

<p>Institution: Royal Holloway, University of London</p>
<p>Unit of Assessment: D.31 Classics</p>
<p>Title of case study: The Ancient Trireme</p>
<p>1. Summary of the impact (indicative maximum 100 words) Since its launch in 1987, the <i>Olympias</i> trireme reconstruction has become the most frequently referenced representation of an ancient warship. Through its appearance in videos and television programmes, and illustrations in numerous popular encyclopedias, textbooks and academic works, it has raised awareness of ancient Mediterranean seafaring worldwide, as well as providing experimental data and acting as a paradigm of a project in experimental archaeology. It is also regularly used as a symbol of Greece's maritime heritage and contribution to the development of democracy. It has served to popularise Greece's maritime heritage and improve understanding of ancient shipping. Impact is in Cultural Life, primarily through preserving, conserving and presenting cultural heritage, developing stimuli to tourism and enhancing the experience of tourists, and secondarily in inspiring new forms of creative endeavour.</p>
<p>2. Underpinning research (indicative maximum 500 words) The trireme <i>Olympias</i> was built by the Hellenic Navy and launched in 1987, and the Trireme Trust undertook a series of experimental sea trials on the ship between 1987 and 2004. Professor Boris Rankov was one of the directors of these trials, and has since 1996 served as Chairman of the Trireme Trust, overseeing its publications.</p> <p>The research underpinning the impact was conducted by Professor Rankov. That research began with sea-trials conducted between 1987 and 2004 with detailed analysis and smaller further sea trials being undertaken from 2004 until the publication of final results in Rankov (2012). The quality and importance of the research has been recognised both in reaction to publications and grants for projects (detailed below) which have built on this fundamental research including a £250,000 grant from Leverhulme to investigate Shipsheds of the Ancient Mediterranean; Rankov's role as Principal Investigator for the latter stemmed directly from his central contribution within the <i>Olympias</i> team and was designed to apply what had been learned from the <i>Olympias</i> reconstruction to the understanding of the functioning of the shipsheds. As a consequence of work on the trireme, Rankov has been invited to present on the project and trials to an International Conference on Computer Application in Shipbuilding (2007) and to the AGM of the Hellenic Society. Rankov has also been asked to contribute chapters on the project to three different volumes on ship reconstructions of various periods (<i>Historic Ships</i> (Royal Institution of Naval Architects 2007); M.-J. Springmann and H. Wernicke (eds), <i>Historical Boat and Ship Replicas</i> (Steffen Verlag, 2008); J. Bennett (ed.), <i>Sailing into the Past: Learning from Replica Ships</i> (Seaforth 2009)). One of the physiological experiments has been covered in <i>New Scientist</i> (2007), reprinted in their 2011 anthology on unusual scientific experiments. The final publications in Rankov 2012 has been favourably reviewed by W. Murray for <i>International Journal of Nautical Archaeology</i> 42.1 (2013). The related Shipsheds project reached final publication in 2013 with Cambridge University Press. This multi-authored, large collaborative project makes extensive use of the <i>Olympias</i> reconstruction to further understanding of shipshed remains.</p> <p>The <i>Olympias</i> trireme reconstruction was designed as a very large scale archaeological experiment in the early 1980s by J.S. Morrison (1913-2000) and J.F. Coates (1922-2010). Rankov's role in this multi-disciplinary project was to design and co-direct the ship's sea trials. Operational, performance and physiological parameters were established through experiments, leading to detailed proposals for modifications to the design, papers both in support of and critical of the original design, and new research arising from the trials on aspects of operation, performance, construction, maintenance, collision damage, dimensions and modelling of battle manoeuvres. Rankov published key results in his chapter in Morrison, Coates and Rankov (2000). Preliminary dissemination of results (in publications, conference contributions, and through more informal academic and non-academic networks) led to further research and publication of the final report in Rankov 2012.</p>

3. References to the research (indicative maximum of six references)

1. J.S. Morrison, J.F. Coates and N.B. Rankov, *The Athenian Trireme: The History and Reconstruction of an Ancient Greek Warship*. 2nd ed. (Cambridge University Press, 2000)
2. N.B. Rankov (ed.), *Trireme Olympias: the Final Report* (Oxbow, 2012)
3. D.J. Blackman and N.B. Rankov et al., *Shipheds of the Ancient Mediterranean* (CUP 2013)
4. W. Murray, review of Rankov 2012 in *International Journal of Nautical Archaeology* 42.1. (2013), 215-217.

4. Details of the impact (indicative maximum 750 words)

The first-phase of the research and the sea trials, and subsequent modifications to the reconstruction, have had continuing impact, through popular scientific publications, mass media, and museum exhibitions. Impact is in Cultural Life, primarily through preserving, conserving and presenting cultural heritage, developing stimuli to tourism and enhancing the experience of tourists. The *Olympias* is an important cultural and national symbol for Greece (see below), sparking discussions about Greek (maritime) heritage. The trireme was funded by the Greek government in relation to the Olympic legacy (whence its name), functioned as a floating 'ambassador' for Greek heritage, and remains identified with the Olympics (see below). It has also had economic impact in encouraging tourism, especially to the important Hellenic Navy museum (and associated commercial facilities) in the redevelopment of Neo Faliro.

The beneficiaries of research have not been limited to particular communities. Television and other media have commented upon or used the trireme as a major element in presentation in UK, US, Greece. Museums have adopted the trireme or part thereof in UK. A segment appears in The Henley River and Rowing Museum where it was in place from 1998 and has continued to be exhibited through the REF period to the present. An exhibit featuring elements of the *Olympias* figured in the The Millenium Dome (2000) and was then transferred to Manchester Museum (currently off-exhibition). The *Olympias* herself has been in Greece (Piraeus) from 2005 and has remained on exhibition (with intermittent refurbishments) to the present. The *Olympias* has considerable recognition in Greece as a symbol of Greece's maritime heritage.

Dissemination of the research and public impact was achieved through the Trireme Trust, which Professor Rankov chairs, and by means of publications (see above) and three conferences organised by Professor Rankov. Rankov's research has informed the partial reconstruction of the trireme in the River and Rowing Museum at Henley (one of the *Daily Telegraph's* 'top 50 museums in the world'). A permanent video display features Professor Rankov and explains the sea-trials conducted on the ship and their importance.

The ship itself is on display at the Hellenic Navy Museum in Neo Faliro, Piraeus. The Museum commemorates Greek maritime history and the importance of Greek naval power in asserting national independence. Together with the *Averof*, the *Olympias* forms the centrepiece of the Museum, and establishes continuity in Greek naval traditions from the Classical period to the Modern Greek state. The presence of the Museum has been at the centre of the major regeneration of the landscape in recent years. More than 40,000 visitors per year visit the museum, the majority of them Greek schoolchildren (personal verbal communication from Captain Leonidas Tsiantoulas HN, Museum Director). A web search found 249 discussions or uses of imagery of the trireme, mostly on Greek sites (below). These include videos, discussions and blogs related to Greek identity and the Olympic Games and sites related to Greek naval tradition, both military and merchant marine.

In the UK, a full-scale interactive model of a section of the ship has, since its opening in 1998, been one of the highlight exhibits at the River and Rowing Museum, Henley-on-Thames. The

relationship between the exhibit and Professor Rankov's research on the sea trials (as discussed in the publications above) is explored through a video presentations. In this video, Professor Rankov explains the origins of his joint research project, how he and his team have used the ship as an archaeological experiment through the sea-trials, how he recruited a crew of 170 rowers was recruited to carry out the experiments he had designed with the team, and what they learnt about the practical viability of the design, the problems of command, control and communication, and the potential performance of this type of vessel under oar and sail.

The trireme has crossed into popular culture in an episode of *Inspector Morse* ("Greeks Bearing Gifts") first shown in 1991. The ship has been discussed in detail in videos and television programmes on the ancient world (especially in the context of the development of Greek democracy) made in the UK, the USA and other countries, mostly pre-2008, but reshowed regularly.

These films, exhibits and publications have enabled those who have seen them to understand much more clearly some of the technological achievements of Classical Greece and the conditions in which ordinary seamen laboured in antiquity as a form of human engine.

The public profile of *Olympias* and her association with Classical Greece led to the London Organising Committee for the Olympic Games (LOCOG) approaching Professor Rankov to arrange for the ship to be rowed on the Thames carrying the Olympic flame on the opening day of the Games (27 July, 2012). The subsequent withdrawal of the request caused a diplomatic incident, involving the Greek Minister of Defence. There was extensive coverage in the UK press (for instance, *Financial Times*, 19 April, 2012). The incident shows both the international regard in which the trireme is held and its symbolic importance.

In recognition of Professor Rankov's contribution, he was awarded a plaque in a civic reception by the City of Salamis in September, 2012.

5. Sources to corroborate the impact (indicative maximum of 10 references)

Collated Web-references to use of the trireme on the internet:

www.rhul.ac.uk/classics/research/TriremeinContemporarydebate/TheOlympiasanditsReception.aspx

1. Wikipedia site: Phaleron Bay: http://en.wikipedia.org/wiki/Phaleron_Bay
Corroborates the importance of the site as a tourist attraction.
2. Tourist Site: <http://www.hnsa.org/ships/averof.htm>
This source is evidence of the economic impact of the research and its impact on tourism.
3. Tourist Site: <http://www.athensguide.com/museum.html>
This source is evidence of the economic impact of the research and its impact on tourism.
4. Greek Navy:
http://www.hellenicnavy.gr/index.php?option=com_content&view=article&id=576&Itemid=483&lang=en
This source is evidence of the economic impact of the research and its impact on tourism and the importance of the trireme as a symbol of maritime heritage.
5. 'When men were gods' in S. Pain (ed.), *Farmer Buckley's Exploding Trousers and Other Odd Events on the Way to Scientific Discovery* (2011), 135-9
Corroborates the impact of the research in popular science.
6. Museum Home Page: The River and Rowing Museum:
<http://rrm.co.uk/visit/schwarzenbach-international-rowing-gallery>
This source is evidence of a beneficiary of the research.