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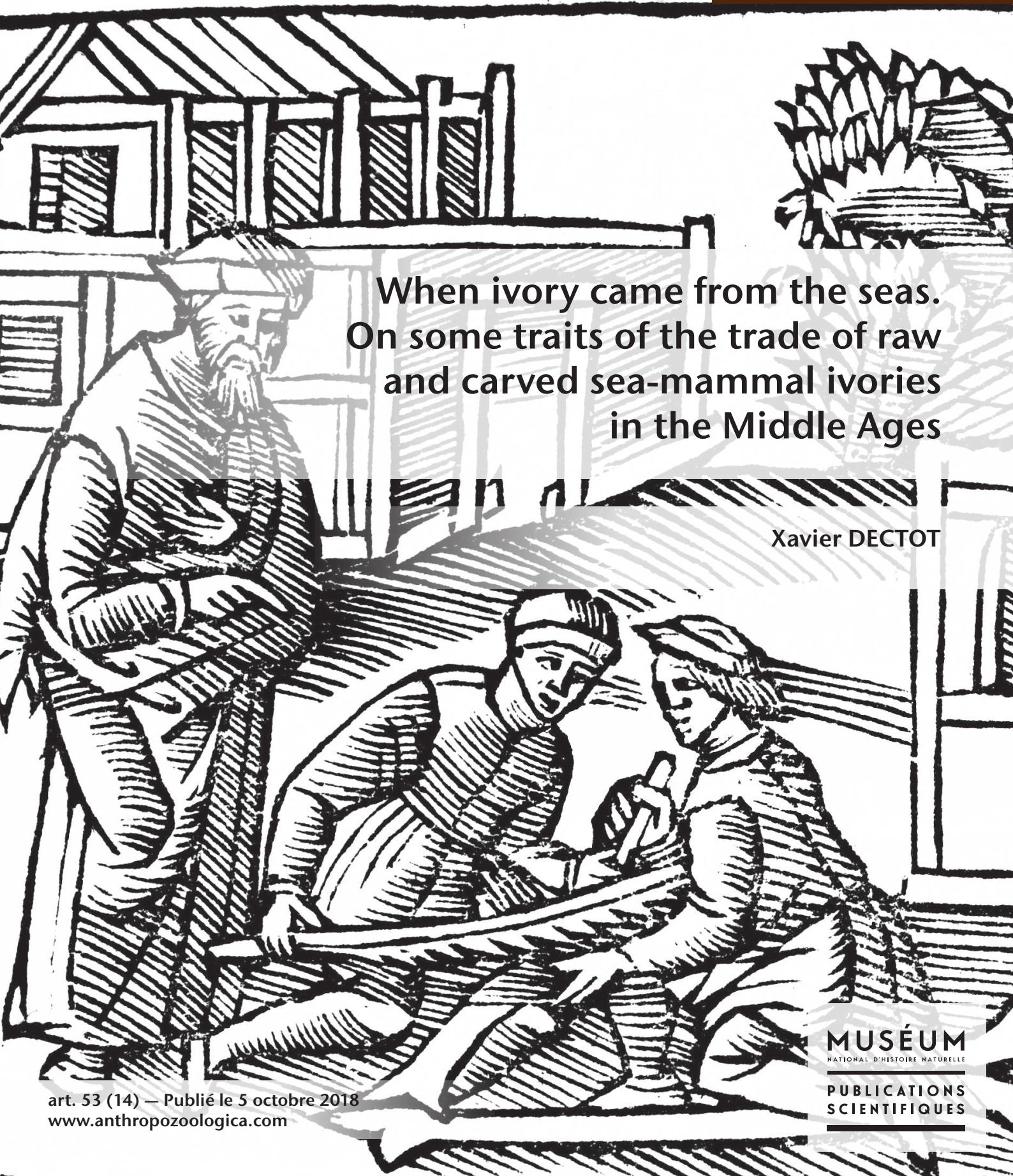

When ivory came from the seas. On some traits of the trade of raw and carved sea-mammal ivories in the Middle Ages

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When ivory came from the seas. On some traits of the trade of raw and carved sea-mammal ivories in the Middle Ages

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ABSTRACT
Even if it played a part, it is not so much the lesser availability of elephant ivory as the Norse expansion in the Northern Atlantic that brought the success of walrus ivory throughout Western Europe and far beyond. The strength of demand did not only bring the extinction of the species in Iceland, but it was also, most probably, one of the main drivers of the sustained Norse settlement of Greenland. Maybe for the first time, at least for such an important luxury production, the division between the places the commodity was gathered and those it was processed is complete. The main workshops were in Norway, mostly in Trondheim, but also in Germany, in England, long after the end of the Danelaw, and even in France and in Castila. Raw tusks were traded, but also carved ivories, which sometimes went back to the initial collection point. Another ivory exported from the Arctic seas, narwhal teeth are even more problematic. The Greenland Norse probably never were in contact with the live sea mammal, but would find its inidentifiable body, or fragments of it, on the shore, after the animals had been eaten by killer whales.

KEY WORDS
Ivory,
walrus,
narwhal,
unicorn,
Greenland,
Iceland,
khutū,
trade,
Middle Ages.

RÉSUMÉ
Quand l'ivoire venait de la mer : de quelques aspects du commerce de l'ivoire des mammifères marins brut et sculpté au Moyen Âge.
Même si elle y a aidé, ce n'est pas tant la relative pénurie d'ivoire d'éléphant que l'expansion scandinave dans l'Atlantique nord qui a entraîné le succès de l'ivoire de morse dans toute l'Europe occidentale et bien au-delà. L'intensité de la demande a non seulement entraîné la disparition de l'espèce en Islande, mais aussi, probablement, joué un rôle essentiel dans le maintien de la présence scandinave au Groenland. Pour la première fois peut-être, en tout cas pour une production de luxe d'une telle ampleur, la séparation entre les lieux de collecte du matériau et ceux de son exploitation est complète. Les principaux ateliers se trouvent en Norvège, en particulier à Trondheim, mais aussi en Allemagne, en Angleterre, et ce bien après la fin du Danelaw, voire en France ou en Castille. Et il n'y a pas que l'ivoire brut à voyager, mais aussi l'ivoire sculpté, parfois d'ailleurs vers les territoires de provenance de l'ivoire brut. Autre ivoire exporté depuis les mers arctiques, la dent de narval pose encore plus de questions. Les Norrois du Groenland n'étaient probablement jamais en contact direct avec le mammifère marin, mais pouvaient en trouver des cadavres, ou des fragments, inidentifiables, échoués après que les animaux aient été tués par des orques.

MOTS CLÉS
Ivoire,
morse,
narval,
licorne,
Groenland,
Islande,
khutū,
commerce,
Moyen Âge.

Fig. 1. — The Symmachi Panel. Rome, late 4th-early 5th century. Victoria and Albert Museum: 212-1865. Height: 29.6 cm (Photo © Victoria and Albert Museum, London).

INTRODUCTION

Anybody interested in the historiography of ivory carving in the central Middle Ages in Europe would think that elephant (*Loxodonta africana* (Blumenbach, 1797), *Loxodonta cyclotis* (Matschie, 1900) and *Elephas maximus* Linnaeus, 1758) ivory was the only sort valued by carvers, for whom other materials, whether ivories from other mammals, horn or bone were only poor substitutes. It is true that carved elephant ivory could be seen as an antique practice, tracing its roots to the Roman Empire (Fig. 1) and, following its footsteps, the Carolingian Empire. Furthermore, after a quick survey of the chronology, one could infer that walrus (*Odobenus rosmarus* (Linnaeus, 1758)) ivory carving, specifically, only started when disruption of trade routes made elephant ivory scarce in Western Europe, and waned when new routes made the pachyderm's tusks available again. In addition, the moment walrus ivory carving fades is also the moment when the Embriachi, artists and skilled entrepreneurs, develop the use of bovid bones (on the Embriachi workshops, see Tomasi 2010).

This perception of the place of ivory relies on three preconceptions. The first is the undeniable link between elephant ivory and the Roman Empire (Fig. 1). The efforts made by the Carolingian Empire to support new elephant ivory workshops are a clear testimony of the link established in the early Middle Ages between the commodity and the memory of the Empire. The second relies on the idea that elephant ivory would be scarce in Europe between the apogee of the Carolingian empire and the Gothic era. Whilst the fact that the quantity of elephant ivory strongly increased from the mid-13th century is undeniable (Guérin 2010), important quantities were brought at least in Southern Europe in the previous centuries, mostly through Swahili Coast trade routes until the 10th century (Horton 1996), then through the Sahara in the 11th and 12th centuries (Guérin 2013). The third is even more open to controversy. Elephant would be an exotic animal, from another continent, making its ivory a luxury product, source of prestige, whilst walrus, on the contrary, would be a common animal, at least in Scandinavia, and, being more abundant, its ivory would be less coveted and, as a consequence, a weaker affirmation of status and wealth.

Obviously, one cannot deny that the qualities of elephant and walrus ivories are different. First, they do not have the same dimensions. The tusks of today's African elephants vary between 50 cm and over two meters, but hunt and poaching have caused a progressive diminution of those maximal dimensions, as individuals with longer tusks were the more sought after (Chiyo *et al.* 2015). The cementum layer (the exterior of the tooth, that must be removed to access the ivory proper) is relatively thin, and primary dentine (i.e. ivory) constitutes more than 95% of the tusk (Espinoza & Mann 1991: 10, 11). Walrus tusks, for their part, measure one meter at the most. Moreover, they contain a lesser quantity of ivory proper, as the external cementum layer is very thick and, in addition, the primary dentine hides, in its core, a large layer of secondary dentine, marbled and granulous, which is unfit for sculpture (Espinoza & Mann 1991: 14, 15).

Does this difference in nature necessarily imply that one type of ivory would be better than the other? As far as historians since the 19th century are concerned, this seems unquestionable, but was this the same in the heart of the Middle Ages, when walrus hunting and walrus tusk trade were at their strongest?

GETTING TO THE WALRUSES

The hunt and exploitation of walruses in Western and Northern Europe predates by far the Norse expansion. Amongst other proofs of this, a walrus tusk, dated between 3100 and 2400 BC, has been found on the neolithic site of Skara Brae, in Orkney (the tusk, collected in the mid-19th century, entered the collections of the National Museum of Scotland in 1866: X.HA 168; Fig. 2). And although walruses' natural habitat had seriously regressed since the Neolithic, they were still far more widespread in the first millennium CE than nowadays. There were walrus colonies in the White Sea at least until as late as the 17th century (Hamel 1861: 306), and we know, through Ohthere's account, that Norwegian merchants went there in search of ivory as early as the 9th century:

"Swiþost he for ðider, toeacan þæs landes sceawunge, for þæm horshwælum, for ðæm hie habbað swiþe æþele ban on hiora toþum – þa teð hie brohton sume þæm cyninge – ond hiora hyd bið swiðe god to sciprapum."

[He chiefly went there, in addition to the surveying of the land, for the walruses, because they have very fine bone in their teeth – they brought some of the teeth to the king – and their hide is very good for ship's ropes.] (Bately & Englert 2008: 45)

Walruses from the White Sea were still hunted for their tusks in the 12th century, as evidenced by the discovery of small amounts of transformed ivories in archaeological digs in Novgorod (Smirnova 1997, 2001). Nevertheless, it would seem that, from the 10th century onward, the White Sea was only marginal in the supply of the Western European market in walrus tusks. Walruses were present in Iceland at least at the beginning of the colonisation, as can be seen both through the literary and juridical mentions in texts (Delliaux & Gautier In press) and through scant, yet clear, archaeological evidence uncovered in Iceland in the two past decades (see for instance Þórlákssson in Orri *et al.* [2006: 35] for eleven walrus bones found under the current city of Reykjavik, and, for a more global synthesis, Frei *et al.* [2015: 442-444]). Yet, the walrus population of Iceland seems to have declined quickly, probably due to over-hunting, and in late 12th and early 13th century sagas, the great pinnipeds only appear as isolated individuals, whose sighting, though not extraordinary, is clearly uncommon, as can be seen, amongst other examples, in this extract from Hrafn Sveinbjarnarson's Saga (Jóhannesson *et al.* 1946): "It so happened at Dyrafjord at the spring assembly, when Hrafn was there, that a walrus came on land. People went to attack it, but the whale rushed to the sea and sank, because it was mortally wounded. Later men went in ships and tried to drag the whale on land, but did not succeed. Then Hrafn made a vow to the holy bishop Thomas that if they managed to get the whale he would dedicate the tusks of the whale to him and no sooner had he made this vow that they were able to land the walrus." (translated by Steven Hartman & Astrid Ogilvie in Frei *et al.* [2015]). The methods described in this text are very similar to what we know about whale hunting in 13th Iceland (Szabo 2008: 31-65), but it is interesting to note that the main prize here is not the tongue, like with most whales, but the tusks.

Fig. 2. — Walrus tusk found in Skara Brae, Orkney, 3100-2400 BC. National Museums Scotland: X.HA 168. Height: 45 cm (Photo © National Museums Scotland).

By that time, Iceland had been superseded by Greenland as the main source of walrus ivory. In fact, as suggested by the title of Frei *et al.* (2015), one could argue that walruses were one of the main reason for the continuous settlement of Greenland throughout the central Middle Ages. In fact, the available data, as exploited by Frei *et al.* (2015: 446, 447), shows that walrus hunting took a very sizeable amount of the year for the Norse communities of Greenland, both in the West and the East settlement. The main hunting area was Norðurseta, which can most probably be identified with Disko Bay, a point of importance we will come back to (Arneborg 1993). According to the *Grænlandiæ vetus chorographia 'a af-gömlu kveri* (Magnússon & Rafn 1838: 228), it took fifteen days for a six-oar boat to reach the hunting grounds from the Western Settlement and twenty-seven days from the Eastern Settlement, leaving, in fact, only seven to eleven weeks for the hunt itself (McGovern 1985: 305). In addition, those six-oar boats probably could not be loaded with more than two full-sized walruses, or around 160 heads (McGovern 1985).

Fig. 3. — Crozier and ring found in the tomb of bishop Olafur (1246-1280) in Garðar. Nationalmuseet, Copenhagen. Crozier height: 14 cm (Photo: Nationalmuseet Copenhagen: CC-BY-SA).

The hunt was clearly geared towards gathering raw materials, tusks and hide (which could be used to make ropes), but, in a world were the workforce was scarce and sea-travel dangerous, it did concentrate a very high amount of resources, and, in fact, we will see later that the walrus byproducts were probably the main exports from Greenland.

Unlike with actual whales, where all the butchering took place on the beaching grounds (Szabo 2008), archaeological evidence shows that, for walruses, the head, or at least the upper maxillary, was separated from the body and brought back at home for extraction. Even in the earlier Icelandic sites, extraction was realised with great care and skill, leaving the head to decompose for some weeks to loosen the root before extracting the tusk with a narrow bladed instrument (Frei *et al.* 2015: 443). The fact that walrus is omnipresent in the excavated archaeofauna of medieval Greenland (Frei *et al.* 2015: 446) shows that, even if we cannot be sure that all of the Greenlandic Norse population participated in the actual hunt, all homes took their part in the extraction process, even farms situated inland. Yet, this industry was entirely focused on the production of raw material. The transformation took place elsewhere.

Whilst ivory chips are present in Greenlandic settlements (McGovern *et al.* 1996), they are byproducts of the extraction of the tusks and not the result of their actual carving. In Iceland, only one ivory carving workshop is known of, that of Margrét hin Haga. She is named in the *Páls saga biskups* (Vigfusson & Powell 1905: 425-458 for an English translation; Egilsdóttir 2002 for the latest edition) as the wife of Thorir, a priest and assistant of bishop Páll Jónsson, and as "the most skilled carver in all Iceland". We know that she carved a crozier, a gift for the archbishop, and an altar for the bishop. Yet, Páll was bishop between 1195 and 1211, long after the walruses were abundant in Iceland, hinting that the tusks used by Margrét where most probably imported from Greenland. Having the name of an artist is a rare thing for the Middle Ages, and, as always, authors have tried to attribute to Margrét some of the most famous

Fig. 4. — Oliphant given to Philip III of France by Magnus VI of Norway. Trondheim, 2nd half of the 13th century. Florence, Museo Nazionale del Bargello: 39 C. Length: 52.5 cm.

walrus ivory pieces. Alas, recent datation of the bishop's tomb in Garðar have shown it to belong to Olafur, who was bishop from 1246 to the 1280s, and not to the, arguably more famous, Jón Árnason, who occupied the see between 1189 and 1209 and thus was a contemporary of Margrét (for a recent reassessment of the history of the bishop see of Garðar, see Richter 2017; Fig. 3). In much the same way, the Lewis Chessmen date from the third quarter of the 12th century, before the period we know Margrét was active as an ivory sculptor (Robinson 2004; Caldwell & Hall 2014). Beyond the attribution game, it seems of much greater interest to note that not only is Margrét a married woman, but her area of work is different of her husband's (albeit, arguably, she could hardly enter priesthood herself). Although this is not the main focus of this paper, this is yet another clue to the existence of autonomous female artists inWestern Europe in the Middle Ages (Martin 2012).

TRADING THE TUSKS IN EUROPE AND BEYOND

As we have seen, walrus ivory was precious at least to the Icelanders and the Greenlanders, precious enough, in fact, for the latter to dedicate at least three of the few months of the year during which they could grow and harvest crops, braving the arctic sea, to hunt walruses far away from home. But how precious was it to the continental Europeans? The documents on which we can base ourselves are scant. Only one mentions the actual value of the tusks: in 1327, a shipment of tusks from Greenland landed in Bergen, corresponding to the Peter's pence and six-years tithe (first published by Munch [1864: 45], this document was commented by Roesdahl [1998: 44] and Delliaux [2016: 94] and, in most details, by Keller [2010: 3, 4], whose conclusions we use here). One can estimate that the shipment contained about 520 tusks, worth 260 burnt silver marks, meaning that the price of a pair of tusks was grossly equivalent to that of three cows. Another equivalence given by Keller (2010: 4) is that the 520 tusks were worth more than a year's tax of 4000 Icelandic farmers. Although comparisons are hard to make, this seems to indicate that a single tusk was worth more than a year of wages for most Norwegians, a clear indication that, even in a society with a very unequal distribution of wealth, they were definitely luxury items.

In fact, lairds and merchants, in Norway and in Iceland, considered that a tusk was a present fit for a king or for a saint. As we have seen, when he tries to catch a walrus, Hrafn promises his tusks to Saint Thomas Beckett (Jóhannesson *et al*. 1946). Indeed, once he has captured the walrus, thanks to the intercession of the saint, he goes to Canterbury in pilgrimage to bring the precious cargo himself. A few centuries earlier, Ohthere had, in much the same way, brought tusks in England and offered them to King Alfred. In fact, even kings considered them as presents fit for kings: the Bargello, in Florence, today holds an oliphant, formerly in the Carrand collection (inv. 39 C; Fig. 4). Gaborit-Chopin (1978: 113, 114) has shown convincingly that this oliphant could probably be identified with one mentioned before 1377 in the inventories of the Sainte Chapelle in Paris. Although it is a carved and not a raw tusk, it gives a good indication of the preciosity of walrus ivory as it was presented by Magnus VI Haakonson, king of Norway, to Philip III the Bold of France as a guerdon for a fragment of the Crown of Thorns.

Quite surprisingly, on another hand, Albertus Magnus, who considers the walrus a hairy whale (*hirsutus cetus*), does not mention the tusks as an object of trade and only speaks about the use of their hides to make ropes:

"*Hii autem qui* [*h*]*irsuti sunt ceti et alii longissimos habent culmos et illis ad saxa in rupibus se suspendunt quando dormiunt* […] *Corrigiae autem corii eius fortissimae sunt, ad magna pondera sublevanda per trocleas, et in Coloniensi foro semper venales exhibentur*."

[As for the hairy whales, they have brooches thanks to which they anchor themselves to rocks when they sleep (…) One makes with their skins very strong ropes for heavy-duty pulleys, and those can always be found for sale in the market in Cologne.] (Albertus Magnus, *De Animalibus* XXVI; Stadler 1916. On Albertus Magnus and whales, see Moulinier 1992).

Nevertheless, a little earlier, when he actually describes the tusks, he does so by comparing them to the canines of elephants and boars, two other sources of ivory in Medieval Europe:

"*Quidam enim habet rictum oris dentatum valde magnis et longis dentibus ita quod plerumque inveniuntur duorum cubitorum, aliquando trium et aliquando quatuor, sed plerumque inveniuntur unius cubiti, et praecipue duo canini sunt longiores aliis et sunt subtus cavi sicut cornu ad modum dentium elefantis et ad modum dentium apri qui culmi vocantur* […]"

[The first one, when it opens its mouths, shows very long teeth, usually two cubits, sometimes three or even four, but more often only one; two of those teeth in particular – the canine teeth – are longer than the others, and hollow inside like a horn. They are similar to the teeth of the elephant and those of the boar, that are named brooches (…)] (Albertus Magnus, *De Animalibus* XXVI; Stadler 1916).

Albertus Magnus has a very imprecise notion of what a walrus actually looks like. He considers it to be the male of the whale, and far bigger than its female. This could call for speculation, but one should note that the size of the skin of a walrus hints at a far bigger animal than reality, because of all the wrinkles (as a matter of fact, until the early 20th century, European taxidermists, who had never seen walruses, produced stuffed animals far bigger than they really were, as shown, amongst other, by the astonishing walrus in the Horniman Museum [NH.H.44]). Whilst his description of whale hunting is quite realistic, his vision of walrus hunting is fantastic to say the less, probably because neither he nor his sources had ever actually witnessed walrus hunting, contrary to whale hunting. But, on the other hand, his description of the tusk is quite precise, especially with the note on the fact that it is hollow on the inside. In our opinion, this would tend to prove that, even if he does not mention them as a commodity, Albertus Magnus (or his source) had actually seen raw walrus tusks.

With walrus tusk trade ranging throughout Europe, it must not come as a surprise that, in fact, they were carved far beyond the place they were gathered. As we have already seen, we have no traces of carving workshops in Greenland, and the only one mentioned in Iceland appears a long time after walruses had ceased to be common on the island. Two places, in particular, seem to have had an important walrus ivory carving activity. The first one is Trondheim, in Norway. Many of the best walrus ivories known to us today originated in that city, with carvers hugely influenced by the sculptors of Nidaros. Those workshops did not only cater to a Norwegian clientele, but also exported widely, at least throughout the Norse world, as shown by the Lewis Chessmen now kept in the National Museum of Scotland and in the British Museum, but found in Uig, on the Isle of Lewis, in the 19th century, and which were probably lost whilst being transported to Dublin (Robinson 2004; Caldwell & Hall 2014; Fig. 5). More generally, in Scandinavia, walrus ivory was often, if in small quantities, carved in workshops which also worked on other materials (like a chess horseman found in Lund in a workshop which also made bone combs, *Les Vikings : Les Scandinaves et l'Europe* [Collectif 1992: n° 613]). It was a urban industry, often linked to the episcopal power, in Lund or in Roskilde (Roesdahl 1998), even if the Trondheim workshop did benefit from the extension of the Trondheim see, which covered most of the North-Eastern Atlantic. Another main carving place was Cologne. We know, through the already cited Albertus Magnus (*De Animalibus* XXVI; Stadler 1916) that the market of Cologne was a major trading place for walrus hides, and it should thus not come as a surprise that there also was sufficient access to tusks in the city for major workshops to develop, creating major pieces like the tabernacle from Saint Pantaleon in Cologne now in the Victoria and Albert Museum (7650-1861, sculpted *c*. 1180; Williamson 2010: 290-303; Fig. 6).

Yet, tusks found their way even further. Archaeological evidence provides ample evidence of walrus ivory carving in Great Britain. In Perth, during the excavation of a metalworker's workshop from the early 14th century, in 1975-1977, two walrus ivory knife handles were discovered, one finished and representing a green man, the other unfinished (Hall 2001), showing that the transformation of the ivory actually took place on site. The relative abundance of walrus tusks in England is also shown by its frequent use as a material for seal matrices (amongst others, one can cite an early 11th century seal die from Wallingford [British Museum: 1881,0404.1], and a 12th seal matrix from York [York Museums: YORYM 1973.5.29]; Fig. 7). In fact, the Norse trade routes through the Atlantic and the Irish sea brought raw tusks in Great Britain and in Ireland, were traces of walrus carvings have been found, amongst others, in Dublin (Wilson 2000).

Further away, one major example can be found in France: an (incomplete) series of the Four and Twenty Elders, originally from the abbey of Saint-Bertin in Saint-Omer and now shared between the Musée de l'Hôtel Sandelin in Saint-Omer, the Palais des Beaux-Arts in Lille and the Metropolitan Museum in New York (Fig. 8, sculpted *c*. 1075-1100; Gaborit-Chopin 2012). A chess piece from the 12th century now in the Walters Art Museum (Walters Art Museum: 71.145; Bagnoli 2016: n° 100; Fig. 9) might show that raw tusks even found their way to the very south of Europe. It is identified by the museum as being Castilian, and, although a figurative chess piece would be a unicum among the chess pieces from the Iberian Peninsula from that era that came to us, some elements seem to confirm this provenance. The shape of the eyes, in almond but slightly bulging, is very similar to what can be found, in the mid-12th century, at the *Puerta del Perdón* of San Isidoro de León or in the *Virgen blanca* of the Cathedral of Tudela, which also has the same jutting chin. The very specific way the queen wears her veil, also, completely draped around her face and neck like a closely fitting balaclava, is similar to what can be observed on other artworks from the north-central Iberian peninsula, like the tomb of doña Blanca de Navarra in Santa Maria de Nájera, nowadays in La Rioja (Valdez del Alamo 1996; Dectot 2018). This last example is, in fact, quite essential to contradict the frequent assertion that walrus tusk was a

Fig. 5. — Lewis Chessmen, Trondheim, third quarter of the 12th century. National Museums Scotland. Height: 6 to 10 cm (Photo © National Museums Scotland).

cheaper alternative to elephant ivory: although not as easily available than in the previous and following centuries, elephant ivory was, relatively, not rare in the Iberian peninsula in the 12th century, thanks to Islamic trade routes leading to al-Andalus (Guérin 2013), whilst the examples of walrus ivory carvings are scant. But, because they have a wider inner cavity, walrus tusks are, actually, better suited to make chess pieces, which need to be relatively light to be handled, than elephant ivory. One could also wonder which route this walrus ivory took to reach Castila.

In fact, the trade of raw walrus tusks ranged far beyond Western Europe. In the 10th century, a new commodity called *khutū* appears on markets in the Islamic world (King 2013: 263). Authors seemed to have had different opinions on what it was. Al-Bīrūnī, in the early 11th century, says "it originates from an animal: it is much in demand, and preserved in the treasuries among the Chinese who assert that it is a desirable article because the approach of poison causes it to exude. It is said to be the bone from the forehead of a bull" (Laufer 1913: 315). On another hand, Al-Kashgari describes it as the "horn of a sea-fish imported from China. It is (also) said to be the root from a tree" (Dankoff 1973: 542).

Trying to identify *khutū* as a single product might, in fact, be difficult. As pointed out by King (2013: 263), in later litterature, *khutū* and its Kitan equivalent, *guduxi*, refer to "a great many types of ivory, bone, and even rhinoceros horn, is indicative of the high prestige value associated with the name". Yet, the description given by Al-Bīrūnī leaves little doubt about one, if not the main source of *khutū*: "Its best quality is the one passing from yellow into green; next comes one like camphor, then the white one, then one colored like the sun, then one passing into dark-gray. If it is curved, its value is a hundred dinar at a weight of one hundred drams; then it sinks as low as one dinar, regardless of weight" (Laufer 1913: 315). Both the colour and the shape seem to point to some kind of ivory, yet not elephant, which was a rather common commodity, easily identifiable both by Chinese and Iranian traders. Even if other materials, including (although doubtfully) musk ox boss suggested by Lavers & Knapp (2008), could be used, it seems that this strange material was, principally, walrus tusk and, for another variety described in Chinese, essentially Kitan, sources, as the horn of a thousand years old snake, narwhal (*Monodon monoceros* Linnaeus, 1758) tusk (Laufer 1913: 318; Ettinghausen 1950).

This identification seems to be reinforced by the properties ascribed to *khutū*, which are the same as those, in European treaties, of the alicorn, and, in fact, even the idea that it would be the (singular) horn of a bull echoes this. Were did this *khutū* come from? Sadly, the sources are very divergent on the subject, citing, amongst others, people living North-East of Kitan and traders from the steppes of central Asia. Some of it could be Pacific Walruses, imported through indirect relations with Yuits, although the import of walrus ivory would be the only trace of these relations (Hansen 2013: 287; this would not explain the presence of narwhals, the habitat of which does not extend to the

Fig. 6. — Tabernacle probably from Saint Pantaleon in Cologne, Cologne, *c*. 1180. London, Victoria and Albert Museum: 7650-1861. Height: 54.5 cm (Photo © Victoria and Albert Museum, London).

Chukchi peninsula). Yet, it is to be noted that there are only a few years between the first mention of *guduxi* in Chinese sources and of *khutū* in Islamic sources, and that both occur around the middle of the 10th century (King 2013: 263). In addition, Al-Birūni also says that it is something that "the Bulgars bring from the northern sea" (Laufer 1913: 316). Finally, we have material traces of the existence of trade routes between the Norse world and Central Asia, such as the bronze, probably Kashmirian, Buddha statue found at Helgö and now in the Historiska Museet in Stockholm (inv. 25514; Gyllensvärd 2004). So *khutū* appears in the middle of the 10th century and is, at least partly, traded through the North-South central European and central Asian routes. As, alongside the walrus tusks, the odd narwhal tusk can be found, it seems safe to assume that, indeed, walrus tusks from Greenland (and from the White Sea) were not only exported in Europe but as far as China. Through Jaḥjà ibn Muhammad al Gāffarī, we also know that *khutū* was exported to the western confines of the Islamic world (Laufer 1913: 317), and, maybe, through this route, could find its way back north in Castilia.

A first effort at identifying objects from Central Asia made from *khutū* has recently been made by Matthew Elliott Gillman (2017), mostly in American collections, although his exclu-

Fig. 7. — 12th century seal matrix of a tax collector named Snorri. York Museums: YORYM 1973.5.29. Diameter: 3 cm (Photo York Museums, CC-BY SA 4.0).

sion of narwhal on the basis that narwhal tusks were not used in fragmented pieces in the Middle Ages is contradicted by evidence to the contrary (Faidutti 1996: 337, 338 for examples taken from French 14th and 15th century inventories). Pursuing such an effort in Central and East Asian collections will allow us to get a better understanding of the nature and the diversity of *khutū*.

The European trade of walrus ivory largely survived the new abundance of elephant ivory in Western Europe from the second half of the 13th century onward. We have seen that it was still a prised material in 1326 (Munch 1864: 45), and, in 1338, bishop Hákon of Bergen sent seven tusks as a present to a merchant in Bruges (Seaver 2009: 285). Yet, although, as has been shown by Kirsten Seaver based on archaeological evidence, both the Western and the Eastern Settlement survived longer than usually admitted (at least until the beginning of the 15th century for the Western Settlement, whilst the Eastern Settlement probably endured until the middle of the same century), the communications between Greenland and Scandinavia became scarce from the middle of the 14th century, probably in part because of the Black Death, which reached Norway in 1349, and accelerated a population decline that lasted nearly two centuries (Brothen 1996: 143-145). After that, walrus ivory becomes scarcer in Europe, but it is still used and coveted. Some tusks were used to made very refined objects, mostly in Scandinavia, amongst which a tusk made for Eric of Pomerania shortly before 1400, a decorated tusk with the arms of Christian I and Dorothea, who ruled over the Kalmar Union (Roesdahl 1998: 31), or a pyxis given to the cathedral of Lund by Archbishop Aslak Bolt before 1450 (Blindheim 1972: 17). Other were still used to produce chess pieces, as evidenced by late 15th century Germanic chess pieces now in the musée de Cluny (Cl. 9223; Goret & Poplin 1999: pls xxix-xxxii). There is also ample evidence that walrus ivory was still being used to make knives handles in the Turkish and Persian world in the 16th century, probably because of its association with *khutū* (Abrahamowicz 1970).

Although stray walruses still found their way in Iceland and northern Norway in those times, the walrus had nevertheless become a very exotic animal in Northern and Western Europe in the Late Middle Ages, actually less well known than in the 13th century: the one that Martin Waldseemüller (1516) put in the Norwegian sea in his *Carta Marina* is in fact mostly a trunk less elephant (and is described as a gigantic land animal with elephant teeth). In the same way, the comparison between the walrus head drawn by Albrecht Dürer, which was based on a salted head sent by Erik Valkendorf, archbishop of Nidaros, to pope Leo X (British Museum: SL, 5261.167; Rowlands 1993: 219) and the woodcut by the same of a rhinoceros (British Museum: 1895,0122.714; Schoch *et al.* 2002: 241), which is based on a description, give a good idea of which animal was the most exotic to the artist. One can only conjecture that, in the 15th and early 16th century, most of the walrus tusks that found their way to both the European and the Middle Eastern markets where hunted on the White Sea, and went south through the Novgorod and Bulgarian trade routes.

Fig. 8. — Elder of the Apocalypse, Saint-Omer, *c.* 075-1100. Saint-Omer, musée de l'Hôtel Sandelin: Inv. 2484. Height: 12 cm. © Musées de Saint-Omer.

HUNTING THE UNICORN

Walrus tusks were not the only kind of sea-mammal ivory in circulation in Europe in the Middle Ages. Whilst we will not discuss here spermwhale (*Physeter macrocephalus* Linnaeus, 1758) teeth, which were mostly a byproduct of whale hunting (Szabo 2008) and circulated in a very different manner, we need to address another ivory, which probably was the most expensive commodity of the Middle Ages and the Early Modern period, as it was misinterpreted as being a unicorn horn. Surprisingly, the question of the origin of the narwhal tusks that circulated in Europe has never been the object of a thorough investigation. Some authors hypothesise it was gathered naturally, from narwhals beached on the European coasts (Gaborit-Chopin 1978), others that they were the result of a voluntary deception from supposed vikings whale hunters who would abuse the credibility of southerners (and easterners) by passing the product of their catch as unicorn horns (Humphreys 1953: 17; Christen & Christen 2011) or that the Greenland Norse got them from trading with the Inuits and then traded them down south (Bruemmer 1993: 104, 105; Pluskowski 2004: 297, 298). Let us assess these hypotheses.

We have seen that enough narwhal tusks found their way to markets in the Islamic and Chinese worlds to be described and traded (although as a very rare product), and that at

Fig. 9. — Chess piece, Castila, 12th century. Baltimore, Walters Art Museum: 71.145. Height: 7.1 cm (Photo Baltimore, Walters Art Museum, CC).

least some of them came through European routes. In addition, in Europe, unicorn horns were rare, but not unique, and we have at least one example of a pair of tusks that were carved in England around 1150 (National Museums Liverpool: 1995.42; Victoria and Albert Museum: A. 79-1936; Williamson 2010: 382-387; Fig. 10). We do not have any written account of beached narwhals in Europe before the 17th century, and since that date, less than ten beaching are recorded (Humphreys 1953: 17, to which must be added a recent beaching, in Belgium in April 2016). Taking into account that only male narwhals have tusks, that those are relatively easily broken (Brear *et al.* 1990), a beaching once every thirty years on average cannot account for the number of tusks in circulation in Europe and beyond in the Middle Ages (some of which were carved in sword hilts or scabbards, like the *Ainkhürn Schwert* of Philip the Good of Burgundy; Fig. 11).

As for whale hunters, the references to narwhals in Norse texts are scant (two to the best of our knowledge, both cited here in Delliaux & Gautier In press). Those appearances have in common that they consider narwhal meat as inedible, casting a serious doubt on the possibility of whale hunters (or Norse walrus hunters in Greenland) killing narwhals for their meat and of the tusk being just a byproduct of a hunting venture driven by the search of food. Yet, for the sake of honesty, one must point out that these mentions of narwhals do not describe the animal, leaving the possibility open that, although the name is the same, the animal they refer to might not be *monodon monoceros* (as we will see, the name it was given in the first confirmed sightings was very different). But the idea of narwhal being preyed upon by Norse whale hunters must, anyhow, be discarded for another, essential, reason that has often been neglected: narwhals, in winter, live in zones of consolidated pack ice, whilst in the summer, they retreat North, following the receding ice (Heide-Jørgensen *et al.* 2003). In other words, if narwhals do live part of the year in the Disko Bay, as far as we know the northernmost part of Greenland were Norse ventured, they are there only in winter, a time of the year when the Norse Greenlanders remained south and when, anyhow, the ice packs would have made the Bay impossible to sail for their rowing boats.

Fig. 10. — Pair of ceremonial staffs carved in narwhal tusks, England, 2nd quarter of the 12th century. **A**, Victoria and Albert Museum: A. 79-136 ; **B**, National Museums Liverpool: 1995.42. Lengths: **A**, 117 cm (Photo © Victoria and Albert Museum); **B**, 110 cm (Photo © National Museums Liverpool).

This seems to only leave us with the hypothesis of contact with other civilisations living in Greenland which, we know, did hunt narwhal for their meat (Pedresen 1962) and could have traded their tusks with the Norse. Yet, when the Norse settled Greenland, the Dorset people had retreated from Disko Bay seven centuries earlier (Rasch & Fog Jensen 1997: 101) and where only found in the extreme North West of Greenland. After Dorset culture disappeared, Thule culture started to develop in Greenland in the 12th century (Rasch & Fog Jensen 1997: 101), although there was probably a solution of continuity with the previous settlements (Park 1993). Most of the Thule settlements in the Disko Bay date after the Norse left Greenland (Rasch & Fog Jensen 1997: 109, 110) and, in fact both Norse sources and Inuit oral tradition suggest infrequent and hostile contacts between the Skrælings and the Kavdlunait, and although the relation might have been more complex, nothing hints at potential trade links (McGovern 1985: 312). In addition, Norse-Thule contacts do not seem to occur before the late 12th century, whilst narwhal tusks are in circulation in Europe and beyond before that date.

Yet we know for a fact that Greenland Norse had access to narwhal tusks, as evidenced by the narwhal skulls found under the chancel in Garðar (Roesdahl 2001; Pluskowski 2004: 299), so we should not discard them as a source, and probably the main one, for narwhal tusks traded in Europe and Asia. But they probably very rarely, if ever, saw live narwhals. Although the life of narwhals is still a very unexplored field of marine biology, much progress has been made in the recent years through the use of GPS systems, drones, direct observation and interviews of Inuit fishermen. And to understand how Greenland Norse came upon narwhal tusks, we need to bring in another animal, the killer whale (*Orcinus orca* (Linnaeus, 1758)). Killer whales prey on narwhals, and direct observation has shown that one of the defence mechanisms of attacked narwhals is to retreat in very shallow water, within the surf zone, less than two or three meters from the land, where their predator cannot follow them, and, in some occasions, would find themselves stranded on the beach (Laidre *et al*. 2006: 459, 460; Ferguson *et al*. 2012: 11). Narwhals beached in the Disko Bay in winter would have been left to decay, and experience has shown that a decayed sea mammal has a very, very different aspect from the living one (as shown by the supposed "polar bear" [*Ursus maritimus* Phipps, 1774] cadaver found in Colonsay, Inner Hebrides, Scotland, in August 2016, eventually identified as a very decayed pilot whale, *Globicephala melas* (Traill, 1809)). In addition, when they do catch narwhals, killer whales only eat the central part of the body, leaving the head (and the tusk) and the tail floating around, sometimes drifting ashore (Ferguson *et al.* 2012: 11). Thus, Greenland Norse probably did come upon both full, but decayed and unidentifiable, cadavers of beached narwhals and heads and tusks left over from killer whales attacks that had taken place in the previous winter when they came to Disko Bay to hunt walruses in the summer. Those remains would be gathered, and the tusks exported, without the beast being actually identified. In fact, they were probably the first to think that they had found dead unicorns.

Fig. 11. — The Ainkhürn Schwert (Unicorn Sword) of Philip the Good of Burgundy, mid-15th century, Vienna, Imperial treasure, Hofburg (Kunsthistorisches Museum: SK XIV-3). Length: 104 cm (Photo KHM-Museumsverband).

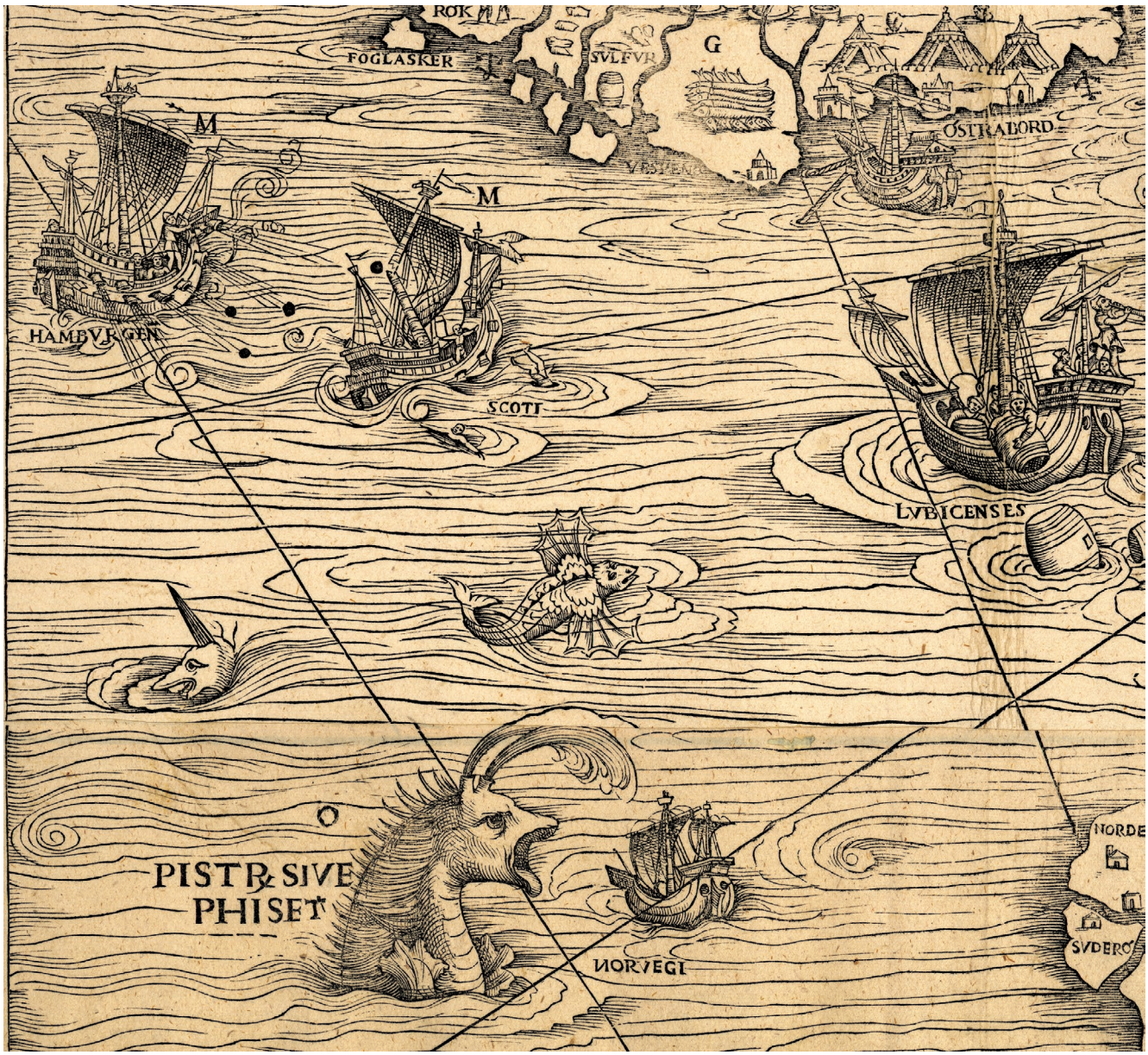

Fig. 12. — Olaus Magnus, *Carta Marina*, 1539, detail. Uppsala universitetsbibliotek (Photo Uppsala universitetsbibliotek).

CONCLUSION

This confusion did last far beyond the Greenland settlements. Olaus Magnus, in his *Carta Marina*, 1539, actually describes a sea unicorn living in the Iceland and Greenland seas (Balzamo 2005; Fig. 12), and one of the first recorded sightings of narwhal confirms them to be sea unicorns: in 1577, Martin Frobisher was sailing by Baffin Island, looking for the North West passage, and found a beached narwhal. Here is how Dionyse Settle describes it: "On this West shoare, we found a dead fishe floating, whiche had in his nose a horn streight and torquet, of length two yardes lacking two ynches, being broken in the top, where we might perceive it hollowe, into which some of our Saylers putting Spiders, they presently dyed. I sawe not the tryall hereof, but it was reported unto me of a truthe: by the vertue whereof, we supposed it to be a sea Unicorn" (McGhee 2001: 1560). The horn was eventually brought back to England, as a gift to Queen Elizabeth, and was counted as one of the crown jewels.

Thus, in the Middle Ages, walrus, and even more narwhal, tusks were prised treasures, gifts fit for the greatest kings. They were coveted not only by the Norse or the western Europeans, but throughout Europe, Asia and North Africa, although their exact nature was usually misunderstood. Amongst ivory sources, they were probably the most exotic ones, even in Western Europe where, in the 13th century, elephants where sometimes part of royal menageries, sperm whales (*Physeter macrocephalus*) were sometimes sighted at sea, but both the walrus and the sea unicorn where only known through rare accounts made by merchants and hunters who travelled far and wide to find these precious commodities.

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