

An Analysis of the Predominance of
Left-Handed Shears in Cremation Urns
From Spong Hill Anglo-Saxon Cemetery,
North Elmham, Norfolk.

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Introduction

This paper is a re writing of an earlier paper produced in 2010, this need has arisen on the basis of new finds becoming available to the author and to clarify points raised by readers - the main point being; are deposited shears representative of the shears used in the living world, it is hoped that the reasoning given here is sufficient to answer that point, however only a full in depth analysis of extant shear finds with the aim of determining handedness from the onset is the only way in which a hopefully conclusive outcome can be achieved.

Background

The Anglo-Saxon cemetery at Spong Hill near North Elmham in Norfolk comprises of over 2000 burials, both inhumations and cremations, and is presumed to cover all the early Anglo-Saxon period with the last burials taking place during the early part of the 7th century. Due to its size, it is presumed to be a major cemetery for the entire area and not just one village. It therefore provides a slice of life (or more specifically funerary practice) during the pagan period extending from the earlier burials of an immigrant community to the rites in place during the conversion to Christianity. This work is based on the published findings of the excavation and subsequent reports presented in East Anglian Archaeology, report number 6, Norfolk, Spong Hill, 1977. Around half the graves and cremations contain some sort of grave goods. The tweezers and shears recovered from the graves and the cremations are often miniatures which could never have had any practical function – some do not have cutting edges and can be regarded in the main as grave side offerings- which is to say were specifically made as an artefact to accompany the deceased on their final journey. Perhaps it is significant that several of the cremations containing these non-functional grave goods have been shown to belong to children (ie; apparently below the age of 12 years of age). This report and subsequent analysis confines itself to the shears recovered from the funerary urns from the site. In total 42 shears were catalogued from the site; this work details the statistical analysis of 34 that from the supplied line drawings in the

archaeological report fulfilled the definition of what would be recognisable as shears. Figure 1 details the difference between left and right handed shears and is the definition and criteria used here to differentiate between the two. As an adjunct to this report further shears finds currently available to the author from both the United Kingdom and Northern Europe have been listed and clearly show that the results from Spong Hill do not represent a statistical anomaly, all the shears currently available have been listed as they have been found and have not been weighted in favour of either left or right handed, they have been listed as they have been presented to the author and therefore represent a random selection of comparative data.

Shears- Use versus Deposition

The manufacture of shears requires skill, they are not the easiest of tools to make. From the authors own experience most of the shears produced have been well balanced- which is to say that the set of the blades is such that when not in use they do not “nick” each other when not in use as they have a sufficiently shallow set. On poorly manufactured shears a more pronounced set or curve is made to offset the weak spring action or poor meshing of the blades and in these circumstances the blades can damage each other as they have a tendency to nick each other, when not in use therefore either the blades are sprung apart (and in some way this may partly explain those indeterminate shear finds) or sprung opposite to how they would be in use- that is to say a left handed pair of shears would appear right handed and visa-versa. When the shears were in use in the physical world of the Anglo-Saxons it would have been likely that the shears would have had tip covers, either of leather or just a twine wrap in which case the shears would be closed in the handedness of their normal use (exposed shears are a danger, sharp to the user, and may become damaged by striking hard surfaces). Given the number of finds with closed blade tips it would seem likely that some sort of tip protector or closure would have been used in the burial to mirror that used in life thereby preserving the handedness of the shears in the burial, this does not however preclude the possibility that unsprung crossover shears were buried in the graves but it does seem unlikely given the requirement for shears of good quality in the period. In a modern re-enactment context more unsprung crossover shears do exist but set against this is the

Requirement for shears to look the part and not act the part to a high degree as re-enactment shears have minimal use and their foibles are accepted. On the balance of probabilities it is a fair assumption that the shears “as deposited” represent the handedness they showed in use and it is on this basis that they are used in this paper.

Statistical analysis of finds

The recovered shears from the cremation graves exhibit a wide range in design of manufacture (morphology) and preservation along with functionality, In this analysis, the following codes definitions have been used;

Code	Designation	Description
F	Functional	By size and shape deemed to have been usable during life
N/F	Non-Functional	By size and shape deemed to have been either purpose made grave goods, or an ornament during life.
L	Left handed	By design deemed to have been made left handed (refer to fig 1)
R	Right handed	By design deemed to have been made right handed (refer to fig 1)
I	Indeterminate	So badly corroded or non-aligned as to make handedness impossible to determine
	Find number	The funerary urn from which the find was recovered- in two instances (urns 1271 & 1471) more than one pair of shears were found in a single cremation urn.

There is thus an opposition between F and N/F on the one hand, and between L,R and I on the other. As part of the statistical analysis, the indeterminate finds were included in one set of figures and excluded in another as they contribute nothing to the percentage of left and right handed shears, it is reasonable to presume that the indeterminate finds include both left and right handed shears in a similar proportion to the identifiable finds so their exclusion from the statistical analysis gives a fuller picture of the percentage distribution of left versus right hand finds.

Find Number	F	N/F	L	R	I
1271*	X		X		
1502		X		X	
1503		X		X	
1109		X	X		
1656		X	X		
1471*	X		X		
1429	X			X	
1682		X		X	
1498		X	X		
1336	X		X		
1545	X		X		
1547		X			X
1170	X		X		
1271*		X	X		
1471*		X			X
1433		X			X
1184		X			X
1151		X			X
1544		X			X
1167	X				X
1064	X				X
1265		X			X
1329	X		X		
1256	X		X		
1380		X		X	
1021		X		X	
1384		X	X		
1011		X		X	
1661		X	X		
1688		X	X		
1285	X				X
0055	X		X		
1529	X		X		
1658		X			X

Table1, Data for the 32 urns (*34 finds) investigated

Handedness in the modern European population

Left- and Right-handedness in the modern general population of western Europe including the United Kingdom is currently assessed as;¹

10% left hand dominant

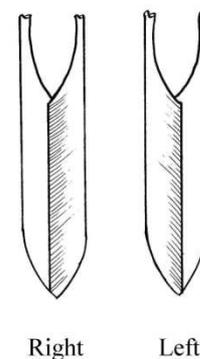
90% right hand dominant

Research into handedness shows no clear reason as to why a person should favour one hand over another. There is a genetic component in that the LRRTM1 gene determines handedness, but environmental factors also influence the preference of the individual- to illustrate this; the author writes and forges iron left handed but is a naturally right handed individual, an injury to the right hand during childhood caused hand re-orientation, consequently when using a bow left handed the author has to close the left eye and site using the dominant right eye!.

Hand orientation of tools

Hand tools which employ a cutting edge as part of their mechanical function are hand specific, that is to say they are designed and manufactured for use with one hand in mind, the three principle tools affected are; (i) metal cutters, (ii) scissors and (iii) shears (but to a lesser degree as will be explained). Due to the mechanical properties of the human hand a tool is designed for use in that hand in order for it to perform correctly. Figure 1 details the design of both left and right-handed shears, the principle requirement being that the lower cutting edge is always visible to the user so he or she can always see what they are cutting. In using Cutters and scissors the mechanics of the tool is such that the cutting force applied by the hand to the blade passes through a fulcrum

Figure 1. Handedness in shears



¹ Source; Franks et al. *Molecular Psychiatry* (2007) 12:1129-1139
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(the pivot point between handle and blade) and since when the hand closes it has a twisting action the blades are forced together as a reflective response to the applied force, however if the tool is used in the wrong hand the mechanics are opposite and the blades are now forced apart and the cutting action is lost. In the case of shears the mechanical design is different in that the force provided by the hand is applied between the fulcrum (spring return) and the cutting blade so in a well-made set of shears with good spring tension the blades are forced together even if used in the wrong hands, experimentation has shown this to be the case. If now we view shears as being ambidexterous then why are they predominantly made left handed, they are certainly easier to use in the correct hand for the shears type, if the construction of shears was a random event in which handedness of construction played no part it would be reasonable to assume a greater parity in types not born out by the data, furthermore it seems likely therefore that the shears were constructed with the handedness of the user in mind. All tools during the Anglo-Saxon period were hand-made, Iron was expensive and shears not easy to make, they would not have been an off the shelf item but made to order, human beings do not make things randomly they are made with purpose in mind either on the part of the person who orders the shears or the one who makes them, was there a tradition in making shears left handed- we cannot say. This does not preclude however that a right handed person would have used left handed shears and visa-versa, this is a matter of environment (nurture) over genetic predisposition (nature) as wil later be discussed.

Results and interpretation

By any measure the results of the analysis in table 1 are startling. All show that left-handed shears outnumber right-handed shears in varying degrees far in excess of what would be expected from inferences based on the modern population (modern shears are made right handed as a norm). If we remove the indeterminate finds (which are assumed to represent both left and right-handed shears with the same percentile spread) we can clearly see that as a whole the functional finds from spong hill are 90% left-handed, the inverse of what is found in the modern European population. If we include non functional finds as

well (in what seems to be accurately made grave offerings or ornamental copies) the percentage of left handed shears drops to 69% - still overwhelmingly high. The results show that by whatever measure (either functional, non functional or an aggregate of both groups) left-handed shears and by implication left handed users are in the majority of “cremations accompanied by shears”.

Reasons and reasoning

This study is small in scope and so could be dismissed as a statistical anomaly, until a more extensive analysis of shear, scissor and cutter finds from the Anglo-Saxon period is made, a fuller picture of handedness in the Anglo-Saxon period cannot be arrived at, however the adjunct to this report detailing shear finds from around Europe of a similar time frame do tend to back up the results obtained at spong hill. I have put forward a number of possibilities for the high incidence of left handed shears in a pre Christian culture;

Tradition. A manufacturing tradition may exist where shears were generally made left-handed, this may have its roots based in pagan belief, equally smithing may have been a trade made up of predominantly left handed men, consequently most of the products they made were manufactured left-handed by habit, given the nature of smithing and the position of smiths within society- as being somewhat strange and empowered with arcane knowledge it may have been a profession that actively sought out left handed apprentices or that society forced the left handed into that profession with its sinister rites and connotations.

General utility. A left-handed pair of shears is less usefull than a right-handed set of shears; if we look at this in a modern context, only one in ten can use a left-handed set whereas nine out of ten can use right-handed shears, Perhaps at the time of death there may have been insufficient left-handed users in a community than had need for these shears, so they were buried with the dead (irrespective of the dead being left or right-handed), whereas left-handed users (in a modern context) would be in the majority, there would thus be a

greater demand for right-handed shears, so fewer right-handed shears would be buried with the dead and would instead be passed down the generations of the living. To count against this argument is the possibility that if shears were manufactured as hand specific (which I believe so) more shears would have been manufactured as right-handed as well and buried with the dead, this gives rise to the possibility that left-handed people outnumbered right-handed people in the community at Spong Hill. One final point is that the dead were “sinister” and may have been required to be buried with left-handed shears as part of the funerary rite, If this was so would not all burials contain left-handed shears as a matter of course?.

Ambidexterity. The early Anglo-Saxons were perhaps more often ambidextrous than the modern population. They may have been as genetically predisposed to right and left handed behaviour as the current European population, but the use of left-handed tools was encouraged as a matter of necessity as any man, woman or child in a society where medicine and knowledge of anatomy was limited would be a burden on that society in the event of a disability in their favoured hand, Ambidexterity through nurture would allow an individual to maintain their social position and value to the community even with a disability. It is also possible that the reason for the high incidence of left-handed shears is that the user was using their right hand for a complex operation and their left hand for the secondary operation thus facilitating the need for left-handed shears used left handed by a right-handed user.

Accident of manufacture. That the handedness in manufacturing of the shears was a chance event is possible, but the human mind does tend to have a set pattern and method of making things, from the author's own experience in forging items he does not make them randomly left or right handed- they are all made to a purpose and this factor does tend to rule out randomness for order and intent.

Risk aversion. The early Germanic settlers in this country (United Kingdom) during the migration period may have been those members of the European tribes who were more likely to be adventurous, willing and able to take calculated risks in migrating. It is possible (but highly contentious, as other research into handedness has shown) that left-handed people are more ready to

take those risks than the right-handed (as some research suggests) , so during the migration period the migrating population contained a high level of left handed people, if this were the case, the remaining peoples in the Anglo-Saxon homelands would show an increase in right-handed tooling after the migration due to them being denuded of left-handers, at the time of preparing this paper the author knows of no such research.

Post-Migration cultural change. The Anglo-Saxon population of Europe may have naturally demonstrated a higher degree of left-handedness than now exists in the modern population. If so, its reduction to present levels could be ascribed to the arrival of Christianity among the Anglo-saxons in the 7th century. With the church's strictures on left-handedness (it being *sinister* and corrupt) the left-handers would by this social environmental factor be forced to correct their deviant behaviour. However, against this are the various late period finds of left-handed cutting tools. The finds are small in quantity, so insufficient numbers exist to make a proper statistical analysis.

These are the six main theories to account for the percentage of left-handed shears in grave (cremation) finds. I now turn to some additional data which on the whole endorses the results from the study of the finds from spong hill. The adjunct was prepared after the spong hill analysis and represents all other shears finds presently known to the author (both left and right-handed) and contains new material not in the original 2010 version of this paper.

Adjunct – Additional Data

(A) Norwich Southern Bypass; the Anglo-Saxon cemetery at Harford farm (early period).

Find	Handedness of shears
Grave 11/6	Right-handed
Grave 18/5	Indeterminate
Grave 20/1	Right-handed
Grave 27/1	Left-handed (fragment)
Grave 33/4	Left-handed

As can be seen, 505 left-handed, 50% right-handed after the exclusion of the indeterminate finds.

(B) Coppergate, York. (mainly 9th Century)

Here only one functional pair of shears was recovered, along with a number of indeterminate finds. The functional pair was left-handed (find no; 2688.). The indeterminate finds were; 2689,2690,2691,2694 and 2696.

(C) The Merovingian cemetery at Gouderlancourt-les-pierpont Aisne, France (5th to 6th Century)

Grave	Find	Handedness of shears
T.143	4	left-handed
T.186	3	left-handed
T.344B	4	left-handed

As can be seen all three shears from this site are all left-handed.

(D) Cleatham Anglo-saxon cemetery, North Lincolnshire, mid 5th to late 7th century

From this site were excavated 31 shears, unfortunately only 5 pairs were in a sufficiently good condition to make a determination of handedness possible, find number 1883 exhibits both left and right handed qualities so has been classified as indeterminate and not therefore been included in the results table below.

Find	Handedness
103	Right-handed
274	Right-handed
891	Left-handed
2253	Left-handed
2404	Left-handed

As can be seen from the analysis; 60% Left-handed, 40% Right-handed

(E) Vendel graves 1 to 14, Sweden, (550-790AD)

Grave	Figure	Handedness
Vendel i	3	Indeterminate
Vendel iii	3	Left-handed
Vendel iv	3	Indeterminate
Vendel vii	6	Left-handed
Vendel x	3	Left-Handed
Vendel xii	25	Left-handed
Vendel xvi	14	Indeterminate

As can be seen from the analysis of the vendel finds, 100% Left-handed shears, also from a Valsgarde 6 grave (same period) a Right-handed pair of shears were recovered (find number 265)

(F) A collection of single and multiple finds from around the United Kingdom (Anglo-saxon period).

Three shears from Icklingham in Suffolk, all Left-handed

Four shears from The Anglo-Saxon cemetery at finglesham;

Grave	Handedness
57	Left-handed
62	Indeterminate
138	Left-handed
150	Left-handed

Buckland	grave 110	Left-handed
Buckland	grave 75	Indeterminate
Shudy camps	grave 76	Indeterminate
Burwell	grave 2	Right-handed
Polhill	grave 41	Left-handed
Maxey	-----	Left-handed
Whitby	-----	Left-handed
Eccles (Kent)	-----	Left-handed

Conclusion

All these results (small in number but randomly obtained) show that the finds from Spong Hill do not represent an isolated occurrence, but rather that left-handed shears do exist in greater numbers and percentages from many sites than one would normally expect in a human population based on modern levels of handedness. We can presume the reasons for this include both genetic and environmental factors, the author excludes here the theory that they represent right-handed shears that have been unstressed when not in use, as experiments have shown that this does not need to be done in most cases with a well made pair of shears, for the unstressed theory to be correct it would require all shears to be routinely “unstressed “ when not in use which runs contrary to the experience found in modern reenactment , modern shears manufacture and the Authors own experience in the manufacture of period ironwork. I do not believe the shears were randomly manufactured, the statistics alone dispute this, the results suggest intent of manufacture, the exact reason may never be known, we can however presume it was in some way advantageous to the society that produced them. It is also interesting to note that all the extant metalworking cutters known to the author at this time are also all left-handed, in this instance handedness of use is critical in using these tools correctly to the extent that they can only be used to give a good cut when used in the correct hand, this does give some credence to the theory that smiths were generally left-handed, these finds are;

Mästermyr Hoard, Gotland, circa 1000AD

Bygland Smiths grave, Telemark, Norway (date unknown)

Tattershall Thorpe smiths grave, Lincolnshire, circa 670-700AD

Coppergate, York, 9th Century

Novgerod, Russia 12th Century (a little late)

Given the evidence presented above, it is the authors opinion that the use of left-handed shears were encouraged by the Anglo-Saxons, the most likely explanation being an environmental factor in that an ambidextrous person is of greater use to the community than they live in than a unidexter.

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