

ANTH 613: CLASSICAL SEAFARING

Fall 2019 / Thursdays 9:00 am - 12:00 pm / ANTH 113

Dr. Deborah Carlson, Associate Professor

Instructor: Deborah Carlson, Nautical Archaeology Program, Dept. of Anthropology

Office Hours: Tuesdays 9:00 am -12:00 pm and by appointment

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I. Course Schedule (Summary)

(1)	Aug 29	Introduction and Orientation	
(2)	Sep 5	Iron Age Greeks and Phoenicians	
(3)	Sep 12	Archaic Greek Colonization	
(4)	Sep 19	Greek Harbors and Shipsheds	
(5)	Sep 26	Fleets of the Athenian Empire	paper #1 due
(6)	Oct 3	Classical Shipwrecks	review #1 due
(7)	Oct 10	Hellenistic Fleets	
(8)	Oct 17	Commerce in Comestible Cargoes	
(9)	Oct 24	High Commerce and the Roman Economy	
(10)	Oct 31	The Red Sea and the Erythraean Sea	paper #2 due
(11)	Nov 7	<i>Mare Nostrum</i> : Defending the Empire	review #2 due
(12)	Nov 14	Roman Harbors	
(13)	Nov 21	Votive, Cultic, and Symbolic Ships	
(14)	Dec 3	Conclusion	
	Dec 5		paper # 3 due
	Dec 12		review #3 due

II. Course Structure

Our primary goal for this seminar is to explore the evidence (archaeological, literary, iconographic, and epigraphic) for seafaring in the Mediterranean from the Iron Age until the Roman Empire. Our secondary goal is to locate this evidence within a framework of broader historical developments (trade, commerce, economy, defense, technology, culture). For some of you, this course will require additional reading of a supplementary nature (see **V**). Each class will begin with a general historical introduction and a discussion of assigned readings from primary and secondary sources. This will be followed by 3-5 oral student presentations and additional discussion of the material presented. *Everyone* in class is expected to a) complete the weekly background readings, b) arrive prepared, and c) participate in these discussions. With the exception of the primary (i.e. ancient) sources, the assigned weekly readings will be posted to eCampus (www.ecampus.tamu.edu) or placed on reserve at Evans Library.

III. Course Requirements

A. Research Papers

Instead of one large 25-30 page research paper, students in this seminar will be expected to write three smaller papers each 6-10 pages in length. The shorter length of the three papers necessitates the selection of tightly-focused topics. Papers are expected to be well researched, thoughtfully written, and carefully edited. Papers will follow the citation format of the *American Journal of Archaeology (AJA)* as prescribed at www.ajaonline.org. Each paper will count toward 15% of your final grade.

Suggested topics for papers include:

Archaeological	Any excavated material that pertains to seafaring, such as an individual shipwreck, a shipwrecked assemblage, a portion of a cargo, an amphora type, a harbor, a piece of ship's equipment, a construction feature (fasteners, wood types), specific personal objects from shipwrecks, etc.
Literary	Any written material that pertains to seafaring, including accounts of battles, voyages (mythical or historical), dedicatory inscriptions (as on some anchor stocks), mercantile graffiti, inventories, catalogs of ships, epitaphs, poems and odes, literary themes (the ship of state), etc.
Iconographic	Any material evidence that illustrates seafaring life, such as harbors, ship types, crews, cargoes, and rigging, as depicted in frescoes and vase paintings, relief sculptures, votive models, mosaics, graffiti, and coins, etc.

Evidence of plagiarism will result in a failing grade. As commonly defined, plagiarism consists of passing off as one's own the words, writings, data or ideas of another without due credit. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. For more on plagiarism, academic honesty and integrity, see: <http://aggiehonor.tamu.edu>.

On the due date (Sep 26, Oct 31, or Dec 5), bring to class **two** copies of your paper. On one paper, write your name, the date, and the paper's title. The other copy should include the title and date but **not your name**.

B. Peer Reviews

In the same way that plagiarism destroys trust between colleagues, anonymous peer review enhances the quality and accuracy of the data and ideas shared among colleagues. In this course, each student will review three papers, assessing content and the author's style, syntax, presentation of the evidence, and use of sources. Reviews should be typed on a single page and will be turned in, in class, one week after receipt of the paper (i.e. on Oct 3, Nov 7, and Dec 12). Like the papers, bring to class **two** copies of your review: **one with** your name and **one without**. Each review will count toward 5% of your final grade.

C. *Presentations*

Each student will prepare 5-6 oral classroom presentations during the course of the semester. These reports should be illustrated and move from the general to the specific; students are encouraged to prepare and distribute supplementary handouts. As the assigned readings in the syllabus are listed in alphabetical order, it will be up to the presenter to organize his/her material most effectively. The ability to organize and present data coherently is the key to success in delivering oral reports *and* writing research papers. Students are welcome to include additional sources in their presentations, but not to the exclusion of assigned bibliography. Your best 5 presentations will count toward 40% of your final grade.

IV. Grades

Final grades in this course will be calculated according to the following formula:

Research papers (due Sep 26, Oct 31, Dec 5)	45%
Peer reviews (due Oct 3, Nov 7, Dec 12)	15%
Presentations (top 5) & participation	40%

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Room B118 of Cain Hall, or call 845-1637.

Absence from class and late submission of assignments will be handled in accordance with University regulations. Please see <http://student-rules.tamu.edu/rule07> for current policy on University-excused absences.

V. Suggested Reference Works

General Reference

Cambridge Ancient History **D57 C252 1970**

Oxford Classical Dictionary **DE5 O92 2003**

Pauly's Real-encyclopadie der classischen Altertumswissenschaft **DE5 P33 1958**

- Cancik, H. and H. Schneider. *Brill's New Pauly* (electronic access through Evans)

Barrington Atlas of the Greek and Roman World **G1033 B3 2000** (Map)

Princeton Encyclopedia of Classical Sites **DE59 P7 1976**

Lexicon Topographicum Urbis Romae **DG63 L49 1993**

Thesaurus Linguae Graecae (electronic access through Evans)

DeGrummond, N. *Encyclopedia of the history of classical archaeology* **DE5 E5 1996**

Hansen, M.H. and T.H. Nielsen, *An Inventory of Archaic and Classical Poleis* **DF222.2 H36 2004**

Literary Resources

Austin, M.M. and P. Vidal-Naquet. 1977. *Economic and Social History of Ancient Greece*.

HC37 A8813 1977a

Austin, M.M. 1981. *The Hellenistic World from Alexander to the Roman Conquest: A Selection of Ancient Sources in Translation*. **DF235 A1 H44**

Concise Oxford Companion to Classical Literature. **PA31 H69 1993 (Ref.)**

Crawford, M., and D. Whitehead. 1983. *Archaic and Classical Greece: A Selection of Ancient Sources in Translation*. **DF12 C7 1983**

Loeb Classical Library includes all major Greek and Latin texts with facing page translations in English. Some translations are rather dated, as the series began in the early 1900s.

Green-bound Greek texts start at **PA3611**; red-bound Latin texts begin with **PA6156**.

Meijer, F., and O. Van Nijf. 1992. *Trade, Transport, and Society in the Ancient World: A Sourcebook*. **HF373 M45 1992**

Meiggs, R., and D. Lewis. 1999. *A Selection of Greek Historical Inscriptions to the End of the Fifth Century B.C.* **CN360 S45 1988**

Tod, M. 1985. *Greek historical inscriptions: from the sixth century B.C. to the death of Alexander the Great in 323 B.C.* **DF209.5 G65 1985**

Archaeological Resources

Biers, W. 1992. *Art, Artefacts, and Chronology in Classical Archaeology*. **DE60 B48**

Hayes, J. 1997. *Handbook of Mediterranean Roman Pottery*. **DE61 P66 H39 1997**

Illsley, J. 1996. *An indexed bibliography of underwater archaeology and related topics*.

Morrison, J.S., and R.T. Williams. 1968. *Greek Oared Ships: 900-322 B.C.* London.

Parker, A.J. 1992. *Ancient Shipwrecks of the Mediterranean & the Roman Provinces*.

Bulletin de Correspondance Hellénique (Chronique des Fouilles en Grèce) **DF10 B9**

Internet Resources

The AMPHORAS Project <http://www.chass.utoronto.ca/amphoras/cgi-bin/well>

Athenian Agora Excavations <http://www.agathe.gr/index.html>

Beazley Archive <http://www.beazley.ox.ac.uk>

Bryn Mawr Classical Review <http://bmcr.brynmawr.edu>

Corpus Inscriptionum Latinarum http://cil.bbaw.de/cil_en/index_en.html

Loeb Classical Library <https://www.loebclassics.com>

Oxford Roman Economy Project <http://oxrep.classics.ox.ac.uk>

OxREP Shipwrecks Database http://oxrep.classics.ox.ac.uk/databases/shipwrecks_database

Perseus Digital Library <http://www.perseus.tufts.edu>

Abbreviations (n.b.: All journal abbreviations follow those listed in *AJA* guidelines)

AG *The Age of the Galley: Mediterranean Oared Vessels since Pre-Classical Times*, edited by R. Gardiner and J. Morrison. London: Naval Institute Press (1995).

AGC *The Archaeology of Greek Colonisation*, edited by G.R. Tsetschladze and F. De Angelis. Oxford: University Committee for Archaeology Monograph 40 (1994).

GO *The Greeks Overseas*, by J. Boardman. New York: Thames and Hudson, 4th ed (1999).

MI *Le musée imaginaire de la marine antique*, by L. Basch. Athens (1987).

MM *Mariner's Mirror*

MWAR *The Maritime World of Ancient Rome*, edited by R. Hohlfelder (2008).

SSAW *Ships and Seamanship in the Ancient World*, by L. Casson (1995, 2nd ed.)

VI. Course Schedule (Detailed)

Sep 5 Iron Age Greeks and Phoenicians

Background

Primary source: Homer *Odyssey* 5.228-390

SSAW 43-60, 71-6; *MI* 155-201.

Demand, N. H. 2012. *The Mediterranean Context of Early Greek History*, 220-255.

(1) Phoenician Ships

Aubet, M. E. 2001. *The Phoenicians and the West: Politics, Colonies and Trade*, 6-25; 97-143.

Basch, L. 1969. "Phoenician Oared Ships." *MM* 55: 139-62, 227-45.

Basch, L. 1971. "The Ships of Luli, King of Tyre and Sidon." *MM* 57: 326-29.

Lloyd, A.B. 1975. "Were Necho's Triremes Phoenician?" *JHS* 95: 45-61.

(2) The Evidence of Shipwrecks

Ballard, R.D., et al. 2002. "Iron Age Shipwrecks in Deep Water off Ashkelon, Israel." *AJA* 106: 151-68.

Negueruela, I., et al. 1995. "Seventh-Century B.C. Phoenician Vessel Discovered at Playa de la Isla, Mazarron, Spain." *IJNA* 24: 189-97.

Polzer, M. E. 2014. "The Bajo de la Campana Shipwreck and Colonial Trade in Phoenician Spain." In *Assyria to Iberia: At the Dawn of the Classical Age*, edited by J. Aruz et al., 230-42.

(3) Ships in Geometric Art

Mark, S. 2008. "The Earliest Naval Ram." *IJNA* 37: 253-72.

Van Doorninck, F.H. 1982. "Protogeometric Longships and the Introduction of the Ram." *IJNA* 11: 277-86.

Wallinga, H. 1995. "The Ancestry of the Trireme." In *AG*, 36-44.

Williams, R.T. 1958. "Early Greek Ships of Two Levels." *JHS* 78: 120-30.

(4) Ship Construction in Homer

SSAW 217-19.

Casson, L. 1964. "Odysseus' Boat." *AJP* 85: 61.

Casson, L. 1992. "Odysseus' Boat (Od. 5.244-53)." *IJNA* 21: 73-4.

Mark, S. 1991. "Odyssey 5.234-53 and Homeric Ship Construction: A Reappraisal." *AJA* 95: 441-45.

Mark, S. 1996. "Odyssey 5.234-53 and Homeric Ship Construction: A Clarification." *IJNA* 25: 46-8.

Sep 12 Archaic Greek Colonization

Background

Primary source: Herodotus *Histories* 1.163-167; 2.178-179

Primary source: Hesiod *Works and Days* 618-694

SSAW 169-82.

AGC pp. 52-65; *GO* passim.

Foxhall, L. 1997. "Cargoes of the Heart's Desire: The Character of Trade in the Archaic Mediterranean World." In *Archaic Greece: New Approaches and New Evidence*, edited by N. Fisher and H. van Wees, 295-309.

Osborne, R. 1998. "Early Greek colonization? The nature of Greek settlement in the West." In *Archaic Greece: New Approaches and New Evidence*, edited by N. Fisher and H. van Wees, 251-70.

Wilson, J.-P. 1997-1998. "The 'Illiterate Trader'?" *BICS* 42: 29-56.

(5) The Black Sea

Greaves, A. 2007. "Milesians in the Black Sea: Trade, Settlement, and Religion." In *The Black Sea in Antiquity*, edited by V. Gabrielsen and J. Lund, 9-21.

Tsetskhladze, G.R. 1994. "Greek Penetration of the Black Sea." In *AGC*, 111-35.

(6) Pots as Commodities

Boardman, J. 1988. "Trade in Greek Decorated Pottery." *OJA* 7: 27-33.

Gill, D.W.J. 1994. "Positivism, pots, and long-distance trade." In *Classical Greece: Ancient Histories and Modern Archaeologies*, edited by I. Morris, 99-107.

Johnston A.W. 1985. "Etruscans in the Greek vase trade?" In *Il Commercio Etrusco Arcaico, Atti dell'Incontro di Studio, 5-7 dicembre 1983*, 249-55.

Osborne, R. 1996. "Pots, trade, and the archaic Greek economy." *Antiquity* 70.1: 31-44.

(7) The Evidence of Shipwrecks

Greene, E.S., M.L. Lawall, and M.E. Polzer. 2008. "Inconspicuous Consumption: The Sixth-Century B.C. Shipwreck at Pabuç Burnu, Turkey." *AJA* 112: 685-711.

Kahanov, Y. and P. Pomey. 2004. "The Greek Sewn Shipbuilding Tradition and the Ma'agan Mikhael Ship: A Comparison with Mediterranean Parallels from the Sixth to the Fourth Centuries BC." *MM* 90: 6-28.

Turfa, J.M., and A.G. Steinmayer. 2001. "Sewn Hulls and Self-Defence." *IJNA* 30: 122-27.

(8) Lead Letters

Chadwick, J. 1973. "The Berezan Lead Letter." *PCPS* 199: 35-7.

Chadwick, J. 1990. "The Pech-Maho lead." *ZPE* 82: 161-6.

Somolinos, H.R. 1996. "The Pech-Maho lead: a new interpretation." *ZPE* 111: 74-8.

Vinogradov, Y. 1998. "The Greek Colonization of the Black Sea Region in the Light of Private Lead Letters." In *The Greek Colonisation of the Black Sea Area: Historical Interpretation of Archaeology*, edited by G. R. Tsetskhladze, 153-78.

Sep 19 Greek Harbors and Shipsheds

Background

Primary source: Xenophon *Ways and Means* 3.1-3.14

SSAW 361-70.

Blackman, D. 1982. "Ancient harbours in the Mediterranean. Part I." *IJNA* 11: 79-104.

Hansen, M.H. 1997. "Emporion: A Study of the Use and Meaning of the Term in the Archaic and Classical Periods." In *Yet More Studies in the Ancient Greek Polis*, edited by T.H. Nielsen, 83-105.

(9) Diolkos

MacDonald, B. R. 1986. "The Diolkos." *JHS* 106: 191-95.

Munn, M. L. Z. 2003. "Corinthian Trade with the Punic West in the Classical Period." *Corinth* 20 (The Centenary: 1896-1996): 195-217.

Pettegrew, D. 2011. "The Diolkos of Corinth." *AJA* 115: 549-74.

Werner, W. 1997. "The largest ship trackway in ancient times: the Diolkos of the Isthmus of Corinth, Greece, and early attempts to build a canal." *IJNA* 26: 98-119.

(10) Thasos

Archontidou-Argyri A., A. Simossi, and J.-Y. Empereur. 1989. "The underwater excavation at the ancient port of Thasos, Greece." *IJNA* 18: 51-59.

(11) Athens

Garland, R. 1987. *The Piraeus From the Fifth to the First Century B.C.*

Loven, B. 2012. *The Ancient Harbours of the Piraeus: The Zea Shipsheds and Slipways.*

(12) Amathus

Empereur, J.-Y., T. Koželj, O. Picard, and M. Wurch-Koželj. 2017. *The Hellenistic Harbour of Amathus: Underwater Excavations, 1984-1986. Volume 1: Architecture and History.*

(13) Shipsheds

Blackman, D., and B. Rankov. 2013. *Shipsheds of the Ancient Mediterranean*, 3-29.

Blackman, D. 1996. "New Evidence for Ancient Ship Dimensions." *Tropis IV*: 113-25.

Sep 26 Fleets of the Athenian Empire

Background

Primary source: Aeschylus *Persians* 353-432

SSAW 60-5, 77-96.

Hale, J.R. 2009. *Lords of the Sea*, 3-74. Viking.

Morrison, J.S. 1995. "The Trireme." In *AG*, 49-65.

(14) Development of the Fleet

De Souza, P. 1998. "Towards Thalassocracy? Archaic Greek naval developments." In *Archaic Greece: New Approaches and New Evidence*, edited by N. Fisher and H. van Wees, 271-94.

(15) Vessels and "Replicas"

Coates, J.F. 1995. "The Naval Architecture and Oar Systems of Ancient Galleys." In *AG*, 127-41.

Morrison, J.S., J.F. Coates, and N.B. Rankov. 2000. *The Athenian Trireme*, 191-275.

Tilley, A.F. 1990. "Warships of the Ancient Mediterranean." *American Neptune* 50: 192-200.

(16) Tactics

Holladay, A.J. 1988. "Further Thoughts on Trireme Tactics." *Greece and Rome* 35: 149-51.

Lazenby, J.F. 1987. "The Diekplous." *Greece and Rome* 37: 169-85.

Strauss, B. 2000. "Democracy, Kimon, and the Evolution of Athenian Naval Tactics in the Fifth Century B.C." In *Polis & Politics: Studies in Ancient Greek History*, edited by P. Flensted-Jensen, T.H. Nielsen, and L. Rubinstein, 315-26.

Whitehead, I. 1987. "The Periplous." *Greece and Rome* 34: 178-85.

(17) Crew

Casson, L. 1995. "The Feeding of the Trireme Crews and an Entry in IG ii 2 1631." *TAPA* 125: 261-69.

Gabrielsen, V. 1994. *Financing the Athenian Fleet: Public Taxation and Social Relations*, 105-25.

Graham, A.J. 1992. "Thucydides 7.13.2 and the Crews of Athenian Triremes." *TAPA* 122: 257-70.

Oct 3 Classical Shipwrecks

Background

Primary source: Old Oligarch (or pseudo-Xenophon), *Constitution of the Athenians* 2.1-14

Meiggs, R. 1975. *The Athenian Empire*, 23-41, 255-72.

Osborne, R. 1999. "Archaeology and the Athenian Empire." *TAPA* 129: 319-32.

Reed, C.M. 2003. *Maritime Traders in the Ancient Greek World*, 15-26.

(18) Alonnesos

Hadjidaki, E. 1997. "The Classical Shipwreck at Alonnesos." In *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*, edited by S. Swiny, R. Hohlfelder, and H. W. Swiny, 125-34.

Hadjidaki, E. 1996. "Underwater Excavations of a Late Fifth Century Merchant Ship at Alonnesos, Greece: the 1991-1993 Seasons." *BCH* 120: 561-93.

Tektaş Burnu (DNC)

Carlson, D.N. 2003. "The Classical Greek Shipwreck at Tektaş Burnu, Turkey." *AJA* 107: 581-600.

Cook, J.M. 1961. "The Problem of Classical Ionia." *PCPS* 187: 9-18.

(19) Porticello

Eiseman, C.J., and B.S. Ridgway. 1987. *The Porticello Shipwreck*.

Gill, D.W.J. 1987. "The date of the Porticello shipwreck: Some observations on the Attic bolsals." *IJNA* 16: 31-33.

Lawall, M. 1998b. "Bolsals, Mendeian amphoras, and the date of the Porticello shipwreck." *IJNA* 27: 16-23.

(20) Kyrenia

Katzev, S.W. 2007. "The Ancient Ship of Kyrenia, Beneath Cyprus Seas." In *Great Moments in Greek Archaeology*, edited by P. Valavanis, 286-99.

Steffy, J.R. 1985. "The Kyrenia Ship: An Interim Report on its Hull Construction." *AJA* 89: 71-101.

Swiny, H.W., and M.L. Katzev. 1973. "The Kyrenia Shipwreck: A Fourth-Century B.C. Greek Merchant Ship." In *Marine Archaeology*, edited by D. Blackman, 339-59.

Oct 10 Hellenistic Fleets

Background

Primary source: Athenaeus *Deipnosophistae* 5.40-44

Murray, W. 2012. *The Age of Titans: The Rise and Fall of the Great Hellenistic Navies*, 3-30.

(21) Polyremes

SSAW 97-135.

Casson, L. 1958. "Hemiolia and Triemiolia." *JHS* 78: 14-18.

Morrison, J.S. 1980. "Hemiolia, Trihemiolia." *IJNA* 9: 121-26.

Morrison, J.S. 1995. "Hellenistic Oared Ships 399-31 BC." In *AG*, 66-77.

Murray, W. 2012. *The Age of Titans: The Rise and Fall of the Great Hellenistic Navies*, 171-244.

(22) Naval Warfare

Casson, L., and J.R. Steffy. 1991. *The Athlit Ram*.

Murray, W. 1996. "The Weight of Trireme Rams and the Price of Bronze in Fourth-Century Athens." *GRBS* 26: 141-50.

Murray, W. 2012. *The Age of Titans: The Rise and Fall of the Great Hellenistic Navies*, 69-170.

(23) Punic Wars

Libourel, J.M. 1973. "Galley Slaves in the Second Punic War." *CP* 68: 116-19.

Prag, J.R.W. 2014. "Bronze rostra from the Egadi Islands off NW Sicily: the Latin Inscriptions." *JRA* 27: 33-59.

Tusa, S., and J. Royal. 2012. "The landscape of the naval battle at the Egadi Islands (241 B.C.)." *JRA* 25: 7-48.

(24) Syracusia

Meijer, F., and A. Sleeswyk. 1996. "On the Construction of the 'Syracusia' (Athenaeus V. 207 A-B)." *CQ* 46: 575-78.

Turfa, J.M., and A.G. Steinmayer. 1999. "The *Syracusia* as a Giant Cargo Vessel." *IJNA* 28: 105-25.

Oct 17 The Commerce in Comestible Cargoes

Background

Primary source: Lucian *Navigium* 5-9

Gibbins, D. 2001. "Shipwrecks and Hellenistic Trade." In *Hellenistic Economies*, edited by Z. Archibald, 273-312.

Houston, G. 1987. "Lucian's *Navigium* and the Dimensions of the *Isis*." *AJP* 108: 444-50.

(25) Maritime Loans

De Ste. Croix, G.E.M. 1974. "Ancient Greek and Roman Maritime Loans." In *Debits, Credits, Finance and Profits: Essays in Honor of W.T. Baxter*, edited by H. Edey and B.S. Yamey, 41-59.

Millett, P. 1983. "Maritime Loans and the Structure of Credit in Fourth-Century Athens." In *Trade in the Ancient Economy*, edited by P. Garnsey et al., 36-52.

(26) The Grain Trade

Casson, L. 1954. "The Grain Trade of the Hellenistic World." *TAPA* 85: 168-87.

Erdkamp, P. 2005. *The Grain Market in the Roman Empire: A Social, Political and Economic Study*, 143-205.

Rickman, G.E. 1980. "The Grain Trade under the Roman Empire." In *The Seaborne Commerce of Ancient Rome: Studies in Archaeology and History*, edited by J.H. D'Arms and E.C. Kopff, *MAAR* 36: 261-75.

(27) Shipping Containers

Heslin, K. 2011. "Dolia shipwrecks and the wine trade in the Roman Mediterranean." In *Maritime Archaeology and Ancient Trade in the Mediterranean*, edited by D. Robinson and A. Wilson, 157-68.

Panella, C. and A. Tchernia. 2002. "Agricultural Products Transported in Amphorae: Oil and Wine." In *The Ancient Economy*, edited by W. Scheidel, 173-89.

Peacock, D.P.S. 1986. *Amphorae and the Roman Economy*.

(28) Exotica

Miller, J.I. 1969. *The spice trade of the Roman Empire: 29 B.C. to A.D. 641*.

Peacock, D., and D. Williams. 2006. *Food for the Gods: New Light on the Ancient Incense Trade*.

Young, G.K. 2001. *Rome's eastern trade: international commerce and imperial policy, 31 BC-AD 305*, 1-26.

Oct 24 High Commerce and the Roman Economy

Background

- Arnaud, P. 2007. "Diocletian's Prices Edict: The Prices of Seaborne Transport and the Average Duration of Maritime Travel." *JRA* 20: 321-36.
- Greene, K. 1986. *The Archaeology of the Roman Economy*, 9-44.
- Houston, G.W. 1988. "Ports in perspective: Some Comparative Materials on Roman Merchant Ships and Ports." *AJA* 92: 553-64.
- Wilson, A.I. 2009. "Approaches to Quantifying Roman Trade." In *Quantifying the Roman Economy: Methods and Problems*, edited by A.K. Bowman and A. Wilson, 213-249.

(29) The Evidence of Shipwrecks

- Parker, A.J. 2008. "Artifact Distributions and Wreck Locations." In *MWAR*, 177-96.
- Rice, C. 2016. "Shipwreck Cargoes in the Western Mediterranean and the Organization of Roman Maritime Trade." *JRA* 29: 165-92.

(30) Merchants

- D'Arms, J.H. 1981. *Commerce and social standing in ancient Rome*, 149-71. Cambridge.
- Denecker, E. and K. Vandorpe. 2007. "Sealed amphora stoppers and tradesmen in Greco-Roman Egypt: Archaeological, papyrological and inscriptional evidence." *BABesch* 82: 115-128.
- Morley, N. 2007. "Markets, Merchants, and Morality." In *Trade in Classical Antiquity*, 79-89.

(31) The Marble Trade

- Fant, C. 2008. "Quarrying and Stoneworking," in *The Oxford Handbook of Engineering and Technology in the Classical World*, edited by J.P. Oleson, 121-35.
- Russell, B. 2011. "Lapis Transmarinus: Stone-Carrying Ships and the Maritime Distribution of Stone in the Roman Empire." In *Maritime Archaeology and Ancient Trade in the Mediterranean*, edited by D. Robinson and A. Wilson, 139-55.
- Waelkens, M., et al. 1988. "Quarries and the Marble Trade in Antiquity." In *Classical Marble: Geochemistry, Technology, Trade*, edited by N. Herz and M. Waelkens, 11-28.

(32) The Art Market

- Green, P. 1990. "Late Hellenistic Art, 150-30: The Mass Market in Nostalgia." In *Alexander to Actium: The Historical Evolution of the Hellenistic Age*, 566-85.
- Kaltsas, N., E. Vlachogianni, and P. Bouyia. 2012. *The Antikythera Shipwreck: The Ship, The Treasures, The Mechanism*.

(33) Antikythera Mechanism

- De Solla Price, D. 1974. "Gears from the Greeks: The Antikythera Mechanism — A calendar computer from ca. 80 B.C." *TAPS* 64.7: 5-70.
- Freeth, T., A. Jones, J.M. Steele, and Y. Bitsakis. 2008. "Calendars with Olympiad display and eclipse prediction on the Antikythera Mechanism." *Nature* 454: 614-17.

Wright, M.T. 2007. "The Antikythera Mechanism Reconsidered." *Interdisciplinary Science Reviews* 32: 27-43.

Oct 31 The Red Sea and the Erythraean Sea

Background

Primary Source: *Periplus Maris Erythraei*
SSAW 270-299.

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