



SURNAME: COWLEY

FORENAME(S): MATTHEW
~~COWLEY~~ CHARLES

12 Pages

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.**

1	Student Number	1700561
2	Title of Examination Paper	INTRODUCTION TO NAUTICAL ARCHAEOLOGY
3	Module Code	HPAR 5007
4	Date and Time of Examination	7-3-19 10:15am
5	Examination Venue	Khalifa 1
6	Seat Number	
7	Number of Answer Books handed in	

[illegible]

(Gweler yr ochr arall am y fersiwn Cymraeg)



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

1. Rhwch yr holl wybodaeth y gofynnir amdani yn y blychau isod.
2. Rhwch eich enw yn lle a ddarparwyd ar y dde, pigwch et a'i selio i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.

1. Rhaid i'r atebion fod mewn llawysgriften ddarllenadwy. Gall yr Arholwyr naill ai anwybyddu sgrïpt annarllenadwy, neu drefnu iddi gael ei theipio a chael yr ymgeisydd i dalu.
2. Ysgrifennwch eich atebion mewn inc.
3. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thynnu llinell drwyddynt.
4. Nid ddylid rhwgo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
5. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwrr/gwyllwyr.
6. Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu defnyddio neu heb eu defnyddio, allan o'r lleoliad arholi o dan unrhyw amgylchiadau.

1	Rhif Myfyriwr	
2	Teitl y Papur Arholiad	
3	Cod y Modwl	
4	Dyddiad ac Amser yr Arholiad	
5	Lleoliad yr Arholiad	
6	Rhif Sedd	
7	Nifer y Llyfrau Atebion a gyflwynwyd	

Rhestrwch rifau'r cwestiynau a ymgaisiwyd gennych	Cyfanswm
Art Ddibenion y Swyddfa	

(See the other side for English version)

Llenwch, plygwrch a seilwch (gweler nodyn 2 isod)

CYFENN:

ENW(AU) CYNTAF:

3

Sim

Diff

o clinker
 o function
 o location
 o preservation
 o crew
 o material.

The Skuldelev Ships, were discovered in the Skuldelev Fjord near Roskilde, Denmark, in 1957, with minor surveying being done on the site until 1959. However, it was not until 1962, under Olaf Olsen and Ole Crumlin-Petersen, that the area was drained and subsequently excavated. In total, 5 ships were ~~the~~ excavated, each donning the name Skuldelev 1, 2, 3, 5, and 6 respectively (originally there was 4 but the ~~archaeologists~~ realised Skuldelev 4 was just the other end of Skuldelev 2). The ships, which seem to have been purposefully ~~deposited~~ deposited, formed a defensive barrier hindering access to the town of Roskilde, which was established c. 1000, as a Christian alternative to the pagan site of Lejre (~~at~~ Crumlin-Petersen, 2010). All of the Skuldelev vessels have many similarities and differences with each other, from how they were made and where they date from, to their function and level of preservation. Although some of the ships have similarities between one another, unless all the ships have the same ~~character~~ characteristic, then said factor ~~will~~ will be included in the differences section as it is not a similarity between all the ships.

Firstly, one similarity between all 5 of the Skuldelev ships is that they are all built in the same manner, that is, in a clinker-built style. This means that the planking of the ship is overlapped, so the bottom edge of one plank overlaps the top edge of the plank below it (Beard and Kemp, 2012). This style is very characteristic of the

nordic ship building tradition, which is another aspect that the 5 Skuldelev ships have in common. A ship or building tradition is a way of building a ship, that is commonplace in a specific region and time period (Beard and Kemp, 2012). In the instance of the Skuldelev ships, they were all built in the tradition common to Scandinavia (Denmark, Norway, Sweden, etc.) during the latter part of the Viking Age (McGrail).

Continuing from this, all 5 ships seem to have been constructed with about 50 years of each other. This is because, based on dendrochronological dating of the surviving ships' timbers, Skuldelev 1 was built in about 1030, Skuldelev 2 was constructed sometime in 1042, while Skuldelev 3 was built in around 1040. Furthermore, Skuldelev 5 ~~dates from~~ and Skuldelev 6 both date from 1030, with Skuldelev 6 deriving from the ~~same~~ ~~but~~ exact same date as Skuldelev 1 (Viking Ship Museum, Roskilde). As is evident here, all 5 Skuldelev vessels were constructed in the first half of the 11th century, potentially within 20 years of each other if we narrow it down further.

One final ~~and~~ aspect all 5 vessels have in common is that replicas have been made of all of them. Firstly, there is Skuldelev 1's replica, Ottar, which has had many sea trials, even travelling to Edinburgh in 2005. Next there is Sea Stallion, Skuldelev 2's replica and ~~probably~~ ~~perhaps~~ probably the most famous of all the replicas of the Skuldelev ships. Then there is Roar Ege and Helge Ask, Skuldelev 3's and Skuldelev 5's respectively, while ~~Skuldelev~~ ~~is~~ ~~replica~~ the most well known of Skuldelev 6's many replicas is known as Kraka Fyr. All of these replicas are located in the shipyard of the Viking Ship Museum in Roskilde, where they were constructed using

as close to period accurate tools and techniques as possible (Viking Ship Museum, Roskilde). As is evident with all of this, the similarities of the 5 Skuldelev vessels are the way they were constructed, their dendrochronological dating, and the fact that replica ships have been constructed of each and every one of them.

On the other hand, the Skuldelev ships have lots of differences to each other, as they are unique in their own way. Firstly, one difference between the 5 Skuldelev ships is their size, and subsequently, likely function of them, as is evident by the length to width ratio of each ship. Usually, those vessels that are a lot longer than they are wide are built for ~~the~~ speed within conflicts and war, while those ships that are stubbier have greater deck space and as such, were used as cargo vessels. This is evident by the fact that Skuldelev 1 and Skuldelev 3 have a length to width ~~ratio~~ ratio of 3:1 and 4:1 respectively. These ratios support the idea that Skuldelev 1 was an ocean going cargo vessel while Skuldelev 3 was a coastal trader, likely to have a cargo capacity of about 7.5 tons. ~~Also~~ Also, Skuldelev 2 and Skuldelev 5 also have a similar function to each other, but is very different to that of the other vessels. Both these ships seem to have been warships, with the bigger Skuldelev 2 having a ratio of 7.5:1 while Skuldelev 5 has a ratio of 7:1. As is evident here, both these ships were built for speed as they were a lot longer than they were wide. Finally, there is the fishing vessel of Skuldelev 6, which has a length to width ratio of ~~4~~ 4.5:1. Due to this ratio, it is likely that Skuldelev 6 was widened in order to allow it to transport more items, either those of trade or of war (Viking

Ship Museum, Roskilde). As is evident here, the Skuldelev ships were very different from one another due to their size and function.

Continuing from this, another difference that the ships had was where they were built. Based on dendro-provenance, which is the analysis of wood to discover where that piece of timber originated from, it seems likely that the wood used to construct the ships, and subsequently the likely location they were built were derived from all over Northern Europe. As previously mentioned, Skuldelev 1 and Skuldelev 6 both come from the same date, but they also come from the same location as well, that is Western Norway. This suggests that these ~~two~~ two vessels were built together. Further, it seems that Skuldelev 3 and Skuldelev 5 also come from a similar location, in that the wood used to construct them was from Denmark.

Finally, and most interestingly, Skuldelev 2's timber came from Ireland, or more specifically Dublin, which was a Viking settlement (Viking Ship Museum, Roskilde). This suggests that either Skuldelev 2 was constructed in Dublin, or that the wood was exported from Dublin to Scandinavia. Either way, this all demonstrates the differences in location ~~in terms of timber~~ that the wood from the Skuldelev ships came from.

Furthermore, another difference is the levels of preservation of the ships. This is evident with the fact that the preservation of Skuldelev 1 was 60% of its overall form, Skuldelev 2's was 25%, Skuldelev 3's was ~~70~~ 75%, Skuldelev 5's was 50% and Skuldelev 6's was 70%. As is evident with all this, the level of preservation between the 5 ships vastly differs from each other (Viking Ship Museum, Roskilde).

Not only this, but the ~~approx~~ likely crew size of each vessel is also different, and is linked with the function of the ship. Firstly, Skuldelev 1

had a crew of about 5-8 people, while Skuldelev 2 had a crew of between 65-70 people. Skuldelev 3's crew size was somewhere between 5-8 people, while Skuldelev 5's crew was 30 people. Finally, Skuldelev 6 had a crew between 5-15 people. As is evident with all this, the crew size of each ship vastly differs, with the cargo vessels having a smaller crew than the warships (Viking Ship Museum, Roskilde). Finally, the type of wood that each ship was made out of is also different, although mainly comprising of oak. In addition to oak, Skuldelev 1 was made from pine and lime, Skuldelev 5 was constructed from pine, alder and oak, and was made of both new and recycled timbers, while Skuldelev 6 was built with pine and birch as well as oak. ~~As is~~ (Viking Ship Museum, Roskilde). As is evident with all of this, the function, size, location, crew capacity, level of preservation, and type of material all differ between the Skuldelev ships.

In conclusion, ~~all~~ the Skuldelev vessels have many similarities and differences to one another, with its similarities demonstrating the core aspects of the ship, while the differences demonstrate the various additions or changes that could be made to the ship.

4. Keel: Double ended clinker built vessel, medieval "coel".

= Newport, Blackfriars 3, Grace Dieu, Magor Pill, Skuldelev.

Hulk = colors and sheerline

= Chronicle of John of Worcester, Life of E+C at HA, Winchester Cathedral, Haverfordwest ^{Flora} ^{Sen}

Cog = "Double ended craft with angular profile, flat bottom, slight strake and steep lapstrake sides."

Bremen, Vejby, Ipswich Seal.

During the Medieval period, ~~there~~ which in a British sense is 1000 AD to 1453 AD, there were many types of ships and boats. However, the main types of ships were keels, hulks, and cogs, which were all dominant in Northern Europe during the period. ~~It is likely that~~ Depending on the type of ship, a range of both archaeological and pictorial evidence will be used to define and explain these 3 types of vessels, ranging from the Newport ship and Grace Dieu for ~~cog~~ keels, pictorial seals and manuscripts for hulks, and the Bremen and Vejby cogs for cogs.

One major type of ship that was in use during the Medieval period in Northern Europe was the keel. The keel was a double-ended clinker built vessel ^{*that was built from the keel up, and} that was used for both military and commercial use, ~~during the 2nd period~~ ^{especially} during the earlier part of the period.

This concept of clinker-built, is similar to that of earlier Viking ships, and is when the bottom edge ~~edge of~~ edge of one plank overlaps the top part of the plank ~~below~~ below it (Beard and Kemp, 2012). There have been various examples of keel ships, such as the Newport ship, ~~and~~ Blackfriars 3, Grace Dieu, and Magor Pill.

Firstly, there is the Newport ship, which was excavated in 2002. This great ship, likely originally coming from the Basque country of mainland Europe, was built in the 1430s and likely arrived in ~~the~~ Newport in the 1460s, where it

would stay for the rest of its life. As mentioned, the Newport ship was built from the keel up in the clinker built style. ~~It is likely that~~

Continuing from this, there is the Grace Dieu wreck, which was likely a warship of Henry V, ~~that~~ that was likely constructed in 1418. Unfortunately, the ship was struck by lightning while it was moored in the Hamble River, and caught ablaze. The ~~the~~ burnt down to the water line, leaving the ship unstable and not buoyant, resulting in what was left of the ship to sink to the bottom of the river (DeVries, 1992). Finally, there is Magor Pill, which is another sample of the keel type of ship. Like before, the ship was constructed in the clinker style from the keel up, and was likely used for coastal trading or small excursions between Ireland and England/Wales. Once excavated, the ship was reconstructed and replica vessels have been made of the ship.

Another major type of ship that was dominant in Northern Europe's Medieval period was the hulk. Interestingly, there is actually no archaeological evidence yet found supporting the existence of hulks, however there is documentary evidence on them. First appearing in about 1000 AD, during the reign of Aethelred I of England, these ships can be identified by their reverse clinker style (top edge of one plank overlaps ~~the~~ edge of plank above it), the presence of color like objects round the stern and bow, and the fact that the planking does not run to the ends of the ship, but only to the sheerline where these colors are usually located (McGrail, 2004). Also, there is no archaeological evidence for them, but there is plenty of pictorial evidence, as is evident in many manuscripts including the Chronicle of John of Worcester, the Life of Edward the Confessor, Matthew Paris' Historia Anglorum. Not only this, but there is also ~~the~~ evidence

found in many town seals of coastal provinces, such as Haverfordwest and New Shoreham.

Within the 12th century ~~John of~~ Chronicle of John of Worcester, and the 13th century life of Edward the Confessor and Matthew Paris' *Historia Anglorum*, the ships are all depicted as hulks, as they all have colars where the ships planking runs into, and they are also reverse clinker, as is evident by the fact that the nails are located at the top of the planks instead of at the bottom, as they should be if these ships were normal clinker. This is also evident with a ~~carving~~ carving in Winchester Cathedral, that dates from the 1180, as this also has colars and has its nails at the tops of its planks.

Finally, there is the town seal of Haverfordwest and New Shoreham, which is also known as Hulsmouth. Again, both these seals, as well as the name of ~~New Shore~~ Hulsmouth, all suggest the presence of hulks (McGrail, 2004).

~~Finally~~ One final major type of ship that was in use during the the Medieval period of Northern Europe, was the Cog, which according to Ole Crumlin-Petersen, is a "double ended craft with an angular profile, flat bottom, flush strakes and steep lapstrakes sides". Furthermore, these ships were associated with the Hanseatic League, a group of towns in the northern part of Mainland Europe, that dominated trade in the Medieval period. Cogs became the ~~dominant~~ dominant form of naval transport during the latter periods and its most well known example is the Bremer Cog. However, the Vejle Cog as well as the town seal of Ipswich are also good examples.

The Bremer Cog, which was excavated in 1962, is probably the most well preserved ship of the period. ~~and was discovered~~ It was a large ship that likely could carry 200 tonnes by the 1400's, suggesting that it was

maybe a trading vessel. Continuing from this, the ship also contained a aft-castle, however the fore-castle does not seem to survive. Furthermore, as became common with cogs, the Bremer Cog had a fixed rudder, meaning the ~~memorability~~ maneuverability of the ship was easier and suggests developments in ship building techniques (De Vries, 1987).

Also, there is the Vejle cog from northern Europe, ~~as well as the town seal of~~ which has its aft castle more integrated into its hull than other cogs (Etting).

Finally, there is the town seal of Ipswich, which presents the ship with a fixed rudder and a for and aft castle.

~~As is~~ In conclusion, the 3 major ships in ~~use~~ use during the Medieval period of Northern Europe were keels, hulks, and cogs, each seeming to develop from each other and having various characteristics, strengths, and weaknesses. From the Newport ship to the Bremer Cog, all these ships demonstrate the 3 dominant naval powers at the time.