation of their significance is the main concern of my forthcoming doctoral dissertation.

[4] A summary report of the excavation and finds from the Arjan tomb appeared in Persian in 1982 (Tohidi and Khalilian 1982) and complementary further analysis appeared soon afterwards in English (Alizadeh 1985). These and subsequent studies of the Arjan tomb and funerary related goods have placed the manufacture of this material between the 7th and early 6th centuries BC (see Vallat 1984; Alizadeh 1985; Sarraf 1990; Majidzadeh 1990; Stronach 2003, 2004a, 2004b, 2005; Alvarez-Mon 2004).

[5] A more precise chronology is presently available but its articulation here will take us into a long discussion of the material remains from the Arjan tomb, ultimately adding little to the matter under discussion.

[6] Following F. Vallat (1999: 29); Note, however, that late Neo-Elamite chronology remains problematic (Potts 1999: 295-301; Waters 2000; Tavernier 2003).

[7] At some point water crept into the tomb to a height of 55cm, just below the height of the top of the coffin. The coffin must have been elevated from the floor level allowing the lid to slide below—which is where it was originally found. It is also possible that water penetrated the interior of the coffin changing the original position of some of the objects inside.

[8] A total of 98 gold bracteates of three different types were found, 34 are 12-petaled rosettes, each having two small loops on the back for attachment. 14 of these were 2.5 cm and 20 were 2 cm in diameter. The remaining 64 bracteates were smaller, measuring only 0.7 cm in diameter (Tohidi and Khalilian 1982: 274). They are disc-shaped with a convex center around which two rows of granulation were applied. In contrast to the larger bracteates, the small ones have only one loop for attachment. The concentration of these bracteates on the upper part of the skeleton, their large quantity, and their differences in size and shapes, lend support to their

and properties of the textiles became possible after their transportation to the National Museum of Iran. Although mud was found intruding on all the fragments, those pieces that had originally been folded had resisted better the external environmental changes and the effects of chemicals from the bronze coffin.

II. Cotton Textiles from Arjan

A total of twelve pieces of textiles were initially collected (not including a number of carbonized fragments). Analysis of the fabrics identified the material as cotton (Mo'taghed 1982: 84).[9] No evidence of dyes was detected on the textiles. According to methods of manufacture and difference in the density of the threads, four different types of textiles were identified; only three of these could be unfolded and carefully studied.

	TEXTILE I	TEXTILE II	TEXTILE III
Material	cotton	cotton	cotton
Length	66 cm	Unknown (remains of 31 cm)	unknown
Width	ca. 43 cm	57 cm recovered	34 cm recovered
Thread[10] structure	Simple	Simple	Simple
Thread density	19-23 warps[11] per cm 20-22 wefts per cm	17-19 warps per cm 22-24 wefts per cm	21-26 warps per cm 26-32 wefts per cm
Directions of warp and weft	warp in direction of the frills, weft orthogonal to it	Unknown (because the fringes are gone)	Unknown (because the fringes are gone)
Spin direction	S shape twist, 2 ply thread (warp and weft)[12]	S shape twist	S shape twist, 2 ply thread (warp and weft)

Textile I is the largest and most beautiful sample of all the Arjan clothing remains (figure 1). It was found folded in a bundle that was 16 x 16 cm in size. After unfolding

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reconstruction as decorative bracteates probably sewn on an elaborate robe which decomposed completely.

[9] In between the layers, there were remains of a delicate dark brown string. This thread was completely dry, brittle and carbonized. It is made of twisting fibers with a texture like a rope. The width of each fiber is about 6 to 7 mm. The material could not be identified (Mo'taghed 1982: 103, fig. 44).

[10] A thread is a-string like length of material made up of two or more fibers or strands of spun cotton, flax, silk, etc. twisted together and used in sewing.

[11] Warp is the name given to the threads running lengthwise in the loom and crossed by the weft or woof. Weft is the name given to the threads woven back and forth across the warp.

[12] The direction in which the thread is spun, whether it is to the left (S spin, from upper left to lower right) or to the right (Z spin, that is from upper right to lower left). Barber suggests the difference lies in the way a right-hander handles a spindle and the ways the spindle rolled in a free suspended movement or, as in Egypt, down along the thigh (Barber 1991: 67).

and separation of the layers it was noticed that fringes and frills were completely preserved on two sides of the cloth. Since the middle part of the cloth had perished, only one of the sides of the cloth could be assessed with confidence to a length of 66 cm. Furthermore, the cloth supported completely distinguishable fringes which were decorated with frills supporting pairs of embroidered eight petal rosettes joined to the middle of frills between two untwisted wefts (figure 2; Mo'taghed 1982: 98); [13] Textile II was folded in 8 layers and laid inside a piece parts of which were completely carbonized (figure 3). The preserved remains supported fringes at the right angles but no trace of embroidered rosettes; Textile III had no fringes preserved (figure 4) and it was impossible to determine its original dimensions (Mo'taghed 1982: 118).

Based on the previous information, it can be stated that the Arjan coffin contained a minimum of twelve individual pieces of textiles, three of which were studied in detail in the laboratory. These textiles were all made in cotton and belonged to at least three different types of individual clothing. Textiles II and III are too damaged to give us any indication of their dimensions and function other than that they were made of cotton. Textile I, the piece with the frills and embroidered rosettes, measured 66 cm by a minimum of 43 cm. In addition, given the placement of bracteates inside the coffin, we have to include a fourth type of clothing decorated with golden rosettes and circular bracteates which originally must have covered the upper part of the body (figures 5 and 6). The assumption can be made that these individual pieces of textiles were personal garments and shrouds woven in cotton belonging to the individual buried inside the tomb.

Two main characteristics of the textile material found in the Arjan tomb are of utmost significance for the history of Elamite and ancient Near Easter textiles: the type of material used (cotton) and the type of recognizable clothing (a garment or shroud containing a fringe that included decorative embroidered rosettes and an upper garment containing golden bracteates). The ensuing discussion will concentrate on the first of these characteristics: the nature of the fiber (cotton) and its introduction into the Near East.[14]

III. Production and manufacture of cotton textiles

Three general aspects involved in the production of cotton can be said to have predetermined the geographical diffusion of this fiber and its associated craft. (1) Cotton is a shrub-like plant growing usually as a perennial which needs much water, moderate weather and heat. The high demands that the cotton plant places on specific climate and irrigation determines where this crop can be grown (Berger 1969); (2) The difficulty of having to organize and train a large labor force to break the soil, to sow and maintain the crop, and harvest the cotton is the chief factor restricting the production of cotton to agrarian based societies; (3) In addition to the physical hardship necessary to remove the cotton from the whole boll the technology of cotton differs substantially from that of wool in that it requires the ability to clean the fiber by separating the cotton from any

[13] The technique of making the rosettes seems to have worked by making petals by twisting a thread around a tiny bar and using a resin-like glue to hold the thread together. The same thread after 0.5 cm formed another spring for the second petal. The process continued until the flower was formed (Mo'taghed 1982: 56, pictures 39-43).

[14] A second part to this study dedicated to Neo-Elamite textiles and garments will be soon made available.

foreign matters including the seed (ginning); Furthermore, the spinning technique requires different types of spindles; "the hairs of cotton are so short and delicate as to require a special method of spinning, namely with a small, light spindle fully supported so as not to put weight on the half-formed tread and break it" (Barber 1991: 33; see also Grant 1954: 449). Thus, given the delicate nature of the fiber, tension is critical in spinning cotton, which is why spindles weighing an ounce or less are required.[15] In other words, a heavy spindle may be helpful with long staple wool (perhaps 100 to 150 grams) but is useless for spinning short fibers such as cotton, flax tow, or short wool (Barber 1991: 52).[16] In short, successful production of cotton presents a number of concrete geographic, climatic, and social challenges which determine where this plant can be grown.[17] This may perhaps explain why large scale cultivation of cotton in Mesopotamia or Iran does not seem to have taken place until the first millennium A.D.[18] and why its presence in the archaeological and textual records may reflect the existence of trade networks linking production centers with areas in Iran and Mesopotamia.

IV. On the origin and the spread of cotton in the ancient Near East

Cotton was produced by the domestication of fibers attached to the seeds of four cotton species, in particular those of the genus *Gossypium* of the mallow family (Smith and Cothren 1999: 16-17; Barber 1991: 32). Textual and archaeological evidence indicate

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[15] Using such equipment the hand-spinners of India were able to stretch a single pound of cotton into well over 200 miles of thread, a feat not possible on the best of modern machinery (see Barber 1991: 43 with references). The smallest spindle whorls on record, as small as 8 mm in diameter and under a gram in weight, were those used in the Middle East during the Islamic period (Barber 1991: 51).

[16] In the words of E. Barber: "it is just this measurement of weight that excavators have generally failed to publish" (Barber 1991: 52). A well kept record of spindle-whorls would provide valuable information about different types of thread and /or fiber used.

[17] Long before the arrival of the Europeans cotton was a well developed native crop of many cultures of the Americas, including the Maya, the Inca, the Aztec, and southwestern cultures of present-day United States. Archaeological evidence from Peru indicates that cotton was grown there since about 2500 BC (Bird and Mahler 1951/52, in Berger 1969: 103). The introduction of non-native cotton and slave labor by the first European settlers into the south of the United States and Brazil revolutionized world economic and social history (Berger 1969: 74-75). With the mechanization of the cotton industry, and the invention of the ginning machine in 1793, cotton became the number one textile throughout the world (at the end of the 18th century only 4% of the world's total textile consumption was cotton, a century latter this number reached 78.6 %; Berger 1969: 12).

[18]Cotton seeds have found in a 5th century AD context in the Sassanian city-oasis of Merv, in present day Turkmenistan. The city of Merv appears to have been founded by Cyrus the Great (559-530) when this region was part of the eastern Achaemenid empire (see http ://www.thebritishmuseum. ac.uk/ane/anereexmerv.html; April 2005). The earliest attested evidence for the cultivation of cotton in ancient Iran (Middle Persian *panbag; katān*; or in Isfahan *kolūza*) comes from the 10th century A.D. These sources mention the presence of cotton manufacturing centers throughout the country: Nīšapūr, Ray, Tabarestān, Amol, Jebāl, Isfahan, Suštar, Kūzestān, Tawwaz, and Azerbaijan. Among the most famous manufacturing textiles were the karbās cottons produced in Isfahan (Ehlers and Parsa 1989: 334-335). Five fragments of cotton textiles dating possibly from the 3rd century BC to the 3rd century AD wee found in the At-Tar caves (Fujii et al. 1996: 145; Fujii 1987: 217).

that this transformation took place in the Indus valley. This is confirmed by the presence of cultivated cotton remains in the third millennium BC sites of Harappa and Mohenjo Daro,[19] and in the second millennium sites of Mehrgarh, Shahi, Tump, Nevasa, Hulas, Chandoli, and Loenbar 3 (Gulati and Turner 1928; Smith and Cothren 1999: 21). Throughout the third and second millenniums BC cotton seems to have remained very much an exotic foreign textile in the ancient Near East. There is however one indication that cotton textiles made their way from India to the west at an exceptional early date. At Dhuweila, a site in eastern Jordan, fibers and impressions of Z-twisted yarns woven cotton fabric were found in a fifth or fourth millennium BC context (Betts et al. 1994). But it is most likely that the Dhuweila cotton was imported from elsewhere "perhaps from the Indian subcontinent" (Moulherat et al. 2002: 1399). Interestingly, a recent study of the textiles found in the eastern Iranian site of Shahr-i Sokhta ranging from the fourth to the beginning of the second millennium BC reveals a culture fully specialized in wool textiles with reduced inclusion of some vegetable fibers but no attestation of cotton (Good 1999).[20]

We have to wait until the first millennium BC to encounter the first secure attestations to cotton, both as a cultivated fiber and woven textile. A stone sarcophagus found below the floor of room 49, in the palace of Assurnasirpal II (883-859 BC) at Nimrud, contained the remains of two female bodies and stunning grave goods associated with the Assyrian queens Yabâ, the wife of Tiglath-Pileser III (744-727 BC), and Atalia, the wife of Sargon II (721-705 BC; George 1989: 29-31, Oates 2001: 83-84). Among these luxurious materials were the remnants of fabrics which, according to the most recent analysis, included seven linen textile fragments and one cotton textile fragment (Toray 1996: 199).[21] This earliest evidence to the presence of a cotton textile inside a royal Assyrian burial is most interesting since, according to Assyrian records, king Sennacherib (705-681 BC) is said to have introduced into the royal botanical garden the *işe naš šipati* "tree bearing wool" which "people pluck and weave as garments" (*CAD* 1956: I.217; Oppenheim 1967: 245). No further information is given as to the provenance or the specific name of the plant. Reference to a tree which bears wool seems to imply that the original name of the plant was unfamiliar to the Assyrians while allusion to a fiber which "people pluck and weave as garments" suggests that cotton-made garments were already known to the Assyrian royal house.[22] In addition, Sennacherib's statement

[19] This evidence may reach back to the Neolithic period if the cotton seeds found in Mehrgarh are indeed attributed to a compartmented building of period II. In view of this new evidence from Mehrghar some authors have suggested that cotton was perhaps domesticated in the Kachi plain of central Baluchistan, several millennia before the rise of the Indus Civilization (Moulherat, Tengberg, Haquet and Miller 2002: 1398). For an independent similar development in Africa see Chowdhury and Buth (1971).

[20] I.L. Good's doctoral dissertation, "the Ecology of Exchange: Textiles from Shahr-i Sokhta," is based on an analysis of 75 samples of fiber.

[21] A previous analysis of (the same?) textile samples from the sarcophagus failed to identify the presence of any cotton fabrics (Crowfoot 1995: 113-118; quoted in Oates 2001: 83).

[22] This is indeed confirmed by the previous reference attesting to the presence of a single cotton fragment inside the royal Assyrian tomb. This cotton fabric may represent the lasting remains of what used to be a single cotton textile or garment belonging to one of the Assyrian queens. Given that Sennacherib introduced the planting of cotton in the Assyrian royal gardens it is most likely that this garment or textile belonged to Atalia, mother or step-mother of

may also suggest a point of departure for the attempted small-scale cultivation of this exotic plant in the Near East. Large scale cultivation of cotton however must remain an improbable hypothesis given that no trace of a cotton garment industry is to be found in Assyrian records (Dalley 1991: 121). At the same time, this almost certainly implies that cotton arriving in Mesopotamia must have been imported.

Further references to cotton come from three independent literary sources: the Hebrew Bible and the Greek writers Herodotus and Theophrastus. Both Herodotus and the Hebrew Bible refer to the existence of cotton in the context of the Persian empire. According to Herodotus, after Egypt was subdued by Xerxes (486-465 BC), the Persian king amassed an army from all nations in order to take over Greece. Among these peoples were the Indians who "wore cotton (*tree wool*) dresses and carried bows of cane" (Herodotus, *Histories* VII: 65). The sole Biblical reference to cotton uses the word *karpas,* which is an obvious cognate of the Sanskrit word for cotton *kârpâsa*. According to the Book of Esther[23] a sumptuous banquet lasting seven days was offered at Susa "in the court of the garden of the king's palace" by the Persian king Ahasuerus, most probably Xerxes. Inside the court "there were white cotton curtains and blue hangings caught up with cords of fine linen and purple to silver rings and marble pillars, and also couches of gold and silver on a mosaic pavement of porphyry, marble, mother-of-pearl and precious stones. Drinks were served in golden goblets, goblets of different kinds, and the royal wine was lavished according to the bounty of the king" (Esth 1: 2-7, *RVS*).

It is noticeable that Herodotus' statement, not unlike that of Sennacherib (705-681 BC), makes a graphic reference to cotton as a *tree wool* while the Hebrew Bible refers to the woven textile by its original Sanskrit name. Arguably, one can imply that these two allusions to cotton refer to two different ways in which this non-native plant and its derivate woven product made their way into the ancient Near east. Sennacherib states he introduced the "tree" itself. Conversely, the reference in the Book of Esther refers to the original name of the fabric, implying direct link between the native Indian origin of the plant and the Persian court.

By the mid-first millennium BC the trade and demand of cotton may have intensified to the point that both Herodotus and the philosopher Theophrastus identify Egypt, and the island of Dilmun (present day Bahrain), together with India, as the locations were cotton was grown. According to Herodotus' remarks on India, " there are trees growing wild which produce a kind of wool better than the sheep's wool in beauty and quality, which the Indians use to make their clothes" (*Histories* III: 106-107). Herodotus writing in the 430s BC stresses the novelty of cotton and mentions that this exotic fiber was grown also in Egypt under the Pharaon Amasis (569 to 525 BC; *Histories* III: 47; III: 106). The Greek philosopher Theophrastus, who wrote probably

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Sennacherib, rather than to Yabâ, wife of Tiglath-Pileser III (for further comments on the death's of Atalia see Oates 2001: 83). According to A. R. George, "Atalia's interment fails between Sargon's accession in 722 BC and the completion of the new capital in 707" (George 1989: 31).

[23] The composition of the book of Esther may be as early as the fifth and as late as the second century BC. Because the book is set in the Persian Period and is concerned with the problems of a Jewish minority in the East it is probable that the book was composed in the eastern Diaspora (Tucker 1993: 198).

during the late 4th century BC,[24] and got his sources from "the occasion when there was an expedition of those returning from India sent out by Alexander" reports that cotton (*tree wool*) was grown in the island of Tylos (the Mesopotamian Dilmun/Telmun, modern Bahrain; Theophrastus IV. 7, 8).[25] Further evidence that cotton was cultivated in Dilmun at the time of the Persian empire is now confirmed by archaeobotanic studies (Lombard 1999: 178-179; Haerinck 2002: 248).[26] Most interestingly, and as in the case of the Arjan tomb, a bath-tub type coffin found at Qal'at al-Bahrain dated to the late Achaemenid period includes textile remains of what could perhaps be cotton fiber (Højlund and Andersen 1994: 415; Haerinck 2002: 246). In sum, taken altogether these sources imply that between the time of the Assyrian king, Sennacherib (705-681 BC), and the time of the Persian king, Xerxes (486-465 BC), cotton textiles may have become a well known luxurious commodity whose cultivation had spread from India to the island of Dilmun, and Egypt. In the context of the Persian Empire this is hardly a surprise since by the end of the 6th century BC Egypt, India, as well as the island of Dilmun were all under Persian political control (524 BC for Egypt; possibly ca. 521 BC for Dilmun; and ca. 513 BC for India; Olmstead 1948: 88, 145, Potts 1990: 351). The attestation of Indian travelers on their way to India around 500 BC receiving provisions from the Persian central administration underlines the type of long distance commercial networks supported by the Persian empire (Hallock 1969, tablet 2057).

V. Cotton in the Neo-Elamite period

It is within the context provided by the previous sources that the relevance of the cotton textiles found in the Arjan tomb should be evaluated. To begin with, the manufacture of the cotton textiles from Arjan broadly falls between 650 and 575 BC (Elamite IIIA). This date not only places the Arjan evidence squarely in between the time of the Assyrian king Sennacherib and the Persian king Xerxes but draws a demarcation line in the chronological timeline, opening the door to a number of general questions regarding trade routes and the participation of cotton in the history of Near Eastern textiles before the creation of the Achaemenid Persian Empire. In addition, it also indicates that cotton-made garments decorated with embroideries and gold bracteates were appropriate to the funerary context of a royal tomb. The association with elite goods also serves to emphasize both, the aesthetic quality and value of these garments as well as the privileged status of Kiddin Hutran, son of Kurluš.

It comes thus as a surprise to note that Kurluš, the father of Kidin-Hutran, is seemingly identified in the economic and administrative tablets from Susa as a merchant

[24] According to Classic sources, Theoprastus was born in 370 BC in Lesbos and like Aristotle was a pupil of Plato (Hort 1916: xvii).

[25] "They say that the island also produces the 'wool-bearing' tree in abundance. This has a leaf like that of the vine, but small, and bears no fruit; but the vessel in which the 'wool' is contained is as large as a spring apple, and closed, but when it is ripe, it unfolds and puts forth the 'wool,' of which they weave their fabrics, some of which are cheap and some very expensive" (Theophrastus IV. Vii.7).

[26] The presence of numerous small size spindle (1 to 1.8 cm diameter) suggest that short delicate fibers such as cotton were effectively weaved in the Island of Bahrein during the Tylos Phase (1st century BC; Lombard 1999: 178-179).

and/or emissary associated with *Unsak*[27] supplying wool and *kuktum* garments into the Elamite court at Susa (Scheil *MDP* 9: 16,4; 50,5; 127,6; Vallat 1984: 4). The fact that both father and son had direct association with both cotton and a type of garment described as *kuktum* does present an interesting tale of anecdotic proportions and a stimulating basis for further speculation about the possibility of finding traces of cotton textiles in the Neo-Elamite texts.

Before going any further, though, the reader should be alerted to the fact that, despite the apparent similarities between the etymology of the English word cotton and Elamite *kuktum,* any analogy based on meaning will be unjustified. Indeed, the English word cotton most certainly originated from the Arabic word *qutn* (via Spanish al-coton/algodon, French Provencal or Italian coton).[28] Nonetheless, at the other end of the etymological chain, there is the Akkadian word *kitû* with a variant *kidinnû/kitinnu* represented only in the Neo-Babylonian period.[29] In both cases, however, the fabric in question is identified as linen and not cotton (CAD 466: 1, 2; Oppenheim 1967: 250-251).[30] When and how the two threads of the etymological chain came to collide is, to this author's knowledge, a mystery.

The texts from Susa represent the bulk of neo-Elamite inscriptions which are roughly dated to the first half of the 6th century BC.[31] These texts contain an inventory of various commodities, weapons, tools, precious metals, and *kuktum* (garments) coming in to the palace from a diverse array of places. Although the locations of many of the places named in the corpus remain unknown, the bulk of the transactions appears to concentrate on locations scattered throughout Neo-Elamite territory (present day Khuzistan province) and includes places in northern Mesopotamia, the shores of the Persian Gulf (at Bushire) and Fārs (Henkelman 2003: 183; Potts 1999: 299). A non-exhaustive overview of the Neo-Elamite text from Susa reveals that hundreds of *kuktum* garments sometimes classified as blue, white, of quality, in color, and streaked or partly colored (?) are represented in the texts (Scheil 1907, MDP 9).[32] Interestingly, these same four kinds of

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[27] Following F. Vallat, *Unsak* is here understood as a personal name; still, we don't know with certainty who this *Unsak* was or from where the *Unsakean* people came from (see Vallat 1992); F. Vallat has suggested a possible association with the kingdom of Samati (Vallat 2000: 30; 2002: 4).

[28] The introduction of cotton into the European continent may have taken place with the arrival of Arab and North African populations in the Spanish Peninsula during the 10th and 11th centuries AD.

[29] According to Oppenheim the late Babylonian word *kidinnû/kitinnu* is "a foreign word in contemporary Neo-Babylonian texts denoting linen fabrics" (Oppenheim 1967: 250-251). W. von Soden suggests a possible Elamite loanword (1965: 472); see also H. Waetzoldt (1980: 584).

[30] A.L. Oppenheim presented circumstantial evidence to argue that the word *kidinnû/kitinnu* denotes two different meanings: a linen fabric and "a yarn and a fabric as well as a finished piece typically made of that fabric" (Oppenheim 1967: 250-251).

[31] The first group is an archive of 298-299 sundry clay tablets discovered on the Acropolis at Susa (Scheil 1907). The second group comprises seven texts found under the Apadana (Scheil 1911: 301-307, 309 B). There is a prominent figure in the texts, the supervisor *Kuddakaka*, indicating that the archive covers no more than one lifetime. For further references and discussion regarding the dating of these documents see J. Tavernier (2004).

[32] *Kuktum dabantina,* 'blue' (Scheil 1907, tablets 7, 23, 25, 53, 78, 90, 91, 93, 100, 109, 127, 225), *kuktum birmuna,* 'streaked or colored' (Scheil 1907, tablets 24, 29, 36), *kuktum*

kuktum garments (blue, white, of quality, and colored) are also represented in Middle-Elamite texts from the time of Šilhak-Inšušinak I (ca. 1150-1120 BC; Hinz and Koch 1987: 559). The individuals bringing *kuktum* garments to the court at Susa come from locations as distantly apart as Aiapir (in Izeh/Malamir; Scheil 1907, texts 29, 47, 101) and Rakan/Raga (around Persepolis; Scheil 1907, texts 61, 93; Vallat 1993: 227). This evidence, while partial and biased, reveals that *kuktum* garments of various colors and qualities were available to numerous peoples throughout the territory of greater Elam , i.e. Khuzistan and Fars.

But what exactly is a *kuktum* garment? According to Hinz and Koch, the word *kuktum,* is attested in Elamite during the Middle Elamite, Neo-Elamite and Achaemenid periods. In all cases it seems to refer to a type of finished upper shirt or coat (*ku-uk-tum/tu*$_4$ as in *MDP* 9 and Hinz and Koch 1987: 559). This by itself says little about the type of fiber but the simple fact that *kuktum* garments reach the Elamite capital from different parts of the Elamite territory and that the seemingly related Akkadian words *kitû/kititu* stand for linen should invite us to discard the possibility that cotton weaved garments may be represented in the Neo-Elamite texts.

Conversely, the presence of cotton-made garments in the Arjan tomb offers assured evidence of the elite status of this textile during the late Neo-Elamite period. This alone does not necessarily demonstrate the existence of a cotton trade network but implies that many other members of the Elamite elite may have sought access to such a quality and status signifier fabric. To further hypothesize, if cotton indeed arrived in Elam as a traded commodity its detection in the texts would depend on two main conditions: (1) that we know the form in which cotton was traded, i.e. finished as a garment, as a textile, or a raw fiber; and that (2) we know the terms describing these. Since, in general, words tend to survive better than cloth most research regarding this subject has followed a pattern of linguistic investigation. A.L Oppenheim summarized the complexities involved in identifying cotton when he suggested that "cotton fabrics...may have been referred to with designations still lost among the many unidentified technical terms used in our period to denote fabrics" (Oppenheim 1967: 245).[33] Yet, the fact that cotton was imported from far-away places implies that either the fiber or the fabric—with their own variable properties of strength, length, color and purity—rather than a finished weaved garment—which may have gone against traditional and local tastes and, ultimately, customized usage—were the subject of trade.

The presence in the Arjan tomb of embroidered petal rosettes decorating the fringes of textile I, in addition to 98 decorative gold bracteates decorating an original upper shirt garment, support our present knowledge of Neo-Elamite elite garments, further underlining the view that these garments may have been locally woven.[34] Thus, if I am correct in suggesting that the cotton from Arjan made its way into Elam in a raw-

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purnibe, 'luxurious?' (Scheil 1907, tablets 1, 23, 60, 108), *kuktum PIR PIR (BABBAR),* 'white' (Scheil 1907, tablets 11, 49, 52, 54, 80), *kuktum tahin* (colored?; Scheil 1907, tablet 61), or simply *kuktum* (Scheil 1907, tablets 16, 26, 40, 44, 47, 63, 83, 94, 95, 101, 110).

[33] Despite this observation, Oppenheim presented the word *tīmu* as his own candidate for cotton—further suggesting that cotton was imported during the Neo-Babylonian period from Egypt into Babylonia via Phoenician trader (Oppenheim 1967: 245).

[34] For a discussion of the Neo-Elamite royal garment, a long garment with long fringes and rosettes on its borders, see Henkelman (2003: 192, n. 37).

fiber or fabric state, the chances of finding any traces in the texts may not be very great since our available texts concentrate on the final link of the trading chain, that is, the arrival of finished *kuktum* garments at Susa.

To sum up, it is then most likely that the attested differences in colors and qualities, the quantities, and geographic extension of *kuktum* textiles represented in the Neo-Elamite texts, points to the manufacture production of linen textiles. In this sense, the presence of linen industries during the neo-Elamite period is nothing of a novelty. Indeed, archaeological evidence spreading from the fourth to the second millennia BC demonstrates that linen and wool textiles were very much part of the Elamite social fabric (Hansen 1970: 7; Granger-Taylor 1983: 94-95; Petzel 1983: 93-94). At this regard, the fact that hundreds of linen textiles were brought into the Elamite court at Susa from a variety of locations presents an interesting platform into which to moderate prevalent opinion regarding the later history of the Neo-Elamite period (Neo-Elamite III: 647/585-539 BC). Accordingly, the late Elamite period is characterized by the gradual abandonment of almost all urban centers and the embracing of pastoralism (Miroschedji 1999: 62). Yet, unlike wool, domestic flax (which provides a fiber we know as linen) is a crop combining well-watered soils with necessary settlement activities. Consequently, an alleged reduction of urban centers may not necessarily imply a pastoral way of life, but could well be reflective of a ruralization of Elamite territory.

VI. Gulf trade: Elam and the island of Dilmun

According to the sources previously reviewed, by the end of the sixth century BC cotton seems to have been grown in India, the island of Dilmun and Egypt. The evidence from Arjan suggests that cotton made its way into Elam from source-supplying centers between 650 and 575 BC (Elamite IIIA). Given that the Neo-Elamite III period is reconstructed after a number of dismembered and heterogeneous bodies of documentation there is little background information available to support contact with any of these three alleged sources of cotton. For this reason, we are very much reliant on the information supplied by second party sources (i.e. Neo-Assyrian and Neo-Babylonian documentation) and much guesswork is required to investigate possible links. Of these three locations only indirect evidence of contacts between Elam and the island of Dilmun during the period in question can be affirmed with any security. Despite A.L. Oppenheims's suggestion that cotton made its way into Babylonia from Egypt via Phoenician merchants I am not aware of any evidence indicating that Egypt may have maintained trade contact with Elam during the first millennium BC before its incorporation into the Persian empire (Oppenheim 1967: 245). The same comment, I believe, can be applied to the actual existence of trade contacts between western India and Elam.

Conversely, three compelling reasons may be given to as why the island of Dilmun, and not Egypt or India, may be behind the origin of the Neo-Elamite cotton from Arjan: (1) geographic proximity; (2) a confirmed long history of trade and cultural relations between the two entities, and (3) the presence of cotton cultivation in Dilmun during the Achaemenid period. Direct trade between the island of Dilmun and Elam is attested by a large body of material and textual evidence at least since the Old Elamite

period.[35] According to D.T. Potts, it is likely that the control of the *Sukkalmah* extended to the Persian Gulf port of Liyan (present day Bushire) "and that the links with Dilmun may have proceeded via Fārs just as easily as up via the Gulf and along the Karkheh river" (Potts 1999: 180). Direct contacts between Dilmun and Elam during the Neo-Elamite period took place with the background of the numerous Neo-Assyrian attempts to control southern Mesopotamia and, in particular, within the Great Rebellion of 652-648 BC (see Brinkman 1984, and Frame 1992). Our knowledge of these events is biased by the nature of the sources which tend to emphasize Assyrian domination and Dilmunite subjugation. Yet, the attestation of two or more Dilmunite kings of Elamite background (Uperi and Hundaru/Ahundara) during the reigns of Sargon II (721-705 BC) and Assurbanipal (668-630 BC) would seem to affirm close links between Elam and the island of Dilmun (Potts 1990: 333-353).[36]

The 7th century BC was a time of constant political turmoil for Mesopotamia and western Elam. In this context, maritime trade between Elam and Dilmun may have provided unique economic advantages for both parties. Easy access to eastern Elam via the Persian Gulf port of Bushire (ancient Liyan) may have encouraged rapprochement, further strengthening exchange relationships and political ties. After the collapse of the Assyrian empire, late Babylonian sources are silent regarding any possible Dilmunite-Elamite associations. In the absence of written records one can only guess that, as evidenced by the presence of cotton textiles in the Arjan tomb, these relationships came to be sustained during the late Neo-Elamite period and continued to further prosper with the emergence of the Achaemenid Persian empire.

VIII. Conclusion

If we attempt to weave the evidence presented, a number of facts and a good many more hypotheses emerge. The survival of cotton garments in the Arjan tomb is, in and of itself, of the utmost significance. For the first time we encounter definite evidence of cotton-made garments in the ancient Near East. This evidence helps now to further validate the presence of a cotton made textile in the Assyrian royal tomb possibly belonging to the persona of queen Atalia, wife of Sargon II. The fact that both, the Assyrian sample and the Arjan cotton-made garments, were found in elite funerary contexts dating to about the end of the 8th and the 7th centuries BC respectively reveals that Assyrian and Elam had access to cotton in a way apparently not reflected in the available textual sources.

The sources instead suggest that by the Achaemenid Persian period cotton was cultivated in India, the island of Dilmun, and Egypt. Unfortunately, the paucity of the Neo-Elamite evidence leaves little room to argue about the existence and importance of an organized trade of this unique luxury fiber. The presence of cotton cultivation in

[35] For the presence of Dilmunites at Susa during the *sukkalmah* period see De Meyer (1966: 115-117); for links between Dilmunites and Mesopotamia during the OB period see Leemans (1960: 141-142); For the cult of the Dilmunite god Enzak at Susa see Vallat (1983); For earlier periods see P. Amiet (1986: 175-180). For a general introduction to ancient Bahrein see *Bahreïn, la civilisation des deux mers, de Dilmoun à Tylos,* catalogue of the 18 may to 29 august 1999 exhibit in the Institut du Monde Arabe, Paris.

[36] For the role of the Hundaru, king of Dilmun in supporting the Sealand revolt against Ašurbanipal see Frame (1992: 135, n. 17 and 177, n. 226, with references).

Dilmun, however, suggests that the Elamite cotton from Arjan—and possibly the Assyrian cotton from Nimrud—originated from this island. Whether or not maritime trade between the Elamite ports and Dilmun was in fact a reality would have to be determined by future excavations, ideally when Iran once again becomes the dynamic scene of concentrated fieldwork that it once was.

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ILLUSTRATIONS [37]

Figure 1. Remains of textile I (photograph courtesy of National Museum of Iran).
Figure 2. Detail of embroidered rosettes from Textile I (photograph courtesy of National Museum of Iran).
Figure 3. Remains of textile II (photograph courtesy of National Museum of Iran).
Figure 4. Remains of textile III (photograph courtesy of National Museum of Iran).
Figure 5. Frontal view of golden bracteates (photograph by the author).
Figure 6. Reverse view of golden bracteates with twin loops for attachment to garment (photograph by the author).

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