

Silk Textiles from the Byzantine Period till the Medieval Period from Excavations in the Land of Israel (5th-13th Centuries CE): Origin, Transmission, and Exchange

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The Hebrew word for silk, *meshi*, is mentioned in the Bible only once¹ and there is a possibility that the item to which it referred was made of local wild silk. Although Jewish historical sources from the Roman and Byzantine periods mention silk many times, only a few silk textiles have been discovered at a site dated to the Byzantine period (4th-7th centuries CE). The word “silk” occurs in the New Testament, although only once.² A turning point in the history of the Negev (Southern Israel) occurred around 400 CE when it underwent a period of prosperity related to the advent of Christianity and pilgrimage, which enabled the purchase of imported silk textiles. The Early Islamic period (7-8th centuries CE) yielded four (out of 310) silk textiles from Nahal ‘Omer on the Spice Routes joining Petra, in the Edom Mountains of modern Jordan, and the mercantile outlets on the Mediterranean Sea, notably Gaza and El Arish. The most important silk textile assemblage in the Southern Levant was found near Jericho at Qarantal Cave 38 and dates to the medieval period (9th-13th centuries CE). Linen textiles decorated with silk tapestry originating in Egypt date back to the 10-11th centuries CE. *Mulbam* textiles — silk warp with hidden cotton wefts — were discovered in the medieval fortress on Jazirat Fara’un (Coral Island) in the Red Sea, 14 kilometers south of Elat and today located in Egypt. *Mulbam* is mentioned in literary sources of the ninth century in

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¹ Ezekiel 16,10; 16,13.

² The Apocalypse of John 18,11-13; Ulrich Hübner, “Palestine, Syria and the Silk Road.” *Silk Road Studies* 18 (2016) 19-74.

Iraq and Iran, whence it spread through the Islamic world. The article will present aspects of the origin, transmission, and exchange of these textiles.

Keywords: Silk, *Mulham*, Coral Island, Cave 38, Israel.

Introduction

This study presents silk textiles from excavations in Israel and neighboring areas (5th-13th centuries CE). It identifies the origin of these textiles, namely, if they were produced locally or were imported, and reconstructs their cultural connections. In this paper, we compare their characteristics (e.g. spin direction and weaving techniques), detect similarities and differences between fabrics from the various sites, and explain these patterns. Whenever possible, we compare the textile to historical sources such as documents from the Cairo Geniza (see below) and Al-Muqaddasi.

In the following paragraphs, the silk textiles of eight sites from Israel and its immediate surroundings are introduced. These include (from north to south) Caesarea, Qarantal Cave 38, Wadi Murabba'at, Nahal Omer, En Marzev, Nessana, Avdat, and the Coral Island (fig. 1). Although only a few artifacts are intact, we can usually deduce their use through comparisons to the written sources, to ethnoarchaeology, and to intact specimens from Egypt. The silk textiles introduce varied weaving techniques. Their technical details include material, size, number of threads (per centimeter), threads' spin direction, weaving technique, density, color, decoration and supplements, sewing, and quality. The main materials that are common in the 5th-13th centuries in Israel are wool, cotton (with a growing trend), linen (in a decline), and goat hair, in contrast to silk, which is rare.³

These textiles raise questions regarding their provenance and the route they took to their new owners. Unlike pottery, textile production rarely leaves diagnostic debris in the archaeological record (e.g., wooden looms). Thus, textile scholars identify the origin of textiles through sites with a concentration of textile finds, which indicate the dominant material, spin direction, or weaving techniques; by their earliest known location; by comparison to the written sources; and via other artifacts in the archaeological context, which relate to production, such as spindle whorls. Regarding distribution maps of textile finds, one should take extreme caution. Textiles are rarely preserved except under special climatic conditions or in a microenvironment, which allows normally perishable organic materials to survive. The dry environments of the Judean desert, the Arava Valley, and Sinai have minimal bacterial

³ Shamir, Orit and Alisa Baginski, *Functions, Uses and Reuses of Silk Textiles in the Land of Israel and a Seventh Century CE Textile Decorated with Silk Threads Wrapped with Silver Strips*. (Hangzhou: 2016) 87-114, Shamir, Orit and Alisa Baginski, *Medieval Silk Textiles in the Land of Israel* (Zhejiang University Press: 2016) 94-104, Shamir, Orit and Alisa Baginski, *Medieval silk textiles from excavations in the land of Israel* (London and New York: 2018) 327-335 and Shamir, Orit and Alisa Baginski, *Trade and Transfer: Early Medieval Textiles from excavations in Israel* (9th-13th centuries) (Brepols, 2021) 235-268.

activity and are ideal for the preservation of textile fibers of all sorts. We present the textiles according to their periods and the sites in which they were discovered.

The Byzantine Period

A turning point in the history of the Negev (southern part of Israel) occurred around 400 CE, a period of prosperity related to the advent of Christianity and pilgrimage. Six centers were established in the Negev including Nessana and Avdat. Silk textiles were found at two sites:

a. Nessana (Auja al-Hafir) is located in the Negev desert approximately 50 km southwest of the modern city of Be'er Sheva, previously on the main route to Sinai and Egypt. In the course of the fifth and sixth centuries CE, a fortress and two churches were constructed on its acropolis.⁴ Monks' tombs at Nessana yielded three undyed linen textiles with silk bands. One of them has silk embroidery with a double running stitch creating two birds in the branches of a symmetrical tree (fig. 2). Another one has silk tapestry (fig. 3). One example is made of pure silk decorated with bands of various widths in tan, red and greenish-blue, and red stripes (fig. 4). These textiles were probably produced in Egypt. In Egypt, linen textiles were decorated with wool or in rarer cases – in silk.⁵

A doll (fig. 5) found at Nessana was from the Umayyad period, 7th-8th century CE layers. The head is made of painted ivory, the body is covered with linen textiles with some remains of silk.⁶ In the Early Islamic period (7th–11th century CE) a new type of figurine appears in the archaeological record: small, crudely crafted human figures made of bone.⁷ Several examples of rag dolls, entirely fashioned with fabrics and stuffed with vegetal matter, were found in Egypt.⁸ They were found also in the Land of Israel. The function and use of these figurines are controversial: some scholars see them as apotropaic, fertility, or magical figures, others merely as educational toys preparing the girl for motherhood.⁹

In the course of excavations conducted in 1993 at Nessana, four small silk fragments in compound weave were found in the ruins of a Byzantine house. One of them has an upper part of a roundel with a pearl border (diam. 8 cm), a pair of reversed birds of prey with spread wings, and a pearl collar standing on half palmettos among ivy leaves. There is a lotus flower on the side and a tan or beige ground (fig. 6).¹⁰ Repeating roundels were produced throughout

⁴ Ornit Ilan, *Image and Artifact: Treasures of the Rockefeller Museum*. (Jerusalem: The Israel Museum, 2000) 88.

⁵ Louisa Bellinger, *Textiles* (Princeton: NJ Princeton Univ. Press, 1962) 91-105.

⁶ Ilan, *Image and Artifact: Treasures of the Rockefeller Museum*, 88-90.

⁷ Ariel Shatil, *Bone figurines of the early Islamic period: the so called "Coptic dolls" from Palestine and Egypt* (Belgrade: Institute of Archaeology, 2016) 296.

⁸ Brigitte Pitarakis, *The Material Culture of Childhood in Byzantium*, (Washington, D.C.: Dumbarton Oaks Research Library and Collection, 2009) 247.

⁹ Shatil, *Bone Figurines of The Early Islamic Period: The So Called "Coptic Dolls" from Palestine and Egypt*, 311.

¹⁰ See Alisa Baginski and Avigail Sheffer, *Textiles from Nessana* (Jerusalem: Ben-Gurion University of the Negev

the long Late Antiquity (and after) in numerous thematic variants all along the trade routes from China to the Mediterranean in silk artifacts and depictions of silk clothing.¹¹

b. A single silk textile (fig. 7) from the late Byzantine period (no later than 636 CE) was found in a building which was a small commercial center at Avdat, in the Negev Desert of Israel, c. 50 km south of Be'er Sheva.

The warp is Z-spun and the weft has almost no twist. The weaving is a compound twill weave consisting of two sets of wefts. The warp is buff in color; the weft is golden-yellow and red. The main field of the fragment is divided by light-colored double stripes into panels, which contain cartouches with floral devices (trefoil). The textile was produced in Egypt, as Avdat served as a way station on the road connecting Egypt with Syria. This silk textile resembles a group of decorated silk tunics found at Akhim¹² and Antinoë in Egypt.¹³ It confirms the opinion of most scholars that these silks should be attributed to the period ranging from the second half of the sixth century to the middle of the seventh century CE.¹⁴ This piece serves as an important benchmark to show the high degree of weaving skills in the region just before the Islamic conquest.¹⁵

The Early Islamic Period

The Arab conquest of the Levant occurred in the first half of the 7th century. This conquest opened an entirely new page in the Land of Israel's history. The new element in the situation was the fact that the nomadic tribes, which for many generations had been kept at a distance from the cultivated lands and their cultures by the rulers of those lands, were now spearheading into these lands and becoming their masters. A new society was born. While the subdued population, Jews, and Christians, continued to form the majority in the Land of Israel during this period, the Bedouin constituted the ruling class under the Umayyad Caliphate.¹⁶ The last century of the Byzantine period and the beginning of the Early Islamic period were marked by the increased changes in urban structures and the confrontation of new cultural and religious challenges.¹⁷

Press, 2004.)

¹¹ James Trilling, "The Roman Heritage: Textiles from Egypt and the Eastern Mediterranean, 300–600 AD", *M* 21 (1982)1-112.

¹² Louise Mackie, *Symbols of Power: Luxury Textiles from Islamic Lands, 7th–21st Century* (New Haven and London: Yale University Press, 2015) 49.

¹³ Albert Frank Kendrick, *Catalogue of Textiles from Burying-Grounds in Egypt. Vol. III. Coptic Period* (London, 1922) 75 and also Daisy Bonnard, Calament Florence and Durand Maximilien, "Antinoë, à la vie, à la mode. Visions d'élégance dans les solitudes" (2013).

¹⁴ Alisa Baginski and Amalia Tidhar, "Dated Silk Fragment from 'Avdat." *Israel Exploration Journal* 28 (1978).

¹⁵ Rebecca Woodward Wendelken, "Weft and Worms the Spread of Sericulture and Silk Weaving in the West before 1300." *Medieval Clothing and Textiles* 10 (2014), 69.

¹⁶ Moshe Gil, *A History of Palestine, 634-1099* (New York: Cambridge University Press, 1992) 269-270.

¹⁷ Gideon Avni, *The Byzantine-Islamic Transition in Palestine an Archaeological Approach* (Oxford: Oxford University

Nahal 'Omer

The value and benefit of textile research for archaeology was presented by Hugh Kennedy, Professor of Arabic at the University of London. In 2018, after he heard our lecture about Nahal Omer, he wrote¹⁸:

If you have never heard of Nahal Omer you need not be dismayed by your ignorance. One thing does distinguish Nahal Omer from many hundreds of villages in the Fertile Crescent in that it offers a very good environment for the preservation of organic remains including textiles. So here in this small out-of-the-way village we have evidence that the inhabitants in the early Islamic period possessed a wide range of woven and dyed textiles including local manufacture but also, in all probability, imports from India or south Arabia. Nahal Omer, in fact, presents evidence of the penetration of the market economy way beyond the confines of metropolitan and elite life.

Indeed, silk textiles and cotton and silks ikats found at the site are prime candidates for the textile trade.

Nahal Omer, can be dated to the Late Byzantine (6th century CE) and Early Islamic periods (7-8th centuries CE). The site is located about 40 km northwest of Petra on the western edge of the `Aravah with a spring nearby. It appears to have been a farming village (fig. 8) on the Spice Routes joining Petra, in the Edom Mountains of present-day Jordan, and the mercantile outlets on the Mediterranean Sea, notably Gaza and El Arish (fig. 9). These routes also led to Egypt, the Arabian Peninsula, Yemen, parts of the Persian Gulf, and the sea routes to India as well as to Mesopotamia, Central Asia, and from there all the way to China. The caravans carried a variety of trade goods as well as spices, which were a major economic asset during the Roman, Byzantine, and Early Islamic periods. The caravans were also used by pilgrims headed for Mecca. This route had existed earlier during the Nabataean period (1st century BCE - 3rd century CE). Nahal Omer's prominence derives from its excellently preserved organic materials. Most of the textile material was discovered in middens (waste dumps) and many had been cut into small pieces. Basketry and cordage items were also discovered. A few textiles were recovered from the remaining ruins of the buildings. The site features 17 rectangular dwelling units as well as a mosque in use during the early Islamic period. The date of the material has been confirmed by radiocarbon 14 analysis.

The small number of textiles and other artifacts found at the site, including simple and poor ceramic vessels, indicate that it was only used for a limited period corresponding to the Early Islamic period. It had been abandoned by its inhabitants when the route changed its path, moving away from Nahal 'Omer. Prior to this shift, it is probable that the village provided caravans with shelter, limited water, fodder, and other amenities, offering a welcome relief from the dangers of the caravans' roads.

Press, 2014) 40.

¹⁸ Unpublished. Personal communication.

Two hundred fifty-one (Table 1) textiles were found at the site, made of cotton, linen, wool, hair, and silk. Nahal Omer is amongst the first archaeological sites at the Western ends of the Silk Roads that yielded silks and a great number of cotton textiles. Technological characteristics like weft-faced compound tabbies and warp-*ikat* suggest that some of these fabrics arrived from East Asia and India. The cotton ikat textiles from this site represent the earliest physical evidence in existence for this technique in cotton. Moreover, the fragments of a cut-to-shape tunic represent the transition from the ‘woven-to-shape’ tunics of the Roman and Byzantine periods to the ‘cut-to-shape’ tunics of the Early Islamic period and onwards. The diversity and abundance of the textile collection from Nahal Omer, compared with other contemporaneous sites from the region, attest to the wide and inter-regional cultural and geographic trade networks and add this hitherto little-known artery of the “Israeli Silk Road” to the larger systems of connectivity. Three very fine, Z-spun silk fragments were discovered. One is a very fragmentary tabby, with slightly Z-twisted red silk weft threads (38 per cm). One (fig. 10) pure silk textile has, in addition to the coral-red main weft, yellow brocading weft threads which create diagonal motifs.¹⁹

Among the Nahal Omer textiles, a warp ikat silk textile was found (fig. 11). The oldest known silk ikat textiles are from Horiyu-ji, Nara, Japan, Asuka Period, 552-644 CE.²⁰ In the eighth century CE, silk warp ikat textiles were widely found not only in Turfan (Xinjiang), Dulan (Qinghai), and Dunhuang (Gansu) in northwest China but also in the Shosoin, Nara, Japan. The Shosoin collection includes treasures from the Tang Dynasty, China, 618–907 CE.²¹

Table 1. Nahal Omer textile materials

Material	No.
Cotton	153
Wool	60
Linen	31
Silk	3
Goat Hair	3
Wool and Cotton	1
Sum	251

A new research field introduced by Prof. Gideon Avni, Guy Bar-Oz, and Roi Galili is that of the excavation of ancient trash mounds, which have recently demonstrated their qualities as “social archives” that enable us to explore the rise and fall of Negev urban communities at the end of the Byzantine period. A recent pilot excavation of the refuse dumps of Nahal

¹⁹ Baginski and Shamir 1995; Shamir and Baginski 2014.

²⁰ Alfred Buhler, *Ikat Batik Plangi* (Bazel: Pharos-Verlag, 1972) [I]:23; Jahongir Usmanov, “Weaved Clouds of Central Asia. From Nomads to Settlers” 2013.

²¹ Shamir and Baginski, 2014.

Omer has revealed that they all contain a dense accumulation of organic remains. Initial results indicate that the hyper-arid environment of the Negev has provided perfect conditions for the preservation of the textiles and various food remains, including numerous plant seeds and their containers. These finds reflect both exotic cargoes in the trade between East and West and the leftovers of the caravan subsistence economy, providing valuable insights into the everyday life of the ancient traders. Most importantly, they offer insights into the diversity of textiles. This excavation yielded around 60 textiles, including silk textiles (fig. 12). These are currently being investigated by our student Nofar Shamir as part of her M.A thesis, supervised by Guy Bar-Oz and myself.²²

‘En Marzev (‘En Yahav)

Sixty-one textile fragments, most of them made of wool, and 10 small bundles of woolen fibers were uncovered at the ‘En Marzev settlement, dated to the Early Islamic period (late 7th-9th centuries CE), a date confirmed by Carbon-14 analysis (787–896 CE). Most of the textiles were found in Building C, which features rooms surrounding a large courtyard (fig. 13).

One Z-spun plain weave cotton textile is very delicate with thin threads and an open weave. It is white, decorated with red cotton bands (each 0.8 cm wide) alternating with shiny silk made of S-spun threads wound with silver strips²³ that disintegrated. Each band consists of two threads. Fringes (4 cm long) were preserved twisted to Z2S2Z²⁴ (figs. 14a-14b). Precious metals have been used in combination with fibers in order to produce luxury fabrics for political and religious elites.²⁵ In this particular textile, the difference in quality between the textile finds from the two ‘Arava sites—Nahal ‘Omer and ‘En Marzev—may be attributed to their findspots. While the finds from ‘En Marzev originated in structures that were abandoned in an orderly fashion, the finds from Nahal ‘Omer originated in a waste dump, thus representing an accumulation of objects discarded over years of habitation.²⁶ A few

²² A joint research project “Revealing the Israeli Silk Road: Exploring networks of trade and exchange between East and West through textile finds from Nahal Omer, with a focus on silk and cotton” by Berit Hildebrandt (Department of Prehistory and Early History, University of Göttingen, Germany), Guy Bar-Oz (School of Archaeology and Maritime Cultures, University of Haifa, Israel) and me. Financially supported by the State of Lower Saxony, Hannover, Germany. Our project’s goal is to contribute to this global world history by examining the textile finds from a small village and way station at the western edge of the vibrant ancient land routes in the Negev Desert of southern Israel.

²³ Examined by Yahalom-Mack -for the technique see Anna Karatzani, “Metal Threads, the Historical Development.” In *Traditional Textile Craft – An Intangible Cultural Heritage?* edited by Camilla Ebert, Mary Harlow, Eva Andersson Strand, and Bjerregaard Lena (Copenhagen: Centre for Textile Research, University of Copenhagen, 2016.) 177-189.

²⁴ Shamir, 2016a,16.

²⁵ Annette.B Weiner and Jane Schneider, *Cloth and the Human Experience*. (Washington, D.C: Smithsonian Institution, 1989) 1.

²⁶ Shamir, 2016a, 18.

other Early Islamic textile assemblages from the Land of Israel have been discovered – for example, at ‘En ‘Avrona,²⁷ Nahal Shahaq,²⁸ and Yotvata²⁹ but they don’t feature silk textiles.

The Crusader Period

Caesarea

A Christian grave under the pavement of the Crusader cathedral in Caesarea was excavated in 1995 by J. Porath. It was dated to the 11th century. The burial was in a wooden coffin with iron nails, where small remains of textiles were discovered (fig. 15). The fragments consisted of several layers, one on top of the other, carbonized and very fragile. They were interpreted as the coffin lining and the shrouds and/or vestments of the deceased. Some fragments consist of a silk tablet woven band, which is brocaded (supplemental brocading wefts) with a gilded membrane lamella wound on a silk core. Some are silk tabby brocaded with similar gilded threads like those of the tablet woven band. The use of splendid silks in burials was customary for high-ranking church dignitaries as well as for secular aristocrats in medieval Europe. In both cases, they would have been buried in the cathedral. As the Caesarea band resembles so closely the European tablet woven bands, such as in Britain or Germany, it can be assumed that it was produced there.³⁰

The Medieval Period

Cave 38

A significant number of textile fragments were unearthed in Cave 38 at the Qarantal Cliff above Jericho (fig. 16), during the 1993 excavations of the Israel Antiquities Authority. They were dated to the early 9th to late 13th centuries, based on radiocarbon analysis of the fragments along with coins and the typology of pottery and glass from the cave. The textiles were found in one of several connected spaces (Area F) (fig. 17). The absence of related artifacts, together with the character of the fragments which will be discussed shortly, indicates that they were collected and stored in the cave and that no textile production or textile repairs were conducted there. The context was thus interpreted as storage. One possible interpretation is that rag collectors or merchants gathered these fragments for the

²⁷ Shamir, 2016b.

²⁸ Shamir, 1995.

²⁹ Shamir, forthcoming.

³⁰ See Baginski 1996; Egon Hansen, *Tablet Weaving: History, Techniques, Colours, Patterns*. (Høbjerg: Hovedland, 1990) 9 and Naomi Spies, “A Thousand Years of Brocaded Tablet Woven Bands.” *Archaeological Textiles Newsletter* 21 (1995)20.

paper-making industry. The growth of this industry, at least from the 9th century, prompted the usage of waste from local cotton manufacturing and other textile materials.³¹

Documents which had been preserved in a storeroom of a synagogue in Fustat (or Old Cairo in Egypt), written mainly in Judaeo-Arabic, hail from all over the Mediterranean basin and the route of the India trade. The manuscripts are of every conceivable sort, ranging from correspondence (commercial, private, or official) to court records, marriage contracts, bills of divorce, and last wills and testaments.³² Most of the manuscripts originated in the Land of Israel. Some were examined and demonstrate that they were principally produced from cotton but were sometimes mixed with flax, wool, or other materials.³³

A total of 768 fragments were found at Cave 38 and analyzed.³⁴ The textiles are torn, cut, and patched and many have been reused, sometimes more than once. Many are composed of several different textiles, or several pieces of the same materials, stitched together. Others were cut into rectangles, odd shapes, or strips. All pieces are small, measuring 5 x 5 cm on average, and worn. Some fragments were stained and some were partly burnt. Some of the reused textiles are of high-quality materials and designs, including fragments of once splendid silk fabrics. It can be assumed that most of these fragments were originally parts of clothing, such as tunics, and that later their decorations were cut in order to decorate other garments.

The textiles from Cave 38 are made of cotton, linen, silk, wool, goat hair, and mixed materials such as linen and cotton (Table 1). Some pieces were identified as tunics, trousers, coifs, wrappers, and small bags. Cave 38 yielded 38 pure silk textiles. Two textiles are block-printed plain weave without any twist of the fibres (I-spun), one of which has blue geometric motifs printed on an ivory background (fig. 18). Another piece is woven in the unique *soumak* technique (fig. 19), which probably originates in Asia Minor.³⁵ Nine linen textiles are decorated with colored silk tapestry bands of brown, beige, gold, red, green, black, blue, and yellow. The motifs are swimming birds (ducks?) (figs. 20a-b), birds' heads (fig. 21), and linen decorated with silk tapestry with stylized devices in cartouches flanked by bands bearing an inscription (or pseudo-inscription?). The long arms of the letters of the inscription are topped with stylized bird heads on a gold and blue ground (*tiraz*?) (fig. 22).

The most significant group consists of eighteen compound-weave silk fragments. Four are monochrome but the others have colored patterns in blue (fig. 23), green, red (fig. 24), and brown on the undyed ground, or vice versa. The patterns are geometric, floral, or interlaced and in several cases include birds, animals, or an Arabic inscription. Textiles woven in tabby or lampas techniques are mostly bicolor and bear motifs. Lampas technique is figured weave

³¹ For cotton, see Zohar Amar, *The History of the Paper Industry in Al-Sham in the Middle Ages in Towns and Material Culture in the Medieval Age in Middle East*, edited by Yaacov Lev (Leiden: Brill, 2002) 135–158; Kedar 2018; Shamir and Baginski, 2018, 334.

³² Kalfon Yedida Stillman, "New Data on Islamic Textiles from the Geniza." *Textile History* 10 (1979) 184.

³³ Zohar Amar 2002; Zohar Amar, Azriel Gorski and Izhar Neuman, "The Paper And Textile Industry In Light Of An Analysis Of The Cairo Genizah Documents." in *From a Sacred Source: Genizah Studies in Honour of Professor Stefan C. Reif*, edited by Ben Outhwaite and Siam Bhayro (Leiden: Brill, 2011) 25–42; Shamir 2015a.

³⁴ Shamir and Baginski, 2002; 2013a; 2013b; 2018.

³⁵ Grenander-Nyberg, 1992, 125.

in which a pattern, composed of weft floats bound by a binding warp, is added to a ground weave formed by a main warp and a main weft.³⁶ No. 719/6 is made of five fragments that were stitched together: one is made of blue and cream silk in lampas, another one is weft-faced compound tabby, in a lozenge grid with an eight-pointed star and a geometrical device. In the cartouches, pairs of birds face each other, between them there is a branch with leaves (fig. 25).

These are all luxury, compound-weaves silk fabrics woven on sophisticated looms such as the drawloom, which allows for mechanized pattern weaving. The complex nature of drawloom technology encouraged mirroring and repetition. The drawloom also encouraged symmetry since the loom created identical and/or mirroring areas of cloth.³⁷ It is a horizontal loom with a special type of figure harness to control each warp thread separately. This loom requires a weaver's assistant to sit perched on top of the harnesses and lift the figure heddles in an order necessary to form the desired pattern.³⁸ Drawlooms owe their existence to a long evolution that includes developments in China, Central Asia, northern India, the Middle East, and later in Europe. On the other hand, there is no rigid relationship between the woven structure and the loom type.³⁹ The same textile could have been made either on highly sophisticated looms or on simple ones with higher labor investment.⁴⁰ Silk compound weaves have been discovered in Egypt⁴¹ and one specimen was found in 6th-century Avdat, Israel.⁴² During the Byzantine period and after the Islamic conquest, textile centers in Syria were already producing such textiles.⁴³ A few have been found in excavations near Rayy in Iran from the 10th-12th centuries.⁴⁴ Such products could have been imported from Egypt, Syria, Byzantium, Mesopotamia, or Persia.

³⁶ Dorothy Burnham, *Warp and Weft: A Textile Terminology* (Toronto: Royal Ontario Museum, 1980) 82.

³⁷ Arielle Winnik, "Toward a Grammar of Textiles: A Reconsideration of Medieval Silk Aesthetics and the Impact of Modern Collecting" *Textile Museum Journal* 44 (2017) 2.

³⁸ Agnes Geijer, *A History of Textile Art* (Bath: Rizzoli Intl Pubns, 1982) 100, Bo Long, "Chinese Imperial Workshop Looms." In *A World of Looms: Weaving Technology and Textile Arts in China and beyond*, edited by Feng Zhou, Sandra Sardjono, and Christopher Buckley (Zhejiang: Zhejiang University Press, 2019) 29-32; Bo Long and Feng Zhao, "A high point in the development of ancient Chinese pattern looms: the multiple heddle pattern device" *Fiber, Loom and Technique* 1 (2021)1-12.

³⁹ Eric Boudot, Origins, Transmission, and Future." In *A World of Looms: Weaving Technology and Textile Arts in China and beyond*, edited by Feng Zhou, Sandra Sardjono, and Christopher Buckley, (Zhejiang: Zhejiang University Press, 2019) 8.

⁴⁰ Gang Wu, "How Did Byzantines Weave? A Synthesis of Textual, Pictorial, Ethnographic, and Archaeological Evidence." *Greek, Roman, and Byzantine Studies* 61 (2021) 369.

⁴¹ Antinoë: Bonnand, Calament and Durand 2013; Geijer 1982:100; Thomas 2017:51, 61, 64; Akhmim: Thomas 2017:61, 64.

⁴² Baginski and Tidhar 1978.

⁴³ Donald King, "The Textiles Found near Rayy about 1925" (Centre International D'Etude des Textiles Ancients, 1987) 44-45; Karel Otavski and Salīm Muḥammad 'Abbās *Mittelalterliche Textilien I* (Riggisberg: Abegg-Stiftung, 1995)137.

⁴⁴ King 1987; Sheila Blair et al, "Reevaluating the Date of the 'Buyid' Silks by Epigraphic and Radiocarbon Analysis." *Ars Orientalis* 22 (1992): 1-41; Jane L. Merritt, "Archaeological textiles excavated at Rayy." *Techniques and Culture* 34 (1999) 7-15.

Wadi Murabba'at

Wadi Murabba'at (Arabic: Wādī Murbba'āt) is a deep ravine descending from the Judean Desert towards the Dead Sea, some 18 kilometers south of Qumran. Five caves were excavated along the valley by Harding, de Vaux, and Barthélémy in 1952 following the discovery of documents by locals. The artifacts recovered in the caves were dated from the Chalcolithic period (4500 BC) till modern times. They were studied and catalogued by G. and E. Crowfoot and were examined also by us. Thirty-two textiles from linen, cotton, and silk were dated to the 11th-13th centuries.⁴⁵ Of importance are four linen textiles decorated with silk. These are assumed to have originated in Egypt.⁴⁶ One blue linen textile, a part of a tunic, is decorated with a silk tapestry band in yellow, brown, light blue, blue, and cream. Another piece has a brocading of Kufic Arabic letters in dark brown and traces of red silk (fig. 26). A third textile shows silk tapestry in brown and red and a scroll with curling leaves (fig. 27). A final linen fragment is embroidered with dark brown silk birds (fig. 28). The vast majority of the Mamluk embroideries were products of home industries and their decoration followed the embroiderer's taste and skill.⁴⁷

The Coral Island

The medieval fortress on Coral Island (Jazīrat Fir'awn) is located in the Red Sea, in the Gulf of Aqaba, south of Eilat (Israel) and Tābā (Egypt). The island, a solid granite rock, is situated beside a shallow lagoon. Excavations were carried out on the site from 1975 to 1981 by A. Goren and dated to the 13th century, based on pottery and C14 (no final report was published). The fortifications were begun in the 12th century CE as protection against Crusader raids.⁴⁸ By the 13th century, when the pilgrim Thietmar passed along the shore, the island was occupied by a fishing village, inhabited by Muslims and captive Franks. The castle was finally abandoned by its Mamluk governor sometime in the 1320s in favor of one located in present-day al-'Aqaba.⁴⁹

About 1,500 textile fragments were unearthed at the site along with 700 basketry fragments and seven hundred pieces of cordage. Most of the textiles were discovered in middens (waste dumps) in contrast to the basketry and cordage fragments, which were chiefly

⁴⁵ Crowfoot and Crowfoot 1961, 61-62, Cat. nos. 110-41.

⁴⁶ Lousia Bellinger, "Textiles." In *Excavations at Nessana*, edited by H. Dunscombe Colt (Princeton: NJ Princeton Univ. Press 1962) 91-105.

⁴⁷ Maria Sardi, "Foreign influences in Mamluk textiles: The formation of a new aesthetic." In *The Hidden Life of Textiles in the Medieval and Early Modern Mediterranean: Contexts and Cross-Cultural Encounters in the Islamic, Latinate and Eastern Christian Worlds*, edited by Nikolaos Vryzidis, (Turnhout: Brepols, 2020) 91.

⁴⁸ Hugh Kennedy, *Crusader Castles* (Cambridge: Cambridge University Press, 1994) 30.

⁴⁹ Denys Pringle "Aila and Ile de Graye." In *The Crusades: An Encyclopedia 1*, edited by Alan V. Murray (Santa Barbara: ABC-CLIO, 2006).

recovered from structures. As there are no signs of a sudden destruction of the buildings, it can be assumed that the inhabitants deserted the island, taking their garments and other valuable textiles with them and abandoning only used mats, baskets, and cordage fragments.

Of these, 236 textiles were analyzed by Alisa Baginski and me. They display a variety of materials: cotton, linen, wool, silk, and silk with cotton. Most of them were parts of garments such as turbans, scarves, and robes. Seven small fragments are all silk and some are red tabbies. One, which is sewn to a plain cotton fabric, has alternating multicolored stripes. One is a compound twill with a red and golden-yellow pattern; No. 79 is a very small silk strip, a multicolored compound tabby. One small fragment is of an embroidered silk damask. The small number of pure silk fragments found here also corresponds with finds from other sites mentioned above. The silk yarns are either slightly reeled in the Z direction or not at all (i.e., I; floss). Twenty-two textiles from Coral Island have silk warps and hidden cotton wefts, a specific weave known as *mulham*. The silk warp has colored stripes while the weft is either undyed or light blue. One *mulham* is decorated with a very delicate silk tapestry band of fine brown scrolls on a beige ground (fig. 29). Another one is a sleeve of a delicate *mulham* tunic, which was lined with plain undyed cotton fabric (fig. 30).⁵⁰

This relatively large number of *mulham* textiles is unique to Coral Island: one was found at Cave 38, one at Qasr Ibrim,⁵¹ Edfu⁵² and eleven specimens were uncovered at Fustāt.⁵³ None was discovered at the Egyptian Red Sea port of Quseir al-Qadim from the thirteenth and early fourteenth century at the time of the Mamluk reign in Egypt. It is uncertain why the harbour lost its importance after that period.⁵⁴ A number of materials of this kind were found at Ghubayra⁵⁵ and Rayy in Iran.⁵⁶ Based on a number of texts, this technique was perhaps utilized in order to avoid regulations for men on pure silk.⁵⁷ Besides, the technique offered an economical way to make the most of silk yarns, which were significantly more expensive than cotton or linen.

Since *mulham* textiles are first mentioned in literary sources from the 9th century about Iraq (Mesopotamia) and Iran e.g. at Khurasan, they might have originated there and then spread through the Islamic world.⁵⁸ According to sources from the 10th and 11th centuries,

⁵⁰ Baginski and Shamir 1998.

⁵¹ Nettie K Adams, "Textiles." In *Meinarti III – The Late and Terminal Christian Phases*, edited by William Y. Adams. British Archaeological Reports, *International Series 814* (Oxford, 2002) 3.

⁵² Amandine Mérat, "New research on Medieval embroideries from Tell Edfu at the Louvre Museum." *British Museum Studies in Ancient Egypt and Sudan* 21 (2014) 68-69.

⁵³ Mackie, 1989.

⁵⁴ Gillian Vogelsang-Eastwood, "The Textiles from Quseir Al-Qadim, Egypt." In *Proceeding of the Archaeological Textiles Meeting 1989*, (Leiden: Brill, 1990) 195-199.

⁵⁵ Linda Woolley, "Mediaeval Textiles Excavated at Ghubayra." *Iran* 27 (1989) 51.

⁵⁶ Jane Merritt, "Archaeological textiles excavated at Rayy." *Techniques and Culture* 34 (1999) 9.

⁵⁷ Muhammad Abdelaziz Marzouk, *History of the Textile Industry in Alexandria 331 B.C.-1217 A.D* (Alexandria: Alexandria University Press, 1955) 63; Liu Xinru, *The Silk Road in World History* (Oxford: Oxford University Press, 2010).

⁵⁸ Carl Johan Lamm, *Cotton in Mediaeval Textiles of the Near East* (Paris: P. Geuthner, 1937) 5. Mackie 1989; Robert

such as Al-Muqaddasi, they were also produced in the Land of Israel⁵⁹ at places such as Ghazza and al-Ramla.⁶⁰ Additionally, *The Book of Gifts and Rarities* (Ghada al-Hijawi al-Qaddumi) – an important record of the material culture of textiles and other objects, compiled in the late eleventh century by Qāḍī al-Rashīd Ibn al-Zubayr (probably an official of the Fātimid court in Cairo), provides valuable information about “gift” exchanges on various occasions between Islamic rulers and their foreign counterparts, e.g. Sasanian and Byzantine rulers, and mentions textile gifts, mainly of silk, its various types, names, and origins, including *mulham*.⁶¹

Discussion, Summary, and Conclusions

The value and benefit of textile research for archaeology in Israel is that it sheds light on this little-known artery of the “Israeli Silk Road,” on the people who lived there, and the goods that they traded, used, and discarded. The connection between the Early Islamic period local textile production, such as ikat cotton and silk textiles, and the long-distance trade in textiles can shed light on the importance of these sites and the differences among them. The most distinctive phenomenon is the strong entrance of silk into the local market. Silk textiles were found in four out of nine Medieval sites and in two of them, *mulham* textiles of cotton and silk were also present, mainly produced in Iraq and Iran. This demonstrates the important contribution of textiles to the archaeological and historical studies of ancient trade.

In contrast to earlier periods, the medieval sites in Israel yielded a variety of textiles but no spinning and weaving implements were preserved. The provenance of textiles suggested by a comparison to parallels from other regions and from the area in earlier periods points to diverse origins. As we showed and will emphasize in this section, the main elements to identify provenance are material, spin direction, the complexity of weaving, decoration, dye sources, and specific designs. The resulting picture, however, is not always that clear.

Silk has been discovered on Israeli sites from as early as the 6th century CE.⁶² We have presented medieval silk textiles from Caesarea, Wadi Murabba‘at, and the Coral Island, with the most significant assemblage from Cave 38 with 38 pieces.⁶³ Printed silks, which were found at Cave 38, have been found at archaeological sites in China from the end of the 3rd century BC to the 10th century CE.⁶⁴ However, one must not attribute silk remains in Israel

Bertram Serjeant, “Material for a History of Islamic Textiles up to the Mongol Conquest.” *Ars Islamica* 9 (1942) 54-92.

⁵⁹ Guy Le Strange, (trans). *Description of Syria, including Palestine: by Muqaddasi* (London: Palestine Pilgrims’ Text Society, 1896) 18.

⁶⁰ Avni, 2014, 177; Simeon Gat, “A Thriving Muslim City: The Economy of Ramla in the Middle Ages.” *Cathedra* 123 (2007) 46 and Shlomo Simonsohn, *The Jews in Sicily: 383-1300* (Michigan: Brill, 1997) 297.

⁶¹ Hana Taragan, “Textiles in Cross-Cultural Encounters: The Case of the Umayyad Palace at Khirbat al-Mafjar.” *Journal of the Medieval Mediterranean* 32 (2020) 3-4.

⁶² Nessana Bellinger 1962; Avdat: Baginski and Tidhar 1978; the Arava: Shamir and Baginski 2018.

⁶³ Shamir and Baginski 2016a; 2016b.

⁶⁴ E.g. Zhao 2002, 104.

to China, as both archaeological and textual evidence point to production centers elsewhere, including centers in Syria.⁶⁵ Evidence for tenth-century silk production in the Land of Israel, as indicated by Arabic sources such as al-Muqaddasi, a medieval Arab geographer, may indicate small-scale production. There is a relationship between the design and the techniques of the compound silk fragments, which may assist in the identification of their origin. The weft-faced compound twills are mostly monochrome with no patterns or motifs, or with unrecognizable motifs. Monochrome, weft-faced compound twills were made in Byzantium in the 10th and 11th centuries CE.⁶⁶ They are of very fine craftsmanship, suggesting that they were once expensive luxury silks affordable only to the upper classes. In parallel, linen textiles decorated with colored silk tapestry are believed to have originated in Egypt, whereas silk warps and cotton hidden wefts (*mulham*) are assumed to have originated in Iran and Iraq.

The most common weaving technique in the medieval textiles found in Israel is tabby (plain weave) and its variations. Other techniques almost certainly represent imports. The *soumak* technique, which was found on one silk fragment in Cave 38, is identified with Asia Minor.⁶⁷ The silk textiles from the site with compound weaves are thought to be from different areas (e.g. Byzantium, Egypt, Persia). Silk was not found at other medieval sites such as 'Avdat – the Saints Cave,⁶⁸ Kasr al-Yahud,⁶⁹ the northern Judean Desert caves,⁷⁰ and Mezar Zohar⁷¹ which means that silk was still expensive.

Dyes and dyeing techniques have a high potential for assisting in the identification of provenances. The blue dyeings were produced with the vat dye indigotin, which may be produced from either woad (*Isatis tinctoria* L.) or indigo (*Indigofera tinctoria*) or from other indigotin producing plants.⁷² Current analytical methods cannot determine the botanical provenance of dyeings that contain the indigotin dye. Either woad or indigo could have been used.⁷³ According to historical texts, the indigotin plant was extensively cultivated locally around Jericho in the 7th century.⁷⁴ Some of the medieval textiles also bear remains of red and yellow hues. In general, it can be said that the red comes from local madder root (*Rubia tinctoria*).⁷⁵ While the yellow color could be produced from different plants that grow wild. The yellow dye source does not correlate with any of the known dyestuffs and has not yet

⁶⁵ Hubner, 2016; King, 1987; Otavski and 'Abbās Muḥammad Salīm, 1995; Volbach, 1969: Fig. 47-48.

⁶⁶ Anna Muthesius, *Byzantine Silk Weaving AD 400 to 1200 AD* (Vienna: Fassbaender, 1997) 85-93.

⁶⁷ Grenander-Nyberg, 1992, 125.

⁶⁸ Baginski and Shamir, 2001.

⁶⁹ Shamir 2005; 2015b.

⁷⁰ Shamir and Baginski, 2002b.

⁷¹ Shamir and Sukenik, 2016.

⁷² Dominique Cardon, *Natural Dyes, Sources, Tradition, Technology and Science* (London: Archetype, 2007).

⁷³ Zvi Koren, "The Mamluk-Period Jazirat Fara'un (Coral Island) Textiles Dyeings." *'Atiqot* 36 (1998)111; Naama Sukenik, "Early Evidence (Late 2nd Millennium BCE) of Plant-Based Dyeing of Textiles from Timna." *Plos One* 12 (2017)1-24.

⁷⁴ E.g. Amar 1998, 53.

⁷⁵ Koren 1995; 1996, 300; 1998,112.

been identified.⁷⁶The research on these dyes is being done these days by Naama Sukenik and is not complete yet.

In general, the origin of silk is a complete mystery unless it is labeled, for not only was it produced in many parts of the Mediterranean (especially al-Andalus, Sicily, and Syria) as well as in Asia but its value-to-weight ratio was so high that individuals carried it about, almost as an alternative currency.⁷⁷ From the perspective of the Silk Road(s) the Land of Israel is a region of minor importance to which there was no direct connection. There might possibly have been indirect contacts. While the Jewish part in the silk trade of late antiquity is hard to define, Jews were certainly involved in it from the Land of Israel all the way to Central Asia. Western extensions of the Silk Road served Jewish pilgrims as roads to Jerusalem where they presented Temple offerings and celebrated the festivities of pilgrimage.⁷⁸ In view of the textile findings at Palmyra (Terminal date 272/273 CE)⁷⁹ and Halabiyeh (610 CE - terminus ad quem)⁸⁰ in Syria, we must expect to find more silk textiles in the Land of Israel.⁸¹

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⁷⁶ Zhang 200,:27.

⁷⁷ Goitein 1967–1993: I, 222–224; Goldberg, Forthcoming, 207.

⁷⁸ Hubner, 2016, 1, 36-37.

⁷⁹ See Pfister, 1934; 1937; 1940; Schmidt-Colinet 1995; Schmidt-Colinet, Stauffer and Al-As'ad 2000; Stauffer 2000; and Thelma. K. Thomas, "Perspectives on the wide world of luxury in later Antiquity: silk and other exotic textiles found in Syria and Egypt." *In Silk: Trade and Exchange along the Silk Roads between Rome and China in Antiquity, Ancient Textiles Series 29*, edited by Berit Hildebrandt and Carole Gillis (Oxford and Havertown: Oxbrow Books, 2017) 61.

⁸⁰ Pfister, 1951.

⁸¹ Hubner, 2016, 36-42.

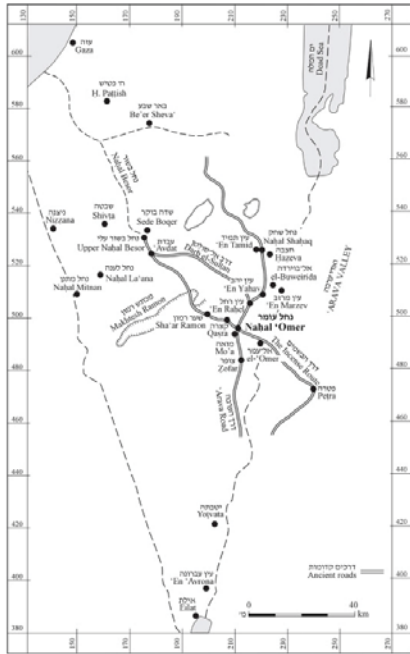


Figure 1. Map of the Nahal 'Omer site and other sites from the Early Islamic period in the Negev and 'Arava region



Figure 2. Nessana, linen textile embroidered with silk with a double running stitch creating two birds in the branches of a symmetrical tree.



Figure 3. Nessana, linen textile decorated with silk tapestry.

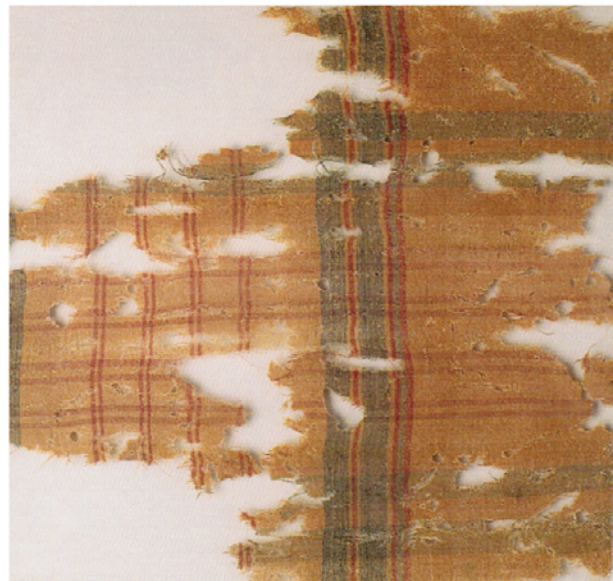


Figure 4. Nessana, pure silk decorated with bands of various widths in tan, red and greenish-blue, and red stripes.



Figure 5. Nessana, a doll, the body is covered with linen textiles with some remains of silk.



Figure 6. Nessana, compound weave.



Figure 7. Avdat, compound weave.



Figure 8. Nahal Omer, Aerial photograph of Nahal 'Omer settlement, looking east.

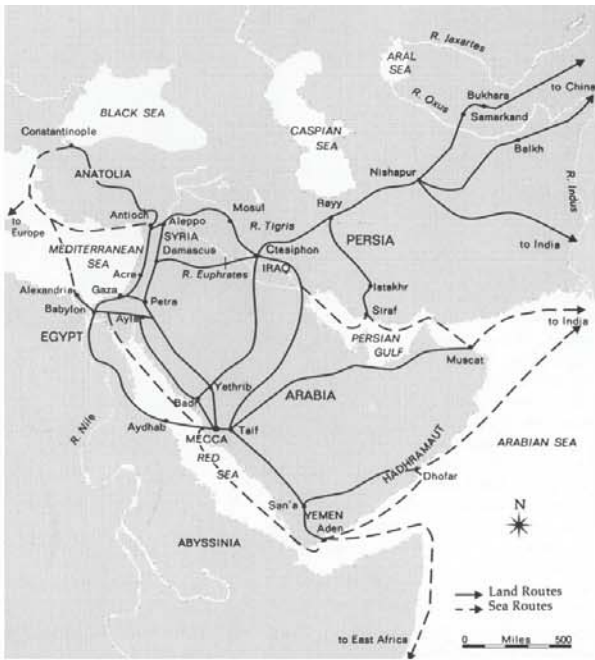


Figure 9. Map of international trade routes at the dawn of the Islamic period.
(After Stewart 1969:13.)

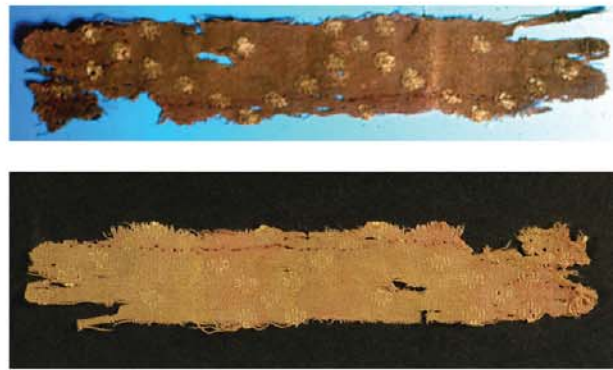


Figure 10. Nahal Omer, pure silk textile, in addition to the coral-red main weft, yellow brocading weft threads which create diagonal motifs.



Figure 11. Nahal Omer, silk ikat.

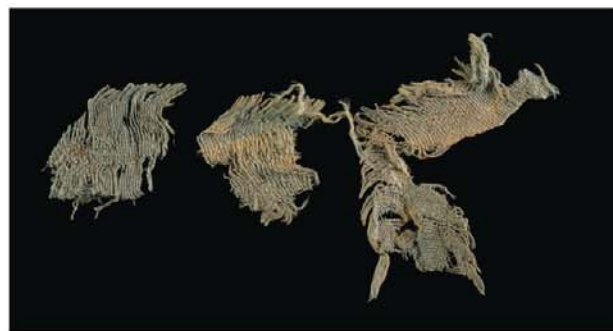


Figure 12. Nahal Omer, silk textile from the new excavations.



Figure 13. En Marzev, the site.



Figure 14. En Marzev, white cotton decorated with red cotton bands (each 0.8 cm wide) alternating with shiny silk, S-spun threads wound with silver strips.



Figure 15. Caesarea, silk textiles.

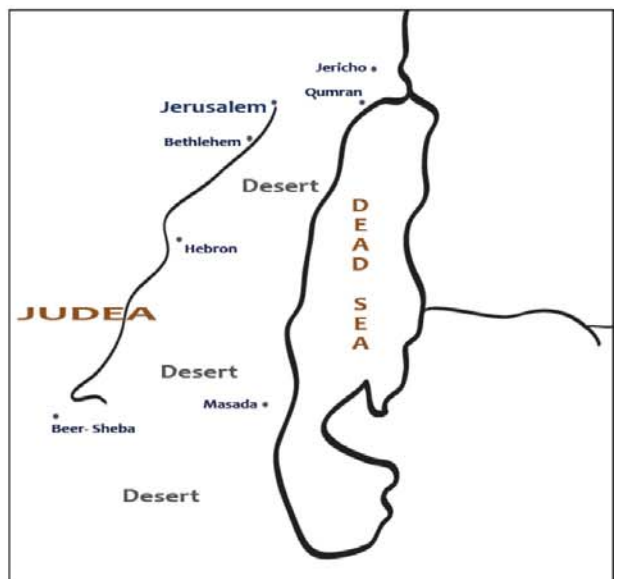


Figure 16. Cave 38, Map near Jericho.



Figure 17. Cave 38, photo.

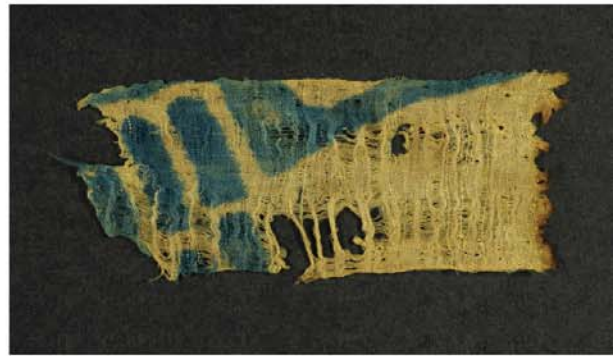


Figure 18. Cave 38, pure silk, blue geometric motifs printed on ivory background.



Figure 19. Cave 38, pure silk, *soumak* technique.



Figure 20. Cave 38, linen tabby and silk tapestry depicting swimming birds (ducks), No 719/9.



Figure 21. Cave 38, linen tabby decorated with silk tapestry; repeating pattern of swimming birds (ducks) cut into a rectangle, No. 752/1.



Figure 22. Cave 38, linen decorated with silk tapestry, with stylized devices in cartouches flanked by bands bearing an inscription (or pseudo-inscription?). The high letters are topped with stylized bird heads on a gold and blue ground (tiraz).



Figure 23. Cave 38, silk weft-faced compound tabby, blue.

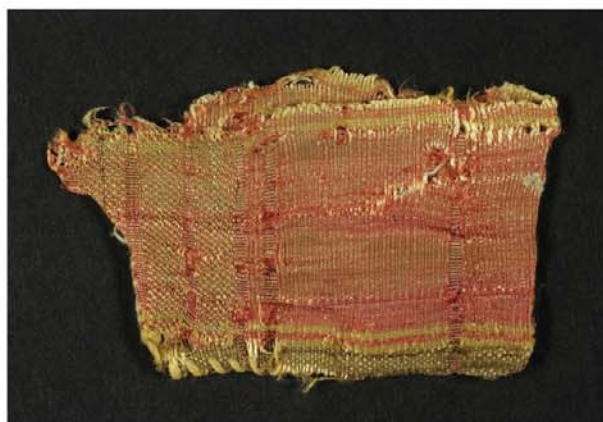


Figure 24. Cave 38, silk weft-faced compound tabby, red.

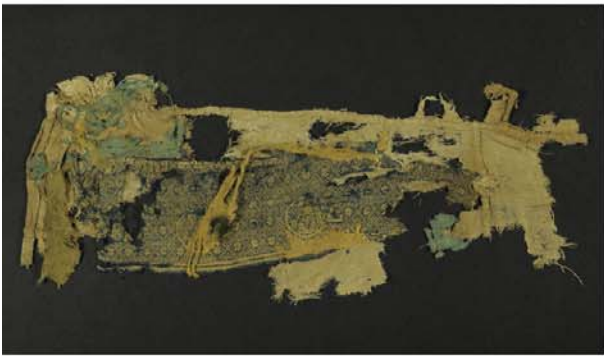


Figure 25. Five silk fragments stitched together, Cave 38.



Figure 26. Wadi Murabba'at, linen textile with brocading of Kufic Arabic letters in dark brown and traces of red silk.



Figure 27. Wadi Murabba'at, linen textile with silk tapestry in brown and red and a scroll with curling leaves.



Figure 28. Wadi Murabba'at, linen with dark brown silk embroidery.



Figure 29. Coral Island, *mulham* textile decorated with a delicate silk tapestry band.



Figure 30. Coral Island, a sleeve of a delicate *mulham* tunic.

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