

Sea-silk – The rediscovery of the ancient textile material raises new questions.

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Abstract

Sea-silk is made of the fibre beard of the pen shell (*Pinna nobilis* L.), endemic in the Mediterranean. The fibres were cut off the mussel, washed, dried, combed and spun. The result is a fine textile material, since antiquity appreciated for its naturally iridescent brown-golden colour. Sea-silk was rare and nearly unknown in textile history. Sixty small textile items have been inventoried, mostly knitted, but also stitched, embroidered or fur-like. They belong to natural history, not textile collections. The oldest fragment was dated fourth century CE; the oldest surviving item is a knitted cap dated fourteenth century. Sea-silk is often confused with byssus. In the sixteenth century, naturalists have denoted the fibre beard of *Pinna* by the Latin term *byssus*, in analogy to the ancient byssus meaning fine linen. These double meaning has created many misapprehensions. Today new problems arise from old textile byssus relics newly declared as sea-silk.

Contents: Revealing an old story / The pen shell and its product: byssus / Written and material evidences of sea-silk / The ambiguity of the terms byssus and sea-silk / Sea-silk in antiquity / What a mess! Byssus and sea-silk in modern mass media

Revealing an old story

In the long, fascinating history of textiles, sea-silk is only a tiny chapter. In textile research it has hardly ever been a topic – with a few exceptions. Forbes mentions sea-silk in Volume 4 of his *Studies in Ancient Technology*. In the last part of the chapter named “Other fibres”, he writes: “Vestments were made [...] even from the bundles of fibres from the pinna mussel of the eastern Mediterranean coast.” (Forbes 1956, 63). Furthermore sea-silk was – and still is – a topic in myth and legends, especially because of its golden gloss and the corresponding associations. In 1998, the first critical, 200-page monograph was published in the Canadian journal *Ars Textrina*: “Pinna and her silken beard: A foray into historical misappropriations” (McKinley 1998). Daniel McKinley (1924-2010) meticulously analysed texts from antiquity to the twentieth century, from Portugal to China, identified unexamined iterations of recurring assertions, deconstructed myths and legends and uncovered countless errors. It’s a great pity that this essential source for any future studies didn’t get the attention it deserved. One reason may be that it has not been easy to access. I am happy to make the whole text – with the permission of the author’s family – available on the Internet site of the ‘Project Sea-silk’: <http://www.muschelseide.ch/en/bibliographie/Monographien.html>

In the same year 1998, without knowing of each other, I started the ‘Project Sea-silk’ at the Natural History Museum Basel, Switzerland with three main objectives:

- To compile an inventory of all objects in sea-silk still existing in museums and private collections worldwide
- To trace the history of this almost forgotten textile material, its production and manufacture, trade and diffusion
- To document the knowledge and remains of this cultural heritage of Italy and the Mediterranean countries.

The “Project Sea-silk” went public in 2004, when the Natural History Museum and the Museum of Cultures Basel, Switzerland, presented in a joint exhibition for the first time over 20 textile objects of sea-silk, dating from fourteenth to twentieth centuries. The exhibition catalogue, *Muschelseide – Goldene Fäden vom Meeresgrund*, (Maeder et al. 2004) represents the first illustrated book to the theme. All exhibition and catalogue texts were written in German and Italian, as from the beginning of my studies it was clear, that sea-silk was first of all a cultural heritage of Italy. Parts of the exhibition were conceived as a travelling exhibition and presented later in Taranto and Lecce, Italy, and in Lugano, Switzerland. Since 2010, an extensive and richly illustrated Internet site presents the inventoried sixty sea-silk items, the biology of the *Pinna nobilis* L. and its fibre beard, the production process of the fibres, and - the most important part - the history of sea-silk, followed by a large bibliography. The regularly updated projects homepage www.muschelseide.ch is written in English, German and Italian.

The pen shell and its product: byssus

Sea-silk is a product of the noble pen shell *Pinna nobilis* L. (Šiletić 2004). (Figure 1) This bivalve is the largest shellfish of the Mediterranean, where it is endemic. The sedentary mollusc stands upright in the sea grass weeds along the coast, with almost one third buried in the sand. To withstand the flow, it fastens itself with a beard of very fine, strong filaments in the ground. These fibrous tufts, zoologically called *byssus*, with a length of up to 20 cm, constitute the raw material for sea-silk. The tufts cut off the mussel have to be washed several times, dried, combed and spun like other natural fibres. The result is a fine, resistant textile material, once famous and highly appreciated for its natural iridescent, brown-golden colour. (Figure 2) The pen shell *Pinna nobilis* L. is protected since 1992, prohibiting a reanimation of the sea-silk production.



Figure 1: *Pinna nobilis* L. with fibre beard (byssus) and cramp (de Réaumur 1717) and Figure 2: Sea-silk: washed and combed fibre beard (byssus). EMPA St. Gallen

Written and material evidences of sea-silk

The use of sea-silk goes back to antiquity. This is proved by a fragment of the fourth century CE found in a woman's grave of the Roman town Aquincum (today Budapest) (Hollendonner 1917, Nagy 1935). As this fragment was lost during World War II, I have studied the circumstances of this find, the situation of the Roman settlement and the background of the finder (Maeder 2008). The oldest existing sea-silk item is a knitted cap dating to the fourteenth century, found near the basilica of Saint Denis near Paris, France. In modern times, South Italy - Sardinia and different places in Apulia - hosted the main centres of the small-scale production, mostly done in convents, girls' schools and some families (Basso-Arnoux 1916, Mastrocinque 1928, D'Ippolito 2004, Carta Mantiglia 2004). Only small accessories were made: knitted gloves, shawls, ties, caps, fur-like items like hats, muffs, collars and children's clothes, wall hangings and covers stitched and embroidered with sea-silk on linen or silk. Woven sea-silk is rare, although in late eighteenth century experiments with sea-silk were made in French and German textile factories (Maeder 2013).

Nearly all sea-silk items are found in natural history museums spread across Europe, rather than in textile collections. One reason is certainly, that in past centuries, sea-silk textiles were often gifts between elites or souvenirs from Italian travellers on Grand Tour. These items were kept together with the shells in private cabinets of curiosity, which for their part formed later the foundations of the first natural history museums in Europe. In the United States, sea-silk items bought in Italy by entrepreneur collectors were presented at different industrial exhibitions. One example is a collection of sea-silk items shown at the world exhibition in Chicago 1893. A knitted pointed cap and gloves and a fur-like muff were later sold to Marshall Field, the founder of the Field's Museum of Natural History in Chicago (Maeder 2009). (Figures 3 and 4)



Figure 3: Knitted glove, sea-silk. nineteenth century, Taranto
(The Field Museum of Natural History, Chicago)

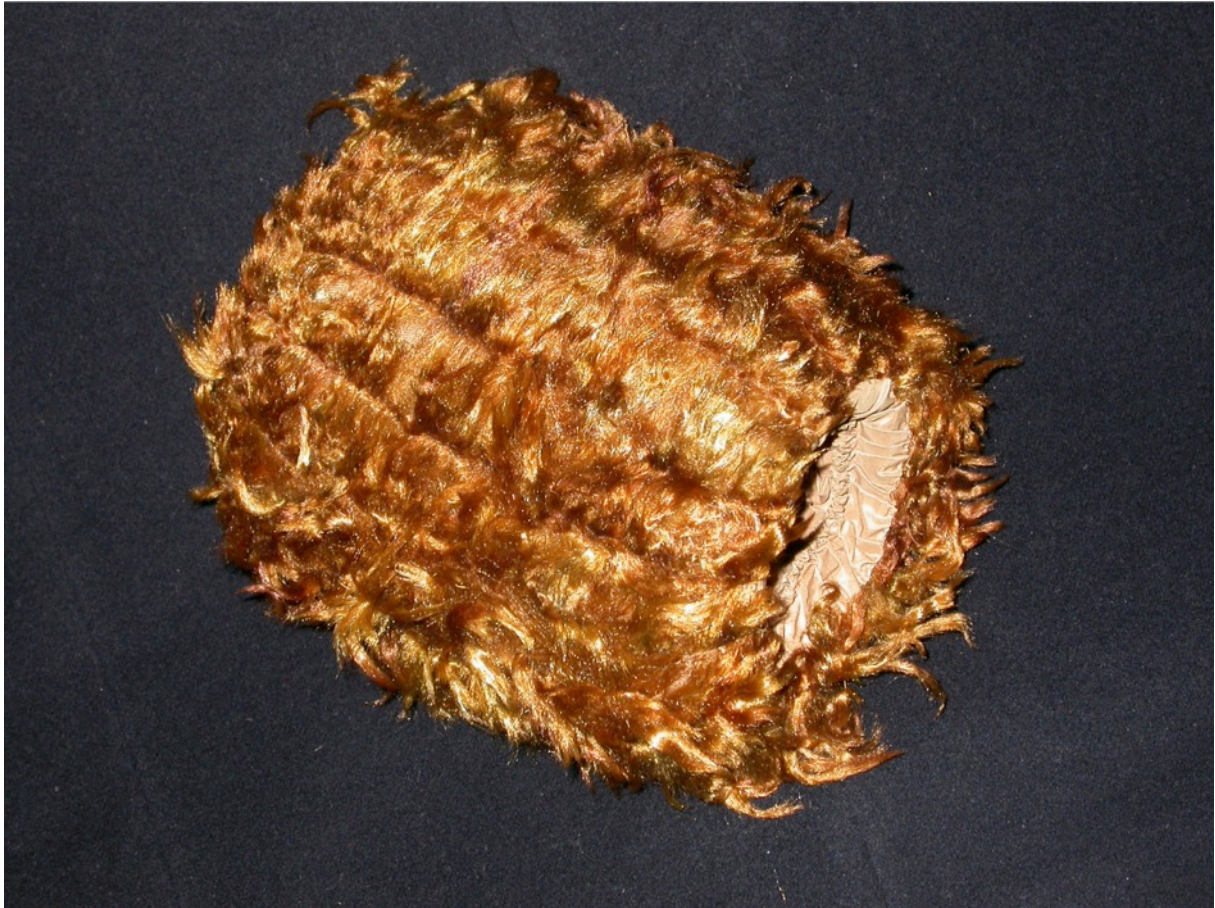


Figure 4: Muff, sea-silk. nineteenth century, Taranto
(The Field Museum of Natural History, Chicago)

The ambiguity of the terms byssus and sea-silk

The different terms for sea-silk have been studied in the literature of four languages from fifteenth century onwards.

English	Italian	French	German
Sea-silk	Bisso marino	Soie marine	Muschelseide
marine byssus byssus silk pinna silk pinna wool marine wool sea wool fish wool silkworm of the sea	bisso seta di mare seta marina lana marina lanapinna lana pena lanapesce lana di nacchera pelo d'astura	soie de mer soie de pinne soie de byssus laine de mer laine marine laine de pinne bysse byssus de pinne marine poil de nacre	Byssus Byssusseide Seeseide Fischseide Steckmuschels eide Meeresseide Pinnamarina-Seide Seewolle Fischwolle Meerwolle

As we see, often silk or wool are connected with an adjective of sea or fish or a mollusc. Highlighted are all the derivations of the term byssus - this goes of course back to the zoological term byssus for the raw material. We find this fact in all four studied languages. But why were the fibre beards of Pinna – beginning with the sixteenth century - called byssus? This is a complicated story going back to a faulty translation of Aristotle’s History of animals (Laufer 1915, 106, van der Feen 1949, Beullens and Gotthelf 2007). I analysed this fact in a presentation at the first workshop treating sea-silk (together with purple) in Lecce, Italy in 2013 (Maeder, 2015). Byssos (βύσσος) in Greek and byssus in Latin is a textile term well known in antiquity, meaning “fine linen”. In hieroglyphs it was “royal linen” – the finest quality of linen, produced in temple surroundings and used for priests and gods and for mummy bindings (Quenouille 2012, 60-62, Maeder 2015, 2016, in publication a, b). The term byssus is also well known from the Old Testament, where it occurs more than 40 times (some references for antique byssus: Braun 1680, Chambers & Scott 1753, Rosa 1786, Gilroy 1845, Bock 1895, Forbes 1956, Wipszycka 1965, Vial 1983, Sroka 1995, Quenouille 2005).

The fact is that the fibre beards of Pinna were named byssus in analogy to the byssus of the ancients – and not vice versa! The French naturalist Guillaume Rondelet (1507-1566) was the first to use the term in this new sense and summarized it perfectly: “*Byssus terrenus est et marina*” – there are two kinds of byssus, one of the land (meaning linen) and one of the sea (meaning sea-silk). In other words: byssus in ancient texts had nothing to do with sea-silk. Another additional difficulty arose with the fact, that at a certain moment the term byssus was – already in antiquity - also used for cotton or silk, may be even as a quality term for fineness and preciousness of a textile.

These different meanings at different times and in different languages are the reason of the ambiguity around the terms byssus and sea-silk. This lack of clarity even entered in many dictionaries and encyclopaedias and - unfortunately - also in scientific research (examples especially in Italian language see Maeder 2016, in publication b).

The *Oxford English Dictionary* reflects correctly the double meaning in its entry for the term *byssus*:

1) An exceedingly fine and valuable textile fibre and fabric known to the ancients; apparently the word was used, or misused, of various substances, linen, cotton, and silk, but it denoted properly (as shown by recent microscopic examination of mummy-cloths, which according to Herodotus were made of βύσσος) a kind of flax, and hence is appropriately translated in the English Bible ‘fine linen’.

2) Zool. The tuft of fine silky filaments by which molluscs of the genus Pinna and various mussels attach themselves to the surface of rocks; it is secreted by the byssus-gland in the foot.

What this entry does not say is, that from this “tuft of fine silky filaments” was made a textile fibre, and that the textiles made of this fibre became known by the name byssus, as seen above. Going deeper, we find in the actual Oxford English Dictionary available online (accessed 8-20-2016) an entry “*sea-silk n. a silky substance obtained from the sea-silk-worm.*” – incorrectly quoting a book of 1902 where sea-silk is correctly mentioned – without any sea-silk-worm (Hannan 1902, 183-184). The experienced researcher of antique textiles, John Peter Wild, stated once: “*To discover the meaning of a specific textile term, a lexicon is a good place to start, but a bad place to end.*” (Wild 2007, 5). How true!

Sea-silk in antiquity

“From these filaments, textiles can be obtained, they are mentioned in Greek texts from the 2nd century AD; ... but they are never called 'byssus'.” (Pelliot 1959, 530). Pelliot refers to the church father Tertullian (c. 155 – c. 240 CE), who denounced the luxury clothing with the following words: “Nor was it enough to comb and sow the materials for a tunic. It was necessary also to fish for one’s dress. For fleeces are obtained from the sea, where shells of extraordinary size are furnished with tufts of mossy hair.” (De Pallio, III,6). If we know that the pen shell *Pinna nobilis* may reach a height of over one metre, there is no doubt: he speaks of sea-silk, used as a textile fibre. This first written proof of the existence of sea-silk gives no name for the textile, it was paraphrased. Other witnesses followed: Basil the Great spoke in the 4th century of the fleece of gold produced by the *Pinna* (Homiliae in Hexaemeron, 7,6). This, I believe, is the origin of the legend, that the Golden Fleece of Jason in Greek mythology was made of sea-silk (Cole 2005). 200 years later, the Byzantine historian Procopius described “... wool, not such as produced by sheep, but gathered from the sea” (De Aedificiis, III, I, 17-20). The references become scarcer in the following centuries and during the entire Middle Ages. It is not possible at the moment to demonstrate an uninterrupted production of sea-silk.

What a mess! Byssus and sea-silk in modern mass media

In Italian we are confronted with the problem, that in common language sea-silk is often translated with *bisso* (without the adjective *marino*). The correct and coherent term *bisso marino* appears already in 1681, in the first illustrated guide for sea-shells: “... *bisso marino a distintione del terrestre, fatto di lino, ò bambagia*” (Buonanni 1681) - *bisso marino*, the byssus of the sea, opposed clearly to the so-called *bisso terrestre*, the 'rural' byssus, which consisted of linen – a citation of Rondelet 1555, of course.

This seems clear, but, as in English dictionaries, also in Italian ones the ambiguity of the term survives. I have analysed this and reached the conclusion, that almost every assertion around byssus and sea-silk can - with good conscience - be founded on some old or new entry in dictionaries or encyclopaedia (Maeder 2016, in publication b).

Just some days before the start of the ICOM costume meeting in Toronto, the Italian journalist Max Paradiso published in *BBC magazine* on September 2, 2015 a fantastic story of “Chiara Vigo: The last woman who makes sea silk”. This article, repeated some days later by the *Smithsonian Magazine*, is the summit of an impressing hype which started some years ago on a little island, called Sant’Antioco, in Sardinia. This place is well known in the history of sea-silk – there still live several sea-silk weavers. Already in 1915 the famous Florentine photographer Vittorio Alinari declares: “*Ma la lavorazione più curiosa è quella che si fa della Pinna nobilis, che viene pescata in grande abbondanza nel golfo e la cui appendice terminale (bisso), formata da filamenti setacei, viene, in prima, ripulita dalle concrezioni calcaree che vi stanno aderenti, quindi filata e tessuta. Ne deriva una stoffa di un bel colore metallico, che si avvicina al rame, con la quale si confezionano delle sottoveste che, guernite di bottoni in filigrana d'oro, pure lavorati nel paese e nel Cagliari, producono bellissimo effetto. Per ogni sottoveste occorrono almeno 900 code la cui filatura costa, all'incirca, una lira al cento. Questo non può ritenersi un prezzo esagerato perché non può filarsene che un centinaio al giorno essence il file delicatissimo e facial a strapparsi.*” (Alinari 1915). During his travel in Sardinia, Alinari was guest of Italo Diana (1890-1969), who founded some years later a textile atelier and taught many young local women not only to weave linen and wool, but also the whole production process of sea-silk. Leonilde Mereu, the grandmother of Chiara Vigo, was one of them. The last sea-silk weaver that once learnt from Italo Diana – Efisia Murrone – died in 2013 at the age of one hundred years. She was herself teacher of actual local sea-silk weavers. (Figure 5)



Figure 5: Efisia Murrioni (1913-2013) and her two last students Assuntina and Giuseppina Pes, Sant'Antioco, Italy

What Chiara Vigo presents in her so-called 'museo del bisso' is a perfect example of 'invention of tradition', a phenomenon extensively studied by Eric Hobsbawm and Terence Ranger in their book of 1983, *The Invention of Tradition*. She spins a made-up story of a "secret oral tradition" passed down "since 30 generations" in her family, garnished with pseudo religious rituals and shamanic prayers and songs. Visitors are fascinated, and so are the media.

All this wouldn't do any harm. But as she and her followers use the term *bisso* without any distinction in the sense of sea-silk, these stories lead to assertions like: the Bible is full of sea-silk, all Egyptian mummies are wrapped in sea-silk, and more and more textile relics around the world are – of course - from sea-silk. In Manoppello, a little town in the Abruzzi (Italy) exists a very fine, translucent veil in the Capuchin church, the so-called *Volto Santo*, venerated as the face of Christ. In 2004 Chiara Vigo 'identified' it – only at sight - as *bisso* (<http://www.voltosanto.it/Inglese/index.php>). With great probability this veil is made of linen or silk of *bombyx mori* (Maeder 2016). This *bisso* has been - without any questions or doubts – translated by journalists and authors as sea-silk, and thus found its way in several books,

papers, videos, and films (e.g. Badde 2005, 2010 a). Another example is the veil of the Madonna in Assisi, perfectly analysed as silk of *bombyx mori* (Flury-Lemberg 1988, 318 and 492, Maeder 2016, in publication b). Mass and social media and – most of all - catholic journalists spread these sensations, without any serious background research (e.g. Badde 2010 b). Countless interviews, radio broadcasts, documentary films and self-promoting books diffuse Chiara Vigo and her idea of sea-silk, some Sardinian recommend her as UNESCO intangible cultural heritage (e.g. Lavazza 2012). All this has – except the real process of washing, combing, spinning and weaving, probably learned from her grandmother - very little to do with the historical record. But it is repeated on and on and got, by repetition and supported by mass media, a dangerous kind of “truthfulness”.

This assumed “knowledge” of the history of sea-silk slowly enters – like an inverted trickle-down effect - in scientific publications of fibre, history and textile research. I uncovered some of these unquestioned assumptions in my last publications (Maeder 2016, in publication b). It is difficult to handle this fact in a correct and honest way. And the question remains: What are the consequences for future textile research?

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