A STUDY OF MEDIEVAL IRON-BOUND 'DOMED STANDARD' CHESTS IN KENT

CHRISTOPHER PICKVANCE

Chests are the most common type of furniture surviving from medieval times and a variety of types exists in Kent today. The aim of the present article is to draw attention to one category which is well represented in the county – with 16 examples – and of which over 130 exist in England. Details of their construction, timber and geographical distribution will be examined and comparisons made with medieval chests in England and the Continent. It will be argued that these chests were imported from the Baltic area in the late 14th and early 15th centuries.

Before 1500, when framed and panelled chests started to appear, English chests in England were constructed in one of three ways (Chinnery 1979, 69-123).[1] Dug-out chests were made by cutting a cavity in a trunk and then adding a thick board as a lid. Boarded chests were made of a box of five boards, nailed or pegged together, and a lid. Iron bands or straps were frequently used to reinforce the chest and to hinge the lid. Clamp-fronted chests had a front and back made of one or more boards tenoning into wide stiles (uprights); with the lids held on by pin (or pivot) or iron strap hinges. These types coexisted between 1200 and 1500; dugout chests, although 'primitive' in construction, are not necessarily older, and 17th-century examples can be found, e.g. the 1691 churchwardens' chest at St Michael's, Hernhill. Oak was the timber most commonly used. The chests were typically plain but, if decorated, were carved with roundels, arcading or tracery. In exceptional cases, exotic woods, decorative ironwork, painted heraldic symbols or carved mythical scenes can be found (Chinnery 1979; Geddes 1999).

The type of chest being studied here has a very distinctive form of construction. The lid is rounded or domed in shape, and is made from a hollowed out trunk, and the box is made of five boards held together by distinctive joints and by iron straps which also provide the hinges. This combination of dug-out lid and boarded box is highly unusual in England.

It is difficult to be certain how such chests were referred to in medieval times. Medieval documents are replete with references to chests and sometimes their contents are described (e.g., in the case of chests in churches, altar cloths, vestments, church plate, deeds and books) but it is rare for descriptions of the chest itself to be given. Examples include iron-bound, red, oaken, Danske (Danzig/Gdansk), spruse (Prussian) (Eames 1977, 108-180; Chinnery 1979, 351-363). Iron-bound domed chests are thought to be a type of chest designed for transport and described as a 'standard'; another type had a three-board gabled lid (Eames 1977, 172-177; Simpson, 2008). They always had handles and/or means of suspension from a

stout pole for carrying, and their shaped lids meant that rainwater bounced off. They also tended to be small or medium in size. But standards also provided secure storage and this may help explain the survival of so many today. Following Eames, the precise term for these chests is therefore 'domed standard chest'.[2]

Description of the sixteen Kentish chests

The shared features and differences and locations of the sixteen chests are set out in **Table 1.** Further detail is provided in the **Appendix**.

TABLE 1. DETAILS OF THE 16 DOMED STANDARD CHESTS IN KENT

Location	Width, Height, Depth (cm)	Divided till box [Left; Right; Undivided]	Ironwork type [see text]; no. of hinges	Lock plate [CS: concave-sided; later 17th C or after]	Locking bar originally present Yes / No	Nail types [gabled; round headed]	Roves Yes / No
Ash (St Nicholas)	134 x 58 x 49	L	A 9	CS	Y	G and R	Y
Ashford (St Mary's)	108 x 58 x 58	U	B 5	CS previously	Y	G	Y
Canterbury Heritage Museum	118 x 54 x 54	L	B 7	CS	Y	G	Y
Canterbury (St Dunstan's)	139 x 60 x 62	L	C 3	CS previously	N	R	Y
Faversham (Fleur de Lys Centre)	123 x 55 x 50	L	C 5	missing	Y	G and R	Y
Fordwich Town Hall	150 x 67 x 56	L	C 3	CS	N	R	N
Harbledown (St Nicholas)	165 x 67 x 60	L and R	C 5?	CS	N	G and R	?
Higham (St Mary's)	150 x 65 x 60	L and R	C 3	CS previously	N	G and R	?
Ickham (St John the Evangelist)	133 x 61 x 51	L	C 3	Later	Y	R	N
Lower Halstow (St Margaret of Antioch)	136 x 74 x 62	U	D 2	Later	N	R	N
Mereworth (St Lawrence)	136 x 61 x 56	U	B 9	CS	Y	G and R	Y
Minster in Thanet (St Mary the Virgin)	152 x 68 x 69	Not seen	D 2	Later	Y	R	?
Northfleet (St Botolph's)	135 x 58 x 44	U	B 9	CS	Y	G and R	Y
Ramsgate (St Laurence the Martyr)	138 x 65 x 52	L	C 7	Gothic	Y	G	Y
Sandwich (St Mary's)	96 x 50 x 44	Not seen	A 7	CS	N	G and R	?
St Nicholas at Wade	120 x 53 x 63	U	C 3?	Later	?	R	Y

Dimensions: the chests range in length from 3ft 2in. (Sandwich) to 5ft 5in. (Harbledown) but the most common size is 4ft 3in. - 4ft 11in. In height they range from 1ft 8in. - 2ft 5in. and in depth from 1ft 5in. - 2ft 3in.

Timber: the chests all have boxes made of pine and the six lids whose timber has been analysed by microscope by Adam Bowett have proved to be of lime, but the Ashford chest has a pine lid. Previous writers had suggested poplar and willow (Cescinsky and Gribble 1922, Vol. II, 5; Eames 1977, 173; Jennings, 1974). The timber of the lid shows erosion between the iron straps. Lime is 'fairly tough and resilient but not durable' (Bowett 2012, 113).

Construction: the chests consist of a dugout lid and a five-plank boarded box, secured by iron straps and hinges. The joints between the four walls of the chest are pegged splayed rebate joints (**Fig. 1**). This joint is highly unusual in English chests and is found on the 15 chests where the joint could be seen. The

Fig. 1 Pegged splayed rebate joint, Fordwich chest.

lid has a splayed rebate all the way around which allows it to fit tightly over the chamfered top edge of the front and back boards and the shaped sides. This helps to provide an air tight joint. Where air has been kept out, the pine inside has a remarkably fresh look, as though it had recently been cut.[3] The internal surface of the lid has a very smooth finish.

Till boxes: these are lidded compartments at the side of the chest used for keeping small items that would get lost if put into the main part of the chest. They are common in chests of all periods. Usually they consist of a single compartment covered by a single lid; occasionally there is a second, lower, compartment accessed via a false bottom. Nine of the fourteen chests which were unlocked have or had till boxes of a distinctive type: the compartment is divided into two sections, front and back, with a lid for each, and a sloping partition with chamfered edges which projects above the lids (**Fig. 2**). The partition is pegged into the side of the chest. Where a till box is missing, the existence of the peg hole is a useful indicator that it was of this type. The Ickham chest has a later locker with 17th-century lock which incorporates the till box. The Fordwich chest has a divided till box on the left and a narrow shelf on the right with upstand. The other five chests have or had single compartment till boxes.

Iron straps, hinges, nails and roves: the chests vary greatly in the amount of ironwork they carry. Some chests are armoured, and no wood is visible, as at Ash and Sandwich (Type A). None of the Kent chests has iron legs or wheels which are found on some armoured chests.[4] Some chests have a grid on the lid

Fig. 2 Divided till with chamfered partition, Fordwich chest.

of six or more vertical straps and horizontal straps, as at Ashford, Canterbury Heritage Museum, Mereworth, Northfleet and Ramsgate (Type B). Some have 3-5 vertical straps on the lid and may or may not have horizontal straps, as at Canterbury St Dunstans, Faversham, Fordwich, Harbledown, Higham, Ickham and St Nicholas at Wade (Type C). The last type of chest has only two hinges from which two straps extend little more than half way towards the front of the lid; the strap leading to the single central hasp does not reach the back of the lid, as at Lower Halstow and Minster (Type D). On Type C chests there are horizontal straps or brackets around the corners of the chest for extra strength; and on Type D, brackets only. The straps on the front and back of the box pass underneath securing the bottom. The straps are generally about 6cm wide. The result is a strongly-made chest. The thickness of the lid (8-12cm at the thickest point) and the weight of the ironwork means that these chests are heavy even when empty. It is likely that the cost of the chest would have reflected the amount of ironwork as well as the size.

For carrying, two chests have pairs of handles at the front and back (Mereworth, Northfleet) while the Canterbury Heritage Museum and Faversham chests have them attached to the ends. All but the latter two chests have one or more vertical straps at the end of the box containing staples with rings.[5] These chests would have been carried suspended from a pole passing through rings attached to iron ropes (or iron bars, extant at Northfleet, see **Fig. 3**) attached to the staple rings.

The nails holding the iron straps onto the timber are either round-headed with a low dome or have a gable-shaped head (i.e. a rectangular head of triangular cross-section, up to 2cm long) **Fig. 4** or a combination of both. Where the

Fig. 3 Iron suspension bars, Northfleet chest.

Fig. 4. Gabled nails, Ashford chest.

two types are combined, the gabled nails are generally found on the lid, for functional or aesthetic reasons or both. On the chests with most ironwork (all those of Types A and B that could be viewed) the tips of the pairs of nails securing the iron straps (including hinges) adjacent to the rear of the lid and the upper edge of the back are clenched over roves, i.e. small pieces of iron plate of various shapes.

Lock plates and locking arrangements: a striking common feature of the chests is that they have a single central lock rather than two or three locks as was common in medieval times. The lock is attached to a lock plate with a keyhole and a slot for the hasp. In most cases the lock plate is of the concave-sided, 'butterfly', shape. In some cases this is very large (30 x 20 cm at Harbledown). The design often has a flared, ridged, U shaped, hasp guard which sometimes terminates in flowers. At Harbledown and Ramsgate there are devices which have to be moved to allow the key to be inserted. On these two chests the hasp has an engraved segmented design, with alternate plain and stippled segments (**Fig. 5**). The rectangular lock plates at Fordwich, Ickham, Minster and St Nicholas are later replacements. In some cases, instead of a single hasp the hasp is split into two sections, with a separate flap which covers the keyhole and fits over a staple below the lock and is locked with a padlock; keyhole flaps can be seen at Ash, Canterbury Heritage Museum, Sandwich, Mereworth and Northfleet. The Ramsgate chest is exceptional in having a rectangular, 'gothic' lock plate; it also has other unusual features (**see Appendix**).

Either side of the central lock, all but the Minster and Lower Halstow chests

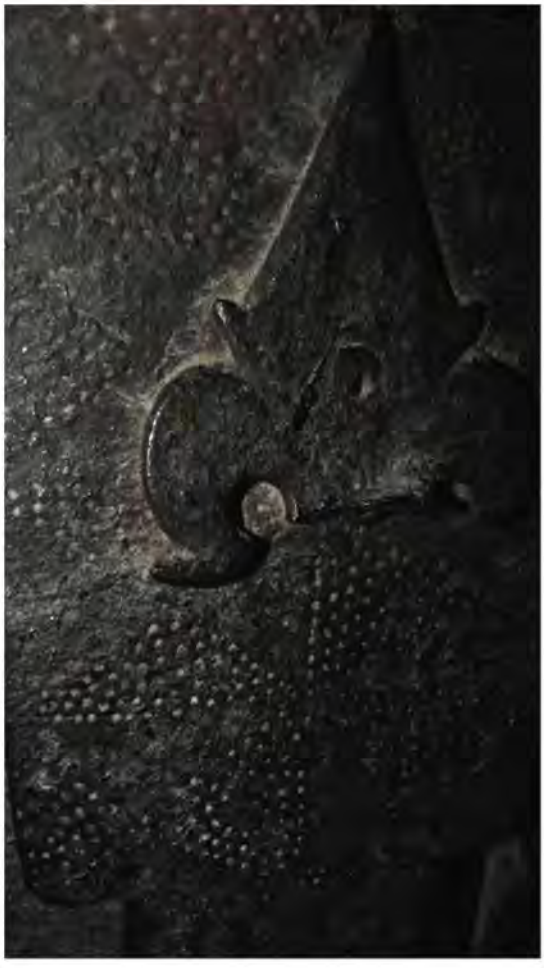

Fig. 5 Hasp with engraved segmented design, Harbledown chest.

have two hasp and staple fixings. These were secured either by two padlocks or by a locking rod or bar with a single padlock. In nine cases a locking rod was fixed across the central lock. At Ash and Ashford the rod is extant. At Canterbury Heritage Museum, Faversham, Ickham, Mereworth, Minster, Northfleet and Ramsgate the existence of staples on the box which do not correspond to hasps on the lid suggest that there was previously a locking rod.

Analysis and interpretation

The 16 Kent chests are part of a national collection of over 130, most of which are found in the eastern coastal counties. The counties with the largest collections are: Suffolk 29, Norfolk 16, Cambs. 14, Essex 8. However, Suffolk and Essex are the only counties where complete surveys have been conducted: and elsewhere the

TABLE 2. DETAILS OF DOMED STANDARD CHESTS LOCATED ABROAD

	Mixed dugout and boarded	Pegged splayed rebate joint	Lock plate	Divided till box with partition	Nails
Skrukeby Nordiska Museum, Stockholm No. 49640*	Yes	Yes	Large concave-sided	Yes and shelf	Large, flat domed, round-headed
Stralsund, Germany	Yes	Yes	Large concave-sided (later)	Probably no	Large, domed, round-headed
Kwidzyn Castle Museum, Poland	Yes	Yes	Slightly concave-sided	Probably no	Large, domed, round-headed
Elblag Museum, Poland	Yes	Yes	Concave-sided (later)	No	Large, flat domed round-headed nails but some gabled nails on lid: both are probably later
Olszytn Museum, Poland No. Mb-62-OMO	Yes	Yes	Missing	n.i.	Large, round-headed but not domed
Gruuthuse Museum Bruges No. 103307	Yes	Yes	Rectangular probably later	Yes (left) right missing	Some gabled nails? Also pyramid-headed nails

* (von Schoultz 1949)

total is continuously rising.[6] Examples are also found in Poland, Sweden, Germany and Belgium but the numbers are very small compared with those in England. Details of six chests located on the Continent are presented in **Table 2**.[7]

Today, the English chests are found mainly in churches but also in museums and Oxford and Cambridge colleges. Since chests are often given or bequeathed to churches, especially as they go out of fashion in homes, it is impossible to know what proportion were originally placed in churches and what proportion originally had secular uses. For two of the Kent chests studied here some documentation exists. According to his will of 1533, Henry Hatch, a Faversham businessman and benefactor, who had moved there from London, left 'To the [St Mary of Charity, Faversham] church my chest bound with iron, the which I bought of Henrey Estey of London, to put in the towels and plate of the church' (Duncan 1906, 128). It was recently transferred to the Fleur de Lys centre.

The Ickham chest is almost certainly the one described in the 1393 founding deed of the John Denys Chantry:

> I will that the books, and vestments, and chalices, the embroidered hangings, and altar ornaments, the charters, and All muniments in any way relating to the lands

> and possessions of the same Chantry, and all other valuables, except two vestments, a missal, and a book called a porthors, one of which vestments is to be of inferior kind, for week days, and the other a better one for Sundays and Festivals, together with the ornaments needed for the altars aforesaid, be in a certain chest, bound with iron, arranged for such things, well secured, with two locks,[8] fastened with different keys, in the custody of the Wardens of the said Church, and in the same Church, of which one key shall remain with me, my heirs and assigns, saving that on the chief Festivals one of the better vestments there be delivered to the oft-mentioned priest to celebrate in on that day, which vestment, given out to him for that occasion, the same priest shall return to the said Wardens, or to one of them, the same day to be replaced in the said chest. (Frampton 1902, 213-4)

Timber

In recent decades dendrochronology has become a widely used tool in dating and provenancing timber in buildings and furniture. The pattern of growth seen in tree rings follows regional and local patterns and allows the construction of regional and site chronologies against which new samples can be matched. Attempts were made to date the pine in three of the Kent chests, at Fordwich, Ash and Canterbury Heritage Museum, but only the Fordwich chest could be dated. The latest dateable ring was 1374 but the sapwood could not be dated as the rings were too close. It was concluded that the boards came 'from a tree felled around the beginning of the fifteenth century' and that the most likely place of origin was present day northern Poland (Bridge 2012). This result was in line with the results obtained for two chests at Mendlesham, Suffolk, which were dated a decade or so later and attributed to northern Poland, south of Gdansk (Sherlock 2008). It is also close to the 1393 date of the Ickham chest.[9]

The origin of the pine is consistent with the idea that the chests were made in what is now northern Poland but does not guarantee it. It is generally considered that for economic reasons trunks were floated down the river (e.g. the Vistula near Gdansk) and then planked (Daly 2007; Tyers 2004). But once planked the pine could have been transported and chests manufactured in several locations, e.g. in the Vistula delta or more widely (e.g. Germany or Sweden). It would thus be unwise to exclude the possibility of multiple places of production within a single region.

Based on her research on Hull and Kings Lynn port records, Childs writes that there was an 'explosion' of Norwegian, and then Baltic, timber exports to England after 1340 but that its peak had passed by the mid 15th century; and that conifer exports dominated exports from Scandinavia (Childs 2002; Daly 2007, 187-202). Timber and other raw materials such as iron, fur, and flax were imported against exports of wool and cloth (Bridge and Miles 2011; Childs 2002; Daly 2007; Malowist 1987; Postan 1987; Tyers, 2004). Pine did not grow in England in medieval times, though it did grow in Scotland (Rackham 2006, 28, 289-290) but it was imported in planks from Scandinavia from the 13th century onwards as port records and building accounts show (Bowett 2012; Childs 1986; Chinnery 1979, 164; Postan 1987, 174; Salzman, 1966).[10] The fir, spruce, pine and deal (softwoods which are considered to be synonymous) referred to in historical records must therefore have been imported.[11] Manufactured goods including chests were

imported from the 14th century and especially after 1400 when the 'eastern Baltic, especially Polish, areas were dominant' (Childs 2002, 201). The development of this trade is explained by increased demand (partly due to increased real incomes in late 14th-century England), low wages in Danzig/Gdansk, the availability of sawn rather than riven timber, lower transport costs (due to increasing ship size and efficiency), and the organizational capacity and enterprise of Hanseatic and English merchants (Childs 2002; Rackham 2006; Tyers 2004).[12] The initiative for the trade could come from landowners contracting merchants or merchants leasing forest from landowners (Simpson 2014). Interestingly, the 1340-1450 period for timber exports mentioned by Childs includes the 1393-1420 dates for the two Kent chests.

Given that the study of early chests is in its infancy, it cannot be ruled out that some domed standard chests were made in England from imported pine.[13] However, the evidence presented here of the very distinctive features of the domed standard chests in England relative to other chests in England, and their similarity to domed standard chests on the Continent, makes this very unlikely.[14]

Construction

What is most striking about these chests is their radical differences from English chests. As shown above, they all have the mixed dugout/boarded construction and the pegged splayed rebate joint used for joining the four walls of the box which are not known in England.[15] English medieval boarded chests use the nailed or pegged butt joint or plain rebate joint. However the pegged splayed rebate joint is found on all the 'foreign' domed standard chests in Table 2.

Till box

The type of till box (divided into front and back parts and with a chamfered partition), found on nine of fourteen Kent chests), is also not found among English chests.[16] But it is found in the Skrukeby and Gruuthuse chests (see Table 2).[17] Thus the divided till box is not as consistently found as the construction method and joint but it is found in two-thirds of the Kent chests, which still contrasts with its absence among English chests. This, together with the unbalanced geographical distribution of the chests, supports the idea that the chests are a Baltic export good rather than an English export to the Continent.

Red stain

A large number of the chests have an original maroon stain. This may be red ochre, made from hematite, a type of iron oxide, and it is relevant that 'sprews oker' or Prussian ochre is a red colour (Chinnery 1979, 199; Salzman 1966, 170). Two chests (Faversham and Ramsgate) are covered with a yellowish brown paint or stain but where this has flaked off the maroon stain is apparent underneath.

Lock plates

All but one of the original lock plates on the Kent chests are concave-sided, as are

the two original lock plates on the continental chests (Skrukeby and Kwidzyn). This type of lock plate is often found on early chests from Lower Saxony and is likely to have originated in that region. Lower Saxony is known for the early development of its iron industry and is close to the Lorraine and Meuse areas reputed for artistic metalwork (Haedeke 1970). Chinnery (1979) suggests that butterfly lock plates were in use in England from 1300-1550, but this assessment was made before dendrochronology had developed. Nevertheless, the major study of early chests in the Luneberg Heath monasteries shows that the degree of concavity increases from the earliest example, on a dendro-dated chest from 1322, to 1375, which is compatible with Chinnery's dating.[18] In Kent, the tracery-carved clamp-fronted chest at St Mary of Charity, Faversham, has a butterfly shaped lock reserve (but lacks its lock plate). This chest is dendro-dated 1390-1420 and has been shown to have many similarities with Lower Saxony chests, to the point that it is almost certain to have either been an import or made by immigrant craftsmen working in that tradition (Pickvance 2007). Thus the lock plate evidence is consistent with the idea that the domed standard chests with butterfly lock plates are imported.

The stippled, segmented design on the Harbledown and Ramsgate hasps also appears on the Greater Treaty chest in Westminster Abbey to which Miles and Bridge (2008) have given a felling date of 1379-95, a century earlier than that used by Eames (1977, 149). But it can also be seen on the Brasenose College Oxford Bursar's chest of *c*.1510, showing that it was popular over a long period, and so does not help with a precise dating. The conservative traditions in ironworking are a major obstacle to its use for dating objects (Geddes 1999, 3-8); at best designs can establish a range of possible dates.

However, the lock plate evidence is supportive rather than absolutely decisive since butterfly lock plates may have been imported to England or English imitations made. Locks were among the imports mentioned by anti-Dutch rioters in 1517 (Geddes 1999, 234).

Lastly, the Ramsgate chest, which is exceptional in having an original rectangular 'gothic' lock plate, deserves comment. This is a type which is more common in England, Flanders and France than in Germany, and which Chinnery dates 1450-1700 (1979, 144). This lock plate with its buttress-type staples is of rather simple design suggesting it is an early example of its type (close to 1450 or even before) which would place the chest after the 1390-1420 dates so far mentioned.

Nails

The most common type of nail on the Kent chests is round and flat-headed; dome-headed nails are uncommon. However, on 10 of the 16 Kent chests gabled nails were found, a type that is not known on English medieval chests.[19] Turning to the Continent, of the six continental chests in Table 2 only the Elblag chest has some gabled nails along the front of the lid and they are probably later, but may have replaced similar-shaped original nails. However, gabled nails can be found on three other chests in the Baltic or Scandinavia. The first is the well-known 13th- or 14th-century 'alms-log' from Svinnergarn church, Sweden, which is a long, narrow, dug-out chest covered with multiple iron straps held by these nails.[20] The second is a large, long, rectangular, flat-topped chest at the Red Monastery

at Cerveny Klastor, Slovakia (near the Polish border, south of Krakow).[21] The third is an oak chest at the Wienhausen monastery in north Germany which has a slightly domed lid and is dendro-dated to 1328.[22] This evidence further associates the gabled nail with Sweden, Germany and Poland. It is not definitive since the chests may not be in their place of manufacture, but this seems very unlikely in the case of the heavy dug-out chest. The fact that these three chests are not domed standards suggests that domed chests were produced in a region where gabled nails were widely used.

Gabled nails are thus like divided tills in terms of evidential value: they are sometimes found on domed standards but sometimes not, and are never found on English chests. Moreover, both are associated with chests found in present day Sweden, Poland, and Germany.

Geddes has argued that English iron was used for nails, horseshoes and tools and imported iron only for weapons and siege engines (1991, 168-9). Against this, Salzman refers to the use of Spanish and Normandy nails in England but says "references to imported nails are rare before [1532]" (1966, 316) This is further reason, therefore, to take gabled nails as an indicator that domed chests were made on the Continent.

Roves

Finally, it was shown earlier that roves were used to secure the clenched nails holding the iron straps on nine of the twelve chests where the inside of the lid could be seen, predominantly those with the most hinges. They are also found on the Stralsund and Kwidzyn chests with their multiple hinges but not on the Skrukeby chest with its three hinges. This is interesting for two reasons. Roves are not, as far as is known, found in English chests. However, they were widely used in clinker-built ships where clenched nails and roves were used to secure overlapping planks (Bill 1994; Friel 1995), suggesting another link with Scandinavia, North Germany and the Baltic.

Conclusion

There are few studies of medieval chests in the UK and on the Continent which include detailed constructional information. Hence it is necessary to build knowledge of particular types of chest one by one. General statements about medieval chests, such as those made here, may therefore need to be revised as knowledge develops.

In the present case, it could be argued that the distinctive construction and joints found in domed standard chests are sufficient evidence that they are imported and that the presence of pine from present day Poland tells us where they came from. Against this, we have examined a series of other features of the chests and their incidence among domed and other chests on the continent, and have explored the evidence for both domestic manufacture and importation. It has been argued that the concentration of the chests in eastern coastal counties and the very small numbers on the continent, suggest the chests are imported. This is backed up by the evidence regarding divided tills, gabled nails, roves and concave-sided lock plates

which, while not found on every chest, is highly supportive of the importation hypothesis. The first three features are unknown on English chests, while all four are found in Germany, Sweden and Poland. The highly organized Hanseatic trade provides the likely channel by which the importation took place. The paucity of domed standard chests on the Continent could have several explanations, from limited original supply to a lower survival rate. It is suggested here that these chests were an 'export good', i.e. the uneven present day distribution as between England and the Continent reflects an original uneven distribution.[23]

A number of questions remain. How did the Kent chests come to be in their current locations, mainly in north-east Kent? Were they imported via Sandwich (apart from the Faversham chest which was bought in London)? Childs (2002) argues that Kings Lynn and Hull were the leading ports for the Hanseatic trade in timber in the late 14th century and that London grew in importance later, but the recent study of Sandwich notes the arrival of ships from Danzig/Gdansk in the 15th century (Clarke *et al.* 2010, 121-130). How far is the geographical distribution of chests due to differences in the ease and cost of transport, and how far to the organization of wholesalers, retailers or purchasers?[24] Did individual churches decide on chest purchases, or was a decision made higher in the Church hierarchy? Did social networks help spread the word about this type of chest among purchasers and did imitation play a role?

Were all four types of chest, defined in terms of metalwork, and therefore cost, produced at the same time, allowing all segments of the market to be served? Did the simpler chests come first, or did the more elaborate ones come first and then open up a market for the cheaper versions? Were the chests made in one or several locations? The location(s) may have changed over time. Danzig/Gdansk and its immediate region is the most likely place of manufacture but the use of Polish pine is compatible with manufacture in other parts of northern Poland, Sweden or North Germany. Over what period were the chests made? It has been suggested that there were precursors as early as 1328 but domed standard chests may have started before 1393. If Baltic exports of planked timber expanded from 1340, perhaps the export of domed standards developed in the period after that. Production undoubtedly continued after 1420 as the V&A has a wheeled, armoured, example, 114 x 83 x 64cm, dated 1597 (M244-1912). It is described as German and has fine small nails, quite unlike those on the Kent chests. Such later chests could have been made in different locations and, perhaps, no longer primarily as export goods – if indeed this hypothesis withstands future research. Hopefully this article will lead to the discovery of further domed standards in Kent and elsewhere and further study of the existing national and international collection to answer some of these questions.

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ENDNOTES

1 'English chests' refers to chests currently considered to be made in England.

2 The term standard, however, may not have been exclusively used. The documents relating to the Faversham and Ickham chests refer to them as chests 'bound with iron' (see below).

3 Cressida Williams, Canterbury Cathedral Archivist, has pointed out that the town documents previously kept in the Fordwich chest (where the pine is fresh and bright) are some of the best preserved in the Cathedral Library (*pers. comm.*, 2013).

4 The armoured, wheeled chest with the most elaborate ironwork and locking arrangements is in Sidney Sussex college, Cambridge (Eames 1977, 173; Pickvance 2012).

5 Eames (1977, 135) quotes a source who suggests that this use of rings is of Scandinavian origin.

6 See Lewer and Wall 1913; Sherlock 2008; Simpson 2008; Pickvance 2012 for their precise locations. Many photos can be found on www.flickr.com by searching for chest or church chest.

7 Other chests are recorded at Gruuthuse Museum (two) and St John's Hospital, Bruges, Busleyden Museum, Malines (Eames 1977, 173-6) and Moustiers, Wemmel and Zoutleeuw, all in Belgium (Simpson 2008); at Gollern, Lubeck (two) and Luneberg in North Germany (von Stülpnagel 2000, 39-40), at St Mary's Church, Gdansk, and one sold at auction in France in December 2013. The latter was an armoured chest 142 x 72 x 52cm, with iron legs, a lock plate similar to the Ash chest, with hasp and keyhole flap, a divided till box and gabled nails.

8 The two keys would be for the central lock and a padlock at the end of the locking rod.

9 The dates given by earlier writers on domed standard chests range from 14th century (Jennings 1974) and 15th century (Cescinsky and Gribble 1922) to 16th century (Roe 1905, 131; 1929, 34-5, 43, 77).

10 Lime grew in England but was also imported so does not help our enquiry.

11 There is evidence of the use of Norwegian pine boards for wall panelling at Winchester Castle in 1252 and of imported fir used from the 13th century for scaffolding, ladders, counters and partitions, and Postan records the timber imports from Danzig/Gdansk as having been of pine, fir and yew (Chinnery 1979, 164; Postan 1987, 174 and Salzman 1966, 248). Postan was probably unaware of the role of Baltic oak imports when he was writing.

12 The superior quality of Baltic oak (close and straight grain, lighter weight leading to greater ease of working) was another factor (Simpson 2014). Its identification in English buildings was a major contribution of dendrochronology in the 1980s (Bonde *et al.* 1997).

13 Eames describes two chests at All Souls College, Oxford, as being of softwood (1977, 169-170.) However, Adam Bowett reports that they are of oak (*pers. comm.*, 2012).

14 Simpson (2008, 55) has suggested that the iron straps on domed chests were 'probably the work of the local blacksmith' in England, which implies that the chests were exported with lid and box separate. This would have prevented them from being used as containers, as Simpson also suggests, and assumes that iron would have been cheaper to add in England. Unfortunately no equivalent of dendro-provenancing currently exists for iron, due to its purity, and although port records list chests and coffers, with and without dutiable items, they do not describe them.

15 By this is meant that to our knowledge there are no documented or undocumented cases. This is based on personal knowledge, books and articles and websites such as flickr.com and www.larsdatter.com/chests.

16 Jennings (1974) was the first writer to note its distinctiveness. Chamfered decoration, as found on the partition, is known on 13th- and 14th-century English chests on the cleats which hold the lid boards together and on applied grids of timber battens on the sides of chests used to strengthen their structure, but not inside chests.

17 The Skrukeby and Fordwich chests both have a narrow shelf with upstand as well as a divided till, a remarkable similarity.

[18] Von Stülpnagel, 2000, 111, 246, 274.

[19] A number of ironwork specialists confirmed that they had not come across gabled nails in England.

[20] Historiska Museum, Stockholm No 333162; Anker (1975, 8) http://www.kringla.nu/kringla/objekt?text=svinnegarn+kista&filter=thumbnailExists%3Dj&referens=shm/media/333162, accessed 5 September 2014.

[21] http://www.larsdatter.com/chests.htm, accessed 5 September 2014.

[22] Von Stülpnagel (2000, 38).The fact that this, unfortunately locked, chest predates the others by sixty years and has a much shallower lid, made of two curved boards strengthened by a narrow external board, suggests it may be a precursor of the domed standard chests. The chest at South Creake, Norfolk, which also has a shallow-domed lid (of pine), has a mix of gabled and large round-headed nails but lacks the pegged splayed rebate joints, suggesting that it, too, is a precursor.

[23] For another example of an export good, compare the comment on the low cost pocket sundials found on the Mary Rose which are attributed to Nurenberg: 'as they were mostly exported, it is not surprising that there appear to be none extant in the Nurenberg area' (Gardiner and Cowham 2005, I,168.)

[24] Simpson (2014) states that finished products could be bought at the port of entry or redistributed through inland markets. This may be illustrated by the concentrations of domed standard chests in north east Kent, near Sandwich, and in the Bury St Edmunds-Diss-Stowmarket (Suffolk/Norfolk) triangle.

APPENDIX: The sixteen Kentish domed standard chests

Ash, St Nicholas: a Type A (Armoured) chest. 134cm (wide) × 58cm (high) × 49cm (deep). It has a divided till at left with decorative chamfering; lids missing. Extra-wide hinges. Complex lock with keyhole flap as well as a hasp. It is unusual in having preserved its original locking bar and has three (later) padlocks ('GR Patent'). A mixture of round-headed and gabled nails. Roves. It has the remains of pale/ochre coloured paint. Some missing metal straps. An attempt at dendro-dating was unsuccessful.

Ashford, St Mary's: a Type B chest. Quite a short chest: 108×58×58. Undivided original till. The locking bar (original?) is still in use. Replaced lock plate; shadow of concave-sided one visible. It is atypical in that the lid is of pine and the joints between the four walls have apparent mortise and tenon joints at the top though they are pegged too, suggesting the presence of butt or rebate joints. The lid does not project as much as on other chests. A mixture of round-headed and gabled nails. Roves. Original maroon colour. Two holes in lid and new collecting trays inserted. Known as the St Peter's pence chest.

Canterbury Heritage Museum: a Type B chest similar to the Northfleet and Mereworth chests, 118×54×54. Lid identified as lime. Evidence of the original divided till, now replaced by undivided till. Extra-wide front hinges. Later lock plate. Two staples on the front to either side of the lock suggest it originally had a locking bar. Gabled nails only. Roves. Two triangular handles at ends; not rings. Original maroon colour. The Museum has no record of how it was acquired. An attempt at dendro-dating was unsuccessful.

Canterbury, St Dunstans: a Type C chest, 139×60×62. A divided till at left with chamfered partition; rear lid present. The lock and lock plate are missing, but the lock shadow is strongly concave-sided. It has undergone internal repairs. Round-

Fig. 6 a Ash chest; b Ashford chest; c Canterbury Heritage Museum chest; d Canterbury St Dunstan's chest

headed nails only. Roves. It shows the original maroon stain. Cowper (1886) records numerous expenditures related to chests between 1484 and 1580 but gives no precise descriptions of the chests concerned.

Faversham, Fleur de Lys Centre: a Type C chest, 123×55×50. Previously this had a divided till at the left with a concealed lower till. A wooden insert where the lock was. Two staples on the front to either side of the lock suggest it originally had a locking bar. Some later iron strapwork? Damage to lid. A mixture of round-headed and gabled nails. Roves. Two triangular handles at each end. The mid-brown colour covers the original maroon stain which shows through where the paint has flaked off. Lid identified as lime. The origin of the chest is discussed in the text.

Fordwich Town Hall: a Type C chest, 150×67×56. It has a divided till on the left and a shelf with upstand on the right exactly like the Skrukeby chest in the Nordiska Museum, Stockholm. It has later lock plates to the left (modern, holding a staple for a padlock) and right (17th-century, with a lock), but the large (25x23 cm) concave-sided decorative central lock plate is original. Round-headed nails. No roves. A dark stain has been applied over the original colour. Lid identified as lime. It is known as the Muniments chest and previously contained the town council documents which are now on deposit in Canterbury Cathedral Library. The pine was successfully analysed dendrochronologically giving a likely construction date in the early 15th century, with the pine provenanced to northern Poland.

Harbledown, St Nicholas: a Type C chest. The largest of the Kent chests, 165×67×60. The chest has divided tills at left and right, lacking lids. Very large (30x20cm) concave-sided decorative lock plate. The hasp has an engraved segmented design; the adjacent hinged shield covering the key hole has an acorn finial. The original iron straps on the lid have been removed, new ones added and the old ones replaced on top. Liquid wax has been applied liberally to the lid. A mixture of round-headed and gabled nails. The original maroon stain is visible on the box.

Higham, St Mary's: a Type C chest, 150×65×60. It has divided tills at left and right. There is tinning, presumably original, on the iron straps. The original lock plate is missing and has been replaced by a concave-sided blank sheet. Later hasp and staple to left of lock? A mixture of round-headed and gabled nails. Some of the original maroon stain is apparent, with some orange colour due to preservative treatment.

Ickham, St John the Evangelist: a Type C chest, 133×61×51. Inside there is a 17th-century locker with padlock enclosing the divided till at the left hand side. The dividing partition has been cut down to allow the lid of the locker to close. It has a later rectangular lock plate which is purely decorative (it conceals a hole in the front and the hasp does not line up with the hasp slot.) (The original lock plate would probably have had concave sides and the nail holes visible internally suggest a size of about 19x15cm.) The vertical straps with staple either side of the lock suggest that the chest originally had a locking bar. The original large iron rings have twisted iron ropes which now fix the chest to concrete bases at each end. Round-headed nails only. No roves. It has received preservative treatment giving it an orange-brown colour. Lid identified as lime. The origin of the chest is discussed in the text.

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Fig. 7 e Faversham chest; f Fordwich chest; g Harbledown chest; h Higham chest

Fig. 8 i Ickham chest; j Lower Halstow chest; k Mereworth chest; l Minster in Thanet chest

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Fig. 9 m Northfleet chest; n Ramsgate chest; o Sandwich chest; p St Nicholas at Wade chest

Lower Halstow, St Margaret of Antioch: a Type D chest; one of only two in Kent (the other is at Minster in Thanet), 136×74×62. Lid identified as lime. Lid now split. Left and right undivided tills, now missing. Round-headed nails only. No roves. Random circular punchwork decoration on end of the lid (original?).

Mereworth, St Lawrence: a Type B chest, 136×61×56; an unexpected find in an 18th-century church and perhaps a survival from the original medieval church at Mereworth. Left hand till box (missing). Lid identified as lime. Complex locking arrangement with keyhole flap as well as a hasp. Two staples on the front to either side of the lock suggest it originally had a locking bar. Triangular handles at front and back. A mixture of round-headed and gabled nails. Roves. Original maroon stain.

Minster in Thanet, St Mary the Virgin: a Type D chest; one of only two in Kent (the other is at Lower Halstow), 152×68×69. Lid identified as lime. (Roe (1902, 120) said the chest was of oak and elm, rather than pine and lime.) Round-headed nails only but not many left. Locked. The splayed rebate joint between the walls is visible through a hole in the corner of the chest. Later lid straps have been added but the extreme left and central ones are probably original. There is now no sign of the original lock and some metalwork is missing The Churchwardens' accounts for 1632 record 'for 3 lockes ye chest 10s 0d' (Church guidebook, 35). These correspond to the three existing rectangular lock plates. Two staples on the front to either side of the lock suggest it originally had a locking bar. Generally the chest is in poor shape. The box has been scrubbed, removing any colour. Referred to locally as the Muniment chest; previously used to store the parish records.

Northfleet, St Botolph's: a Type B chest, 135×58×54. Left hand till box (missing). There is a lockable keyhole flap as well as the normal hasp. Two staples on the front to either side of the lock suggest it originally had a locking bar. The large suspension rings with attaching bars at the left end are rare survivors. There is an additional pair of triangular handles at front and back. A mixture of round-headed and gabled nails. Roves. Original maroon stain. In good condition.

Ramsgate, St Laurence the Martyr: a Type B chest, 138×65×52 (excluding feet). It has a divided till with chamfered partition at the left. An unusual chest in several respects. The lid is made of three boards; additional full length boards have been added to thicken the main board; they are held on by inset horizontal bands which pass under the vertical straps to wrap round and fasten underneath the ends of the lid. The front is made of two boards, the only example of this found by the author. The lock plate is unique among the 16 chests in being (an unusual version of) the rectangular 'gothic' type (held on by buttress-shaped staples); it has a U-shaped hasp guard and a concealed push down mechanism to allow the key to enter and the hasp has a segmented engraved design. The chest previously had a locking bar which slid into a protective casing at the left. (But no sign of additional staples for the rod to pass through as elsewhere) Gabled nails only. Roves. Yellow-brown colour which is obviously a later finish: where it has flaked off on the end grain of the lid a bright dark red colour is visible. Trestle feet are probably later. Described in the church guide as 'supposedly an offertory coffer in which Peter's pence (a tax paid to the Holy See) was collected'.

Sandwich, St Mary's: a Type A chest, 96×50×44. The shortest chest. Complex lock with (replaced) keyhole flap as well as a hasp. A mixture of round-headed and gabled nails. Trestle feet. Locked to a column of the church and the key could not be found.

St Nicholas at Wade, St Nicholas: a Type C chest 120x53x63 (estimated original size with domed lid). Domed lid replaced by flat lid, probably a 17th-century renovation. Later hinges, lock plate, hasps and staples. Later grey paint probably added when the lid was replaced. Round-headed nails. Roves. Grooves indicating till at left. Roves. Ironwork on front mostly missing; remaining ironwork of poor quality.