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David K. Pettegrew

Messiah University, dpettegrew@messiah.edu

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The *Diolkos* of Corinth

DAVID K. PETTEGREW

Abstract

Since the mid 19th century, the paved portage road known as the *diolkos* has been central to interpreting the historical fortune of the city of Corinth and the commercial facility of its isthmus. In this article, I reevaluate the view that the *diolkos* made the isthmus a commercial thoroughfare by reconsidering the archaeological, logistical, and textual evidence for the road and overland portaging. Each form of evidence problematizes the notion of voluminous transshipment and suggests the road did not facilitate trade as a constant flow of ships and cargoes across the isthmus. The *diolkos* was not principally a commercial thoroughfare for transporting the goods of other states but facilitated the communication, transport, travel, and strategic ends of Corinth and her allies. The commercial properties of the Isthmus of Corinth subsist in its *emporion* for exchange, not in a road used for transshipment.*

INTRODUCTION

Since the mid 19th century, the paved limestone portage road known as the *diolkos* has been integral to interpretations of ancient Corinth. Scholars have noted that the road across the narrowest part of the Isthmus of Corinth offered seafarers a shortcut in maritime trade between west and east (figs. 1, 2). In some summaries, the *diolkos* functioned like an overland canal across which ships and cargoes flowed in the span of several hours. Corinth allegedly grew wealthy from the revenues of transit tolls and transport fees on the portage.

The *diolkos* is intriguing because the relevant textual, archaeological, and logistical bodies of evidence are seemingly contradictory or inconsistent. The dozen

relevant texts, for example, seem to belong to two distinct groups. One group relates historical episodes of states, generals, or admirals drawing military ships across the Isthmus of Corinth beginning with the Peloponnesian War: Thucydides (describing a portage of the Peloponnesians in 412 B.C.E.), Polybius (Demetrius of Pharos in 220 B.C.E. and Philip V in 217 B.C.E.), Livy (King Eumenes in 172 B.C.E.), an inscription from Corinth (Marcus Antonius in 102/101 B.C.E.), Dio Cassius (Octavian in 30 B.C.E.), and the *Vita Basilii* and later Byzantine sources (Niketas Ooryphas in 872 C.E.). The second group includes passing citations to ship dragging in Aristophanes, Strabo, Pliny the Elder, and Hesychius, who seemingly refer to portaging for nonmilitary quotidian purposes. Whereas the first group references multiple distinct transfers of ships across the isthmus from the fifth century B.C.E. to the ninth century C.E., the second has suggested that portaging was a regular and constant activity.

The texts are also problematic in that all refer to the process of portaging, but none names a physical road called a *diolkos* as the medium for portage. Only the first-century geographer Strabo and the fifth-century grammarian Hesychius, who quotes Strabo, use the term *diolkos* to describe a general portage area on the isthmus,¹ but not in the precise modern sense of a monumental portage road. Rather, Strabo (8.2.1, 8.6.4, 8.6.22) applies *diolkos* as a toponym denoting the narrowest part of the Isthmus of Corinth visible from the height of Acrocorinth (fig. 3), a geographic zone associated with ship dragging but also

*I am grateful to many individuals for comments, suggestions, and assistance that have improved this paper. Dallas DeForest, Melissa Hogan, Sophia Loverdou, Shelley Wachsmann, Editor-in-Chief Naomi J. Norman, and an anonymous reviewer for the *AJA* read the entire text carefully and critically and offered insightful comments. Loverdou offered extensive discussion about the modern neglect and abuses of the *diolkos* road and arranged for our visit to the grounds of the Military Engineers' School. William Caraher, Timothy Gregory, Sarah James, Abaz Kryemadhi, Yannis Lolos, R. Scott Moore, Dimitri Nakassis, Jennifer Palinkas, and Kate Pettegrew answered queries or provided discussion, critique, and feedback. A sections of this paper makes use of archaeological and topographic data produced by the Eastern Korinthia Archaeological Survey (EKAS), for which I thank the project's directors, Timothy Gregory and Daniel Pullen. I also thank Richard Rothaus

for GIS data. The arguments were improved from audience feedback in presentations at Messiah College, the University of North Dakota, the 2010 "Corinth in Contrast: Studies in Inequality" conference at the University of Texas, the 112th Annual Meeting of the Archaeological Institute of America in San Antonio, Texas, and the 2011 International Meeting of the Society of Biblical Literature in London. Messiah College and the Office of Faculty Development generously supported my research through course reductions and travel grants. Additional figures of the *diolkos* can be found under this article's abstract on the *AJA* website (<http://www.ajaonline.org>). See <http://corinthianmatters.com> for a full range of texts, photographs, and information about the *diolkos*.

¹Hesychius (s.v. "diolkos") defines *diolkos* as the place (*topos*) from Lechaion to Kenchreai.



Fig. 1. The isthmus between east and west.

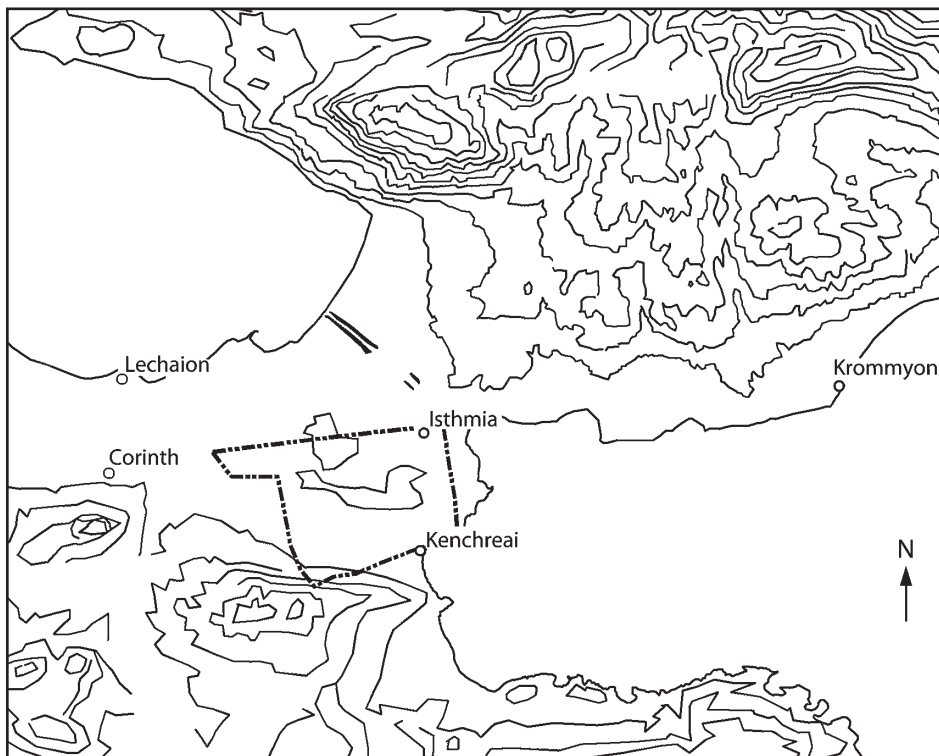


Fig. 2. Topographic map of the Corinthia, showing major ancient sites, the mounds from Nero's canal, and the main area of the Eastern Corinthia Archaeological Survey.



Fig. 3. The *diolkos* as Strabo saw it from Acrocorinth.

encroaching seas and the Sanctuary of Poseidon. His toponymic use of the word to refer to a land strip or zone is comparable with Ptolemy's and Xenocrates' use of the term for narrow land strips in Egypt.² No ancient writer connected portaging specifically with a road across the isthmus.³

Modern scholars, however, have used the term *diolkos* for the physical trans-isthmus road excavated in the late 1950s. It is not clear when in the modern period the ancient toponym *diolkos* became narrowly defined as a road, but the change had taken place by the mid 19th century, more than 100 years before the road was excavated. In the early 1800s, travelers like Chandler and Dodwell carefully followed Strabo in defining the *diolkos* as a "drawing place," an area or strip of the isthmus his-

torically associated with ship drawing.⁴ But by the time Ernst Curtius, the German archaeologist and historian, discussed the *diolkos* in his *Peloponnesos* (1851–1852), the narrow zone had become a carriage road (*isthmische Fahrbahn*) used for transferring small ships and cargoes that generated continuous traffic, commerce, duties, and wealth.⁵ Baedeker's *Griechenland* (1883) included a stop at the remains of the "tramway" (*der Schleifbahn*) on the eastern end of the isthmus near the road to Kalamaki,⁶ while Frazer identified a physical road near a guardhouse in this region.⁷ By the early 20th century, *diolkos* was synonymous in nearly all scholarship with "tramway," "carriage road," "portage road," "railway," or "overland canal." Strabo's broad land strip, visible from Acrocorinth, was lost in translation.

² The geographer Ptolemy (4.5.10) records a *diolkos* between two mouths of the Nile, and two fragments of the medical writer Xenocrates of Aphrodisias, preserved in Oribasius *Collectiones* (2.58.54–5, 2.58.129), apply the term to a district in Alexandria; cf. Fraser 1961; Blackman 2008, 660–61.

³ Only Pseudo-Skylax (*Periplus* 40), in the late fourth century B.C.E., notes an ancient roadway across the isthmus, but he does not name it or associate it with portaging.

⁴ Chandler 1817; Dodwell 1819, 185–86.

⁵ Curtius 1852, 2:521, 539, 545–46, 596. Curtius (1852, 2:596 n. 91) proposes that the road crossed from the village of Kalamaki to Loutraki and cites the standard list of ancient textual sources. Cf. Finlay (1851, 279–80), who defines the *diolkos* as a "railroad."

⁶ Baedeker 1883, 220. Baedeker (1869, 3:326–27) also recommended a stop at this road in *Italy, Handbook for Travellers*.

⁷ Frazer 1898, 5.

The archaeological investigation of the physical trans-isthmus portage road complicated rather than clarified the picture of portaging known from textual sources. As early as the 1840s, travelers thought they recognized parts of the roadway as a physical place in the landscape,⁸ but the first clear outline of the visible remains occurred in the late 1920s when Fowler identified a wide limestone landing platform and an associated roadway with wheel ruts near the Corinthian Gulf.⁹ Between 1956 and 1959, the Greek archaeologist Nikolaos Verdellis excavated significant tracts of the road that had been exposed by bulldozing operations during the construction of the grounds of the Military Engineers' School. He cleared several long stretches of a limestone road over the course of 1.1 km, effectively uncovering the great portage highway that 19th-century travelers had predicted from ancient texts (fig. 4). On the basis of textual evidence, inscribed alphabetic letters, and associated pottery, Verdellis argued that the tyrant Periander constructed the road in the late seventh/early sixth century, 170 years before the first textual attestation for portaging (Thuc. 3.15). His conclusions, then, complicated the function of the road and the nature of portaging, and they spawned a new set of questions. Why did Periander construct the road, and how was it used prior to the Peloponnesian War? Were merchant ships and commercial cargoes transferred throughout antiquity more regularly than military galleys?

If the textual and archaeological evidence has proven difficult to reconcile, a consideration of the logistics of portaging ships and cargoes has really complicated interpretations of the *diolkos*. How does one explain the textual evidence suggesting that portaging occurred frequently in light of the logistical challenges of hauling vessels of 15–30 tons or more over an isthmus 6 km in length?¹⁰ No one has denied the occasional transfer of military galleys narrated clearly by Thucydides and other ancient writers, but not everyone has accepted that heavier commercial vessels were normally portaged. Some scholars have accepted that commercial vessels

were often transferred but posited that these were smaller vessels, lighters, or *porthmeia*.¹¹ Other scholars have downplayed the textual evidence and argued that the road functioned primarily for the overland portage of commercial cargoes, either heavy building material (timber, marble, cut stone) or bulk commodities (grain, oil, wine); full-sized commercial ships were rarely transferred over because of the inherent difficulties.¹²

Today the scholarly and popular picture of the *diolkos* common to overviews of ancient Corinth is often an unwieldy composite of these different evidentiary bodies: building materials and divisible commodities were both portaged frequently, smaller commercial vessels sometimes, and military galleys at least on occasion. The picture is a messy one, with the only consistent thread being that the *diolkos* functioned primarily as a thoroughfare for long-distance commercial traffic that benefited Corinth through transit tolls and portage fees; crossing the isthmus was safer and easier than sailing around Cape Malea. This “commercial thoroughfare thesis,” as I will call it, has had a notable influence on the modern conception of both the isthmus and Corinth, the former imagined as an overland canal, the latter a cosmopolis servicing passing merchants and passengers.

If the thoroughfare thesis is today the dominant thread of interpretation of the *diolkos* and the isthmus, a more careful consideration of the varied evidence argues against the view. The archaeology of the road is problematic, and relatively new ceramic evidence for trade indicates that the *diolkos* was no superhighway for portaging commodities. The logistical challenges of time and labor for a long overland transport made any movement of ships and cargoes difficult and costly. The texts do not indicate ordinary portages but all refer to exceptional military instances of stratagem and heroic action. The *diolkos* did not mainly facilitate international trade but served Corinth's regional needs of communication and transport, and the commercial properties of the isthmus lay less in its facility as a thoroughfare than in its double *emporion*.¹³

⁸ Mott (1842, 238–84) notes or imagines the railway near the Hexamilion Wall near Kalamaki.

⁹ Fowler 1932, 49–51.

¹⁰ Burford 1960, 1969; Raepsaet 1993, 2008.

¹¹ Salmon 1984, 138–39; Drijvers 1992; Sanders 1996. Salmon (1984, 138–39) points out that portaging divisible cargoes would require the cumbersome process of loading and reloading, which could only have created serious congestion in both gulfs; moving ships overland must have been easier in the Archaic period. However, he recognizes that the increasing size of ships in subsequent periods would have made it impossible to portage most commercial ships.

¹² Wiseman 1978, 45; 1979, 441, 446; Cook 1979 (with revisions in Cook 1986); MacDonald 1986; Lewis 2001, 13–14. MacDonald (1986), e.g., underscores the fundamental differences in the weight, size, and shape of *triereis* and merchant vessels and argues that the latter were more difficult to transport and would never have been subjected to risk of overland passage; construction materials were unloaded and transferred across the isthmus and reloaded on different ships in the opposite gulf. In this article, I use the ancient term *triereis* in place of the common English term “trireme.”

¹³ I discovered Lohmann's (forthcoming) recent article too late in the proofing process to engage with it fully in this



Fig. 4. The excavated portage road revealed by Verdellis near the Corinthian Gulf.

PERIANDER'S ROAD: THE ARCHAEOLOGY OF THE DIOLKOS

The Isthmus of Corinth was the Mount Everest of ancient isthmuses (online fig. 1; cf. fig. 2). At its narrowest point, it spanned more than 5,600 m, 13 times wider than the Leukas isthmus and 8 times wider than the 700 m *diolkos* of Alexandria.¹⁴ It was significantly steeper than other isthmuses, climbing from sea level to an elevation of 80 masl at its narrowest part. Across this land bridge, the Corinthians in the Archaic or Classical period laid a monumental limestone road. Two main forms of archaeological evidence relate to the *diolkos* and trans-isthmus portaging: (1) the road

itself (excavated from 1956–1959) and (2) ceramic data for trade. A reconsideration of both of these problematizes Verdellis' conclusions about the date as well as the commercial thoroughfare thesis outlined above.

The Diolkos Road

Since the completion of Verdellis' excavations, archaeologists have often relied on his brief conclusions recorded in a half dozen preliminary reports.¹⁵ The limestone road uncovered through excavation consists of three main parts, stretching intermittently over a course of 1,100 m: a landing platform or quay

paper. That author follows similar paths and reaches similar conclusions from the literary testimony: ship carting was an occasional military affair, not a frequent occurrence, and the *diolkos* was only ever an ancient toponym in antiquity. However, he also arrives at several different conclusions than this article does; he argues that the transfers of ships occurred via wooden rollers (made from cut timber), and that the *diolkos* road was probably constructed sometime following the 146 B.C.E. destruction of Corinth using building materials removed from abandoned Archaic-Hellenistic walls or buildings on the isthmus. I have noted in this article the places

where his interpretations are most different from my own.

¹⁴For the Leukadian isthmus, see Pliny (*HN*4.2), who measured it as 3 stades across. For the Alexandrian *diolkos*, see Fraser 1961.

¹⁵Verdelis 1956a, 1956b, 1957, 1958, 1960a, 1960b, 1962. Most of these appear in Greek and German, but Verdellis (1957) wrote a popular piece in English following the first two years of excavation. Summaries appear in *BCH* between 1957 and 1963, *AR* between 1956 and 1963, and the *AJA* 1957 and 1958.

on the Corinthian Gulf, a section of road (255 m) on the Peloponnesian side of the canal, and a section of road (204 m) within the grounds of the Military Engineers' School. Werner conveniently subdivided these into 13 sectors labeled A–N (fig. 5).¹⁶ The road uncovered in the late 1950s is a complex composite of different phases of construction and repair, and its date of construction is uncertain.

Sector A corresponds to the pavement that Fowler documented in the 1920s, which was already visible when excavations began (fig. 6). This pavement consists of large limestone blocks along the modern canal; the blocks have been cemented together and covered over by a sandy conglomerate from centuries of exposure to the sea. Today the platform is approximately 10 m wide and 10 m long, but it was probably much longer in the past (Fowler estimated 40 m). With its gentle slope to the sea, Verdellis and other scholars have interpreted sector A as a seaside quay for berthing ships.

Twenty-five meters south of the quay is the terminus of the *diolkos* road (sector B), which is not architecturally linked with the quay. Here, Verdellis uncovered a pavement of irregular stones 24 m long and 10 m wide delimited on three sides by well-built isodomic walls, evidently representing a later construction (late fifth or early fourth century B.C.E.) (see below).¹⁷ This pavement the excavator interpreted as a space for transferring vessels out of the water onto the road, which runs southeast from this point. Excavation, in fact, uncovered significant quantities of bronze and iron nails, heaps of iron and slag, earth darkened from the decay of organic matter, and notches in the walls associated with the pavement. He envisioned a large wooden installation like a crane that made use of wooden beams inserted into the notches.

Beginning with sector B, Verdellis excavated a stretch of road on the Peloponnesian side of the canal running 255 m (sectors B–G) (figs. 7, 8). At the time of excavation, this entire stretch of the road was well preserved, but a half century of continuous wave action from canal traffic and repeated dredging episodes has eroded, submerged, and destroyed sectors C and D and parts of sectors E and G (fig. 9; online fig. 2).¹⁸ The excavator noted that in sectors C–E, the

road was 4.2–5.8 m wide, and in sector G, 3.4–4.0 m. He observed that shallow parallel grooves 1.5 m apart from sectors C to G suggested wear from wheeled traffic. Letters and signs inscribed on the stones in sectors C and E had forms that suggested to him an early sixth-century construction (see below).

The other long stretch of the *diolkos* was uncovered on the Ionian side of the canal on the grounds of the Military Engineers' School (sectors J–N) (online fig. 3).¹⁹ This section of the road was 204 m long and 5.5–6.0 m wide, and it had deeper parallel grooves spaced at 1.5 m that suggested not the natural wear of wheel ruts but intentionally cut rails. In sector K, Verdellis documented a short stretch of road lacking the deep ruts; it had two low parallel walls (the “ramp”), approximately 0.10–0.36 m in height and 1.0 m in width, separated by a space of 1.50 m (online fig. 4); today, this ramp is clearly not in situ and appears to have been moved from its original position of discovery. At the time of excavation, Verdellis noted that the deep grooves were absent where the low walls were present. Since this section of the road marks an ascent at a curve, the excavator inferred that the low walls functioned to keep the trolley or wagon on track. Thus, the uncovering of this entire section of the *diolkos* demonstrated to him that it was no ordinary stone road worn by wheeled traffic but a deliberately engineered “railway” for transporting heavy items.²⁰

At the outset, Verdellis expressed hope for uncovering the road on the Saronic side of the isthmus, but his efforts to locate stone pavements farther to the east proved fruitless. He concluded eventually that thick fill from the canal construction overlay the road's projected course, making its future investigation time-consuming and costly.²¹ The route of the road east of sector N was consequently never determined, allowing scholars subsequently to propose different reconstructions (fig. 10).²² Late 19th-century travelers thought they saw segments of the tramway in the area between Kalamaki and Isthmia, but there is no reason to believe that their identifications were correct. Verdellis and his topographer, Pyrros Kasoumbis, noted the curve evident in the 1,100 m documented stretch and reasoned that the road wound across the isthmus along the grades of lowest ascent (1.5%), carefully avoiding

¹⁶Werner 1997.

¹⁷Verdelis 1960a, 136–41.

¹⁸Verdelis 1960a, 141–42.

¹⁹Verdelis 1957; 1960a, 143.

²⁰Verdelis 1957; cf. Raepsaet 1993, 243; Lewis 2001.

²¹Cf. Verdellis 1957, 649; 1962, 49–50.

²²Cf. Raepsaet 1993, 234, fig. 1; Werner 1997, 108, fig. 16.

Raepsaet (1993, 2008) has proposed a more direct route across the isthmus, which would cut the distance of the portage but climb grades up to 6%. Werner (1997, 100–2) and Lewis (2001, 10–12) have proposed a gentler sinuous route that avoids the steepest climb and sticks to a grade of no more than 3.5%. The winding path of the road, however, would increase the length of the portage by a kilometer or more.

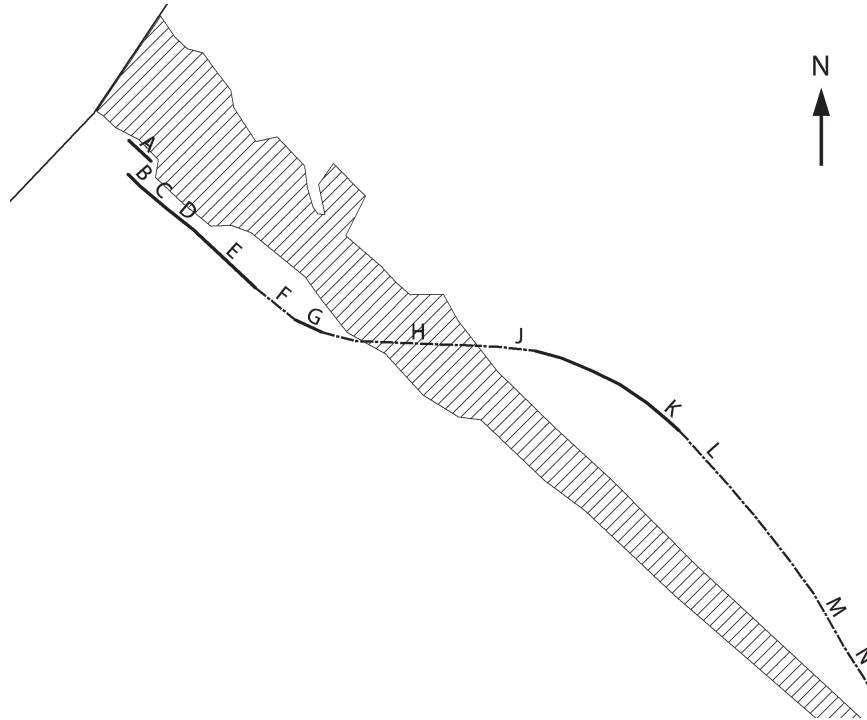


Fig. 5. Plan of the western end of the portage road and the modern canal, showing sectors A–N. The dotted line indicates sections of the road that have been completely destroyed (modified from Verdalis 1957, fig. 2; 1960a; Werner 1997, fig. 2).



Fig. 6. The platform/quay (sector A) at the Corinthian Gulf in 2011.



Fig. 7. Sectors B–E of the portage road on the Peloponnesian side of the canal in 2007 (K. Pettegrew).



Fig. 8. Sector G of the portage road in 2011, where the modern canal bisects it. Some 10 m or more of the road has fallen into the canal through neglect.



Fig. 9. The *diolkos* on the Peloponnesian side of the canal, which is under threat of disappearing (sectors D and E in 2011).

the steepest climbs in elevation (3% or more) (online fig. 5; cf. online fig. 1).²³ Lohmann has recently proposed that paving stones were laid over the loose Neogene sands near the Corinthian Gulf but were not necessary on the much firmer substratum of the rising ridge to the east—an observation that would explain why Verdélis was unable to locate pavements to the east of sector N (see above). However, even if stone pavements gave way to bedrock shelf in some places, this road cannot have passed through ravines, and its course on the eastern side of the isthmus must have been limited to a fairly narrow swath east of the ravine near Isthmia (see fig. 10).²⁴

Archaeological investigations in the Corinthia have never turned up substantial harbor installations associated with the road at either the Saronic or Corinthian Gulf. The eastern end of the *diolkos* had a very good natural harbor known as Schoinos, which Strabo notes

marked the eastern end of the portage area (online fig. 6). If Schoinos is placed in Kalamaki Bay, then the road would have passed less than a kilometer east of the site of Isthmia and bisected the important coastal road from Megara.²⁵ The western outlet of the road on the Corinthian Gulf coast was unknown in antiquity, and the straight sandy shores there provide no natural protection from the western winds. Excavations showed no evidence for the sorts of facilities found at well-built harbors, such as moles for protecting ships, broad quay spaces for berthing and unloading, warehouses for storing goods, or hostels, restaurants, and water supply for servicing the crew.²⁶ While this absence may be attributed to the modification of the western end during canal construction, as well as the limits of excavations, this cannot be the entire explanation, for physical harbor spaces like breakwaters, basins, and dredging mounds were visible at nearby

²³ Verdélis 1957, 649; 1962, 50 n. 1. For discussions of the topography of this part of the isthmus, see Gregory 1993; Pafotiou 2007.

²⁴ Lohmann (forthcoming). The missing pavements could also be explained by the later construction of the Hexamilion Wall (see fig. 10), which reused available building material.

²⁵ For the identification of ancient Schoinos with Kalamaki, see Wiseman 1978, 46.

²⁶ On facilities often found at substantial constructed harbors, see Casson 1971, 361–70; Shaw 1972; Blackman 1982, 2008.

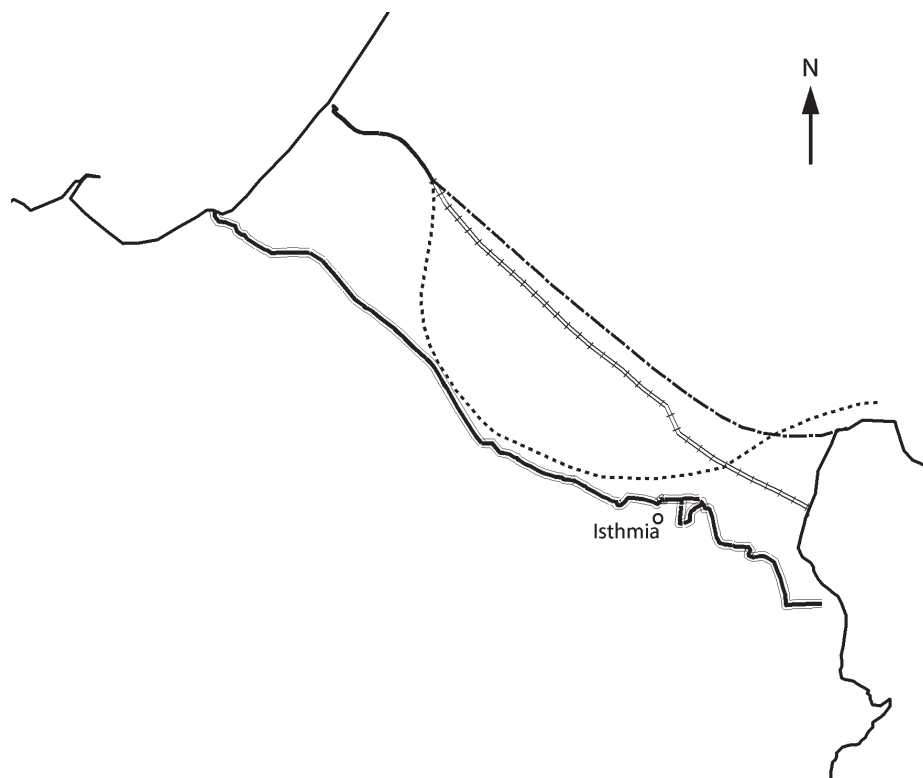


Fig. 10. Three proposed paths of the *diolkos* road east of the excavated part (solid line): Raepsaet's more direct route (dash and dot line), Werner's easier but longer sinuous route (dotted line), and the author's reconstruction of a slightly different sinuous route (railroad line). The path of the Hexamilion Wall to the west (dark line) is included for context (adapted from Raepsaet 1993, fig. 1; Werner 1997, fig. 16; Gregory 1993, fig. 2).

Kenchreai and Lechaion to early modern travelers. We can at least say that the ends of the *diolkos* lacked the degree of physical investment associated with those harbors. Without shelter space, portaging and shipping would have been awkward and difficult, requiring the regular use of lighters via Kenchreai and Lechaion.²⁷

The Dating of the Road

Verdelis dated the construction of the *diolkos* to the late seventh or early sixth century B.C.E. apparently because the Roman writer Diogenes Laertius (1.99) noted the aspirations of the tyrant Periander to canalize the isthmus.²⁸ While a canal was impossible for Periander, he inferred, a road across the isthmus was a fitting monument for this wise tyrant of Corinth.

The archaeological evidence itself proved generally supportive. Several sections of the road revealed mono-

grams and Greek letters with shapes that appeared to "belong to the early local alphabet of Corinth," by which Verdelis meant the early sixth century.²⁹ Even at the time of publication, however, Daux, the editor of *Bulletin de correspondance hellénique*, commented that the letters could not be dated so precisely.³⁰ After the preliminary reports were released, Jeffery, in her important study of local archaic Greek scripts,³¹ noted that the letters were not necessarily earlier than the fifth century B.C.E. Other scholars have remarked that while some letters are clearly archaic, those so-called archaic letters remained in use as late as the fifth century.³² A parallel chronological conundrum is presented from the architecture for the road: given the frequency of reuse evident in the *diolkos* pavements and walls (see below), it is not evident that the inscribed letters were on blocks that were part of the

²⁷ Sanders 1996.

²⁸ Verdelis 1957.

²⁹ Verdelis 1957, 649.

³⁰ Daux 1957.

³¹ Jeffery and Johnston 1990, 375.

³² Raepsaet 1993, 239 n. 25 (noting communication from A. Martin).

original installation. Indeed, Lohmann has suggested that the appearance of letters on buried blocks and the undersides of the stones highlights the spoliated nature of the road.³³

According to Verdelis, the other archaeological evidence that was roughly consistent with a late seventh- or early sixth-century date consisted of “a few fragments of pottery found in the earth on either side of the pavement and on the same level.”³⁴ As the *diolkos* was revealed in part by the aid of bulldozers, however, the excavations cannot be called stratigraphic. The excavator never outlined the relationship between the Protocorinthian pottery and the *diolkos*, and if he had, it would only have provided a terminus post quem for the road’s construction sometime after the late seventh century. We might expect some archaic pottery, in any case, given several tombs in the vicinity. In sum, while the late seventh- to early sixth-century date has become standard, it is not certain from the evidence, and a fifth-century construction date or later is possible. While historical context may make the early sixth century one of several plausible times for the road’s construction,³⁵ the archaeological evidence is far from clear.

Verdelis’ conclusions about dates were complicated already at the time of publication by his observation that the road was a composite of different phases of refurbishment, repair, and additions.³⁶ The pavement of sector B he thought sloppy and rough in comparison with the rest of the *diolkos*, suggesting a subsequent phase of use and repair in the later fifth or early fourth century B.C.E.; late fourth-century pottery found on the pavement seemed to confirm this.³⁷ Similarly, he observed that the inconsistent width of the road and the shape of the grooves indicated repairs over time.³⁸ In a number of places, he recorded architecture and sculpture built into the road—column capitals, a column base, a geison covered with mortar—dated on stylistic grounds to the sixth or early fifth century B.C.E. and transferred, he thought, from a ruined temple in the district.³⁹ Moreover, the degree of wear from cart traffic appears very different in the different sectors of the excavated road and suggests repairs to the road over time.

Verdelis did not discuss uses of the road later than the fourth century B.C.E., and it is unclear when the road went out of use. In the 60s C.E., Nero’s canal excavation cut a wide gash through the western end, but we do not know that this necessarily marked the end of its use. Raepsaet has observed cement that may indicate Roman repair,⁴⁰ and Lohmann has even argued that the road’s construction dates to some time after the 146 B.C.E. destruction of the city.⁴¹ Was a Roman phase connected with Marcus Antonius’ portage in 102–101 B.C.E. or Nero’s activities on the isthmus in 67 C.E.? For reasons we will discuss later, we can at least reject the account recorded in the *Vita Basilii* that the ninth-century C.E. admiral Niketas Ooryphas carted dromons over the road to surprise attack a fleet of Cretan Saracens. It may be best to infer the end of the use of the road in the seventh century C.E. when the entire Corinthia experienced a period of reduced human activity and land use after the new building activity of the fifth and sixth centuries. By the time of excavation in the 20th century, the road was buried by 1–2 m of overburden.

Ceramic Evidence for Portaging

Since the flurry of publications on the *diolkos* in the late 1970s and 1980s, another kind of archaeological evidence has surfaced and become fundamental for assessing trade, exchange, and overland transport of amphoras and tableware. Three decades or more of archaeological investigations in the Corinthia and neighboring regions have produced an enormous corpus of ceramic material. If the Isthmus of Corinth facilitated transshipment on the scale that is often described or assumed, the western and eastern sides of the isthmus and the two gulfs should produce signatures that are in some sense comparable. In fact, the consistent pattern from the ceramic data is that the land bridge interrupted rather than facilitated the westward and eastward flows of goods. The isthmus was no overland canal for voluminous transshipment but a point of transition between different exchange networks.

We do not have the space for an exhaustive review, but we can highlight a few recent studies from the

³³Lohmann (forthcoming) cites personal communication with Werner for these letters on buried blocks. He concludes that the road was constructed from reused limestone quarried from abandoned monuments sometime after 146 B.C.E., when stone was plentifully available.

³⁴Verdelis 1957, 649.

³⁵The best case for an archaic context is laid out in Salmon 1984.

³⁶Cf. Verdelis 1960a, 1962.

³⁷Verdelis 1960a, 140.

³⁸Verdelis 1960a, 141–42.

³⁹Verdelis 1962, 48–9.

⁴⁰The presence of cement need not indicate Roman repair, of course, since such an agent is used in Corinthian contexts from the Late Classical period, but Raepsaet (1993) has suggested that the type of cement points to a Roman date; cf. Lewis 2001, 12.

⁴¹Lohmann (forthcoming).

period of the Greek polis to that of the Early Roman colony. For the Archaic to Hellenistic eras, Lawall has recently synthesized the evidence for western transport amphoras in the southwest Aegean, showing their infrequency in the late sixth and fifth centuries, near absence in the fourth century, sporadic presence in the third century, and greater variety from the late third century to early first century B.C.E. By comparison, Aegean transport amphoras in the Adriatic are uncommon if not sometimes absent during these same periods.⁴² Lawall has shown that eastern imports into the Adriatic zone of amphora production and distribution (Adriatic Italy, Sicily, Illyria, Epirus, northern Peloponnese, and east as far as Corinth) and western imports into Aegean zones occurred periodically but not constantly. His conclusion that Corinth and the isthmus were points of transition by which goods sometimes trickled into the Aegean is supported by other recent ceramic studies for the urban center at Corinth.⁴³

For the Early Roman period (first century B.C.E. to second century C.E.), we find similar pictures of limited crossover. Only at the urban center does one find an even distribution over time of ceramics from east and west, indicating regular but fluctuating imports from both directions.⁴⁴ Slane has shown that in the first century C.E., Italian sigillata dominated the tablewares, and eastern products like Eastern Sigillata A (Syria) and Eastern Sigillata B1 (southwest Asia Minor) existed in smaller but significant numbers. In the second century, Italian products diminished in importance, and eastern wares, especially Eastern Sigillata B2 and Çandarlı Ware, became predominant. The more balanced proportions of eastern and western wares indicate that goods were being imported into the urban center from both northern and eastern ports but do not reveal their movement to places beyond.

Elsewhere on the isthmus, the ceramic pattern appears differently. East of Corinth, the Eastern Korinthia Archaeological Survey (EKAS) conducted a surface investigation of the area between the villages of Hexamilia, Kyras Vrysi (Isthmia), and Kechries (Kenchreai), including units on the *diolkos* (land strip) itself (cf. fig. 2).⁴⁵ Early Roman tablewares in EKAS were of eastern origin (Eastern Sigillata A, Eastern

Sigillata B), the only western sigillata consisting of a single fragment of Arretine Ware. Likewise, Early Roman amphoras were primarily vessels of Aegean origin, and no western amphoras were found. Since western wares are very common at Corinth in the first to early second centuries,⁴⁶ we might expect them on the eastern side of the isthmus if the portage road were a superhighway for transshipping western goods.

In a parallel way, the Panhellenic sanctuary of Poseidon at Isthmia, located on the *diolkos* itself (Strabo 8.6.4), has produced little evidence for western products in the Early Roman era and a clear orientation of the site toward eastern, especially Aegean, markets.⁴⁷ Hayes' preliminary study of first-century fills from the excavations at the Sanctuary of Poseidon, for example, noted a variety of tablewares from both the west and east Mediterranean but observed that Eastern Sigillata B2 and Çandarlı Ware were especially common.⁴⁸ Gregory's preliminary publication of the Roman Bath at Isthmia noted mainly eastern Aegean wares like Micaceous Water Jars and Eastern Sigillata B2 plates in the second-century C.E. fill under the floor of the monochrome mosaic.⁴⁹ Marty's study of pottery from the UCLA-OSU excavations at the Roman bath showed that Arretine and Gaulish Wares were almost completely absent from the later first-century deposits.⁵⁰ Her study highlighted the site's place within eastern markets, especially the Aegean and western Asia Minor, conclusions confirmed in Moore's quantification of Roman pottery from the "69-72 Pottery Dump," the pottery from excavations of the residential areas Loukos Field and East Field.⁵¹ In Moore's analysis of wares dating from the first to seventh centuries, the only wares of Early Roman date imported from the western Mediterranean were a couple of Italian sigillata sherds; there were no western transport amphoras from the Early Roman period.

Only at Kenchreai on the eastern side of the isthmus do we find slightly greater quantities of western wares. The University of Chicago excavations of the harbor facilities proper showed that eastern goods dominated, but a small corpus of western products were also found, including Arretine Ware (n=20) and thin-walled ware (n=19), Italian and Spanish Dressel amphora types, and, to a lesser extent, Ital-

⁴²Lawall 2006.

⁴³See, e.g., James (2010, [forthcoming]) for Corinth's import and consumption patterns in the Hellenistic era, showing growing internationalism and expanding connections with the West in the second century.

⁴⁴Slane 2000, 2003.

⁴⁵For a discussion of Roman pottery in EKAS, see Pettegrew 2007.

⁴⁶Slane 2000, 299–301; 2003, 331.

⁴⁷Marty 1993; Gregory 1995, 298–301; Gebhard et al. 1998, 444–54; Moore 2000, 113–30.

⁴⁸Gebhard et al. 1998, 444–54.

⁴⁹Gregory 1995, 298–301.

⁵⁰Marty 1993.

⁵¹Moore 2000, 113–30, fig. 7.8.

ian sigillata (n=3) and South Gaulish Ware (n=2).⁵² Western tablewares made up 25% of the first-century C.E. tablewares, while eastern fine wares like Eastern Sigillata A, Eastern Sigillata B1, and Cypriot Sigillata formed 75% of the imported first-century tablewares. Above the harbor, however, in the Roman cemetery at Koutsongila, recent investigations have shown that eastern goods definitely predominated and western amphoras and Italian tablewares were more occasional.⁵³ In short, only in the harbor proper do we find a significant proportion of western wares, which, given the contrast with the cemetery above, may be as easily explained by cabotage as by trans-isthmus portaging.

The evidence for Early Roman ceramics in both gulfs also points to crossover significantly more limited than what is commonly imagined. In contrast to Corinth, western products dominated at cities like Argos and Athens only briefly. For Argos, Abadie-Reynal has shown the absence of western products for the first century B.C.E. and their frequency only around the mid first century C.E.⁵⁴ In Athens, Hayes has shown that Italian sigillata became numerous only in the early first century C.E. but was not as common there as in Corinth and Patras; thin-walled ware, another import from Italy, may have moved east from Corinth.⁵⁵ In some regions of the Aegean, Early Roman western wares are nearly absent altogether. For example, major regional surveys carried out in two nearby regions, Methana and Kea, showed almost entirely eastern tablewares and amphoras in the Early Roman period with scant Italian sigillata and only occasional Spanish and African amphoras.⁵⁶

In Corinth's western gulf, by contrast, the Roman regional pattern is predominantly western imports with few eastern wares. In his regional survey of Sikyon and its territory, Lolos has observed that western imports like Italian-type amphoras dominate over eastern products throughout the Roman period, and even locally produced amphoras imitate western wares.⁵⁷ For Patras, the investigators have noted Arretine Ware, western terra sigillata, and Italian lamps present from the late first century B.C.E. and especially after the mid first century C.E.⁵⁸ Across the Gulf of Patras, an extensive survey in the region of Aetolia noted that Eastern Sigillata A and Western Sigillata (Arretine and

South Gaulish Ware) were dominant, while other imported eastern fine wares (Eastern Sigillata B, Çandarli Ware, Cypriot Sigillata) occurred with less frequency.⁵⁹ The picture from the regions west of Corinth is the predominance of western tablewares and amphoras, including those from Africa, Italy, Gaul, and the Adriatic, and, less commonly, eastern products like Eastern Sigillata A from north Syria.

In sum, the ceramic evidence suggests that the Isthmus of Corinth functioned not so much as a major commercial thoroughfare for the eastward and westward transshipment of goods but rather as a point of transition to very different regional patterns. As Martin's recent study of Italian sigillata at Ephesos and Olympia concluded, an "important internal division at the Isthmus" marked the point of visibly different orientations to eastern and western wares.⁶⁰ This is not to say that goods did not cross the isthmus but that the image of the *diolkos* as an overland canal constituting a major east-west trade route is not evident from the pottery. Eastern and western wares were carted regularly to Corinth for urban consumption, but the movement of goods beyond was more of a barely discernible trickle than a constant flow.

THE LOGISTICS OF PORTAGING AND THE USES OF THE *DIOLKOS*

If this is the case, what then was the purpose in constructing a road that required so many limestone blocks? And how was it used subsequently? Such questions may not be as demanding as they initially appear, especially if the limestone pavements of the road did not run the entire course of the isthmus (see above), an interesting thesis that deserves and requires more consideration and investigation. In any case, recognizing the road's multiple functions over the course of its use is more profitable than seeking a single overarching original purpose in construction. The following discussion of the logistics of portaging will move away from the dominant notion of commercial portaging and consider other roles the road must have played within its regional context. We will begin with the portaging of cargoes and uses that are more ordinary before we turn to the complex matter of transferring ships.

⁵² Adamscheck 1979.

⁵³ Rife et al. 2007, 166–75.

⁵⁴ Abadie-Reynal 2005.

⁵⁵ Hayes 2008, 41, 95–104.

⁵⁶ Cherry et al. 1991, 353–54; Sutton 1991; Bowden and Gill 1997.

⁵⁷ Y. Lolos, pers. comm. 2009, 2010.

⁵⁸ Petropoulos 1994, 409; 1999; Petropoulos and Rizakis 1994, 199.

⁵⁹ Bommeljé and Doorn 1987; Bommeljé and Vroom 1995.

⁶⁰ Martin 2006. Cf. Hayes (1963, 32–3), who noted long ago that Western Sigillata was rare east of the isthmus outside Athens.

Portaging Cargoes and Ordinary Uses

The voluminous movement of divisible cargoes across the *diolkos* road should be rejected in light of our discussion above of ceramic evidence. The logistical requirements for transferring an entire shipload of amphoras and vessels perhaps points to why this sort of transshipment operation never developed in antiquity. Servicing a merchant ship at one end of the *diolkos* would have required an army of stevedores to unload the amphoras, sacks, and crates of goods from the ships, reload them onto carts, and restack them on ships on the other side.⁶¹ The protracted process of unloading and restacking cargoes on both ends would have required a minimum of a full day, and probably a couple, for even small merchant ships such as the third-century B.C.E. *lembos* carrying 360 amphoras containing 25 tons of olive oil.⁶² Larger coastal traders with cargoes of 2,000 amphoras—or crates and bags—would easily have required many days of unloading, transferring, and careful restacking.⁶³ Servicing more than a few ships per day would indeed have generated “intolerable congestion” unless a myriad of personnel were employed to keep up with the arrivals and departures.⁶⁴

The portage itself would also have required dozens of carts pulled by hundreds of yoked oxen led by numerous drivers. Even if we were to assume the liberal figure for traction capacity of a pair of oxen at about 1 ton/yoke,⁶⁵ the cargo of the small *lembos* noted above (25 tons of olive oil in 360 amphoras) would have required 50 oxen yoked in 25 pairs drawing as many carts or wagons. However, if we were to assume a slightly larger (but still relatively small) coastal merchant ship carrying several thousand amphoras weighing 50–70 tons, the same operation would have demanded 100–140 oxen and 50–70 wagons. The scenario is not technically impossible, but it is also not very likely given the scale of labor and the exorbitant costs. In light of both ceramic evidence and logistical considerations, it is preferable to think of small loads of amphoras and tablewares crossing the isthmus, financed by wealthy

consumers in the neighboring cities and regions of the Saronic and Corinthian Gulfs.

If portaging divisible cargoes occurred on a very limited scale, the road still served many important purposes either at the time of construction or in subsequent periods. Most immediately, the *diolkos* facilitated the portage of building materials during particular construction projects. Burford and Raepsaet have shown that from the seventh to fourth centuries B.C.E., stones weighing several tons and occasionally more were transported distances of 10–25 miles in Greece.⁶⁶ Each individual column drum and monolith weighed a couple of tons and required a team of several yoke of oxen, while heavier architectural members like the 8–10 ton drums found at Eleusis might make use of 20–30 yoked pairs of oxen.⁶⁷ This sort of transport was ordinary—even if it required tremendous labor—and occurred sporadically in connection with projects of construction. A number of scholars have offered important discussions on the logistics of the use of the road for heavy transport.⁶⁸

The use of the road for portaging construction material in this manner was not only possible but explains the evidence well. While logistically difficult, the portage required the occasional movement of fewer heavier items mainly during the dry summer months when winds were gentler and more predictable. The transshipment of heavy loads of building material would clearly have depended on the kinds of supporting apparatuses documented or inferred in the excavated road: grooved rails, low walls, windlasses, and cranes, among others. And the use of the road for moving construction material would clearly have benefited Corinth directly. Whereas portaging olive oil and wine would actually have undermined Corinth’s markets by introducing competing products in opposite gulfs,⁶⁹ the transfer of timbers, roof tiles, and cut stone met various building needs in the region over time.

Eastern materials presumably moved west for use in Corinth, Lechaion, Perachora, and Delphi. Aegean marbles, and limestone and timber from the southern

⁶¹ Casson 1971, 366–70; Blackman 1982, 204; Rickman 1988, 263.

⁶² Casson (1971, 162 n. 36) gives this example of a ship sailing from Samos to Alexandria in 259 B.C.E.

⁶³ Meiggs (1973, 291–92) suggests that typical coastal traders of Italy in the first century B.C.E. carried loads of several hundred to 2,000 amphoras or more (50 tons). Pomey and Tchernia (1978, 240 n. 39) cite figures of a week for unloading large cargo vessels, and two to four days for small and medium ships; cf. Rickman 1985, 112. On the care in stacking, see Casson 1971, 199–200; Rickman 1988, 262–63.

⁶⁴ Salmon 1984, 139.

⁶⁵ Burford (1969, 184–91) suggests that oxen pairs could transport weights up to a ton, but the more common and standard figure is 0.5 ton/yoke; cf. Raepsaet 2008. If we use the figure of 0.5 ton, the number of oxen should be doubled in the following discussion.

⁶⁶ Burford 1960, 1969; Raepsaet 1993, 2008.

⁶⁷ Raepsaet 1993, 255–56; 2008, 591–92.

⁶⁸ Raepsaet 1993; Werner 1997; Lewis 2001; Papafiotou 2007.

⁶⁹ Snodgrass 1980, 147; Salmon 1984, 142–44, 154–55, 401.

Corinthia, may have been carried to Corinth, Lechaion, or Delphi via the *diolkos* rather than the longer route from Kenchreai. Likewise, western construction materials may have moved east for use in the Saronic zones. Timbers from Adriatic regions or tiles produced at Corinth could be transferred for construction projects in Kenchreai and Krommyon. In either case, certain sites, such as the Panhellenic sanctuary at Isthmia located less than a kilometer from the portage road, received some of the carried material.⁷⁰ The *diolkos* would have served the sanctuary by creating a means of supplying construction materials from both gulfs.

The *diolkos* should also have facilitated industrial activity on the narrowest part of the isthmus, including, for example, the quarrying of Corinthian limestone, which moved stones from the quarries to sites in the Corinthian and Saronic Gulfs via this road.⁷¹ While the stone quarried in many areas east of Hexamilia would have been more easily transferred to the Saronic or Corinthian Gulf by other routes, stone quarried near Isthmia and on the foothills of Mount Gerania would have found in the *diolkos* a functional road for export, either for use somewhere in the Corinthia or for trade to other parts of the Greek world.

We should finally note that while the *diolkos* was clearly outfitted for heavy transport, its role extended well beyond that, facilitating many kinds of ordinary, quotidian activities throughout antiquity. Most commonly, the road functioned for communication between gulfs, facilitating wheeled traffic in cart and carriage, supplying the countryside, and marketing agricultural surplus. In its proximity to the Panhellenic sanctuary, the *diolkos* was always the main road to Isthmia from either gulf. As such, it articulated the center of the Isthmus of Corinth. As an unknown geographer wrote in the third century B.C.E.: “[T]here is a road of 40 stades that runs over the Isthmus from one sea to the other.”⁷²

Portaging Ships and Military Uses

The uses of the road discussed above are complicated by ancient writers who describe the military

and strategic adaptation of the road. It is not hard, of course, to understand how the road was useful for military ends.⁷³ Corinth and her allies would have readily supplied their forces via the road and accomplished rapid communication between gulfs. When the growth of Athenian naval power threatened Corinth in its eastern gulf, the portage road would have provided the Peloponnesian allies a potential way of evading the enemy (moving directly from the Saronic Gulf) or directly attacking the enemy through offensive action. It is nonetheless remarkable that large wooden vessels were transferred the entire distance of 6–7 km over a land bridge climbing to 80 masl.

Military and commercial vessels were not intended for overland movement. It was neither easy nor wise to haul a ship overland in antiquity. While warships, fishing boats, and skiffs were regularly pulled onto beaches overnight or into ship sheds for the winter, hauling ships onto land did not occur daily, and moving vessels significant distances over dry ground was extraordinarily difficult.⁷⁴ The transfer of a fleet was a complex operation that required planning the transition between sea and land, amassing the physical labor, maintaining balance and control of the ships while on the sleds, and minimizing the risk of damage to either the vessel or the crew. The transfer presented very real danger to ships, and land was obviously an incredible hindrance to their movement. That lighter military crafts like *triereis*, *keletes*, *lemboi*, and *hemioliiai* were moved overland on several occasions is truly phenomenal.

The transfer was difficult most immediately because Greek *triereis* weighed approximately 20–25 tons,⁷⁵ a figure at the upper threshold of items known to have been moved overland in the Archaic and Classical periods. The construction of monumental temples at Delphi, Eleusis, Epidauros, and Didyma between the sixth and fourth centuries B.C.E., by comparison, required transporting over long distances (5–40 km) column drums, architectural members, and building blocks weighing typically several tons, not uncommonly 6–10 tons, but rarely more.⁷⁶ Military ships had large crews of 200 men who needed to pull or push

⁷⁰ Cf. Papafiotou (2007) for the *diolkos* servicing Isthmia.

⁷¹ On Corinthian quarries generally, see Hayward 2003.

⁷² Pseudo-Skylax *Periplus* 40.4.

⁷³ For another view against the notion of regular ship dragging, see Lohmann (forthcoming), who argues that the curvature of the road made it very unsuitable for moving ships, which were occasionally transferred over the isthmus on wooden timbers/rollers.

⁷⁴ Casson 1971, 99–100; Raepsaet 1993, 248–49; Morrison and Coates 1996. *Triereis* weighing 20–25 tons were beached or hauled up for routine maintenance, avoiding storms, wintering, and periodic drying. Coates and Shaw (1993) discuss

the extraordinary traction force required for such an operation, 100–200 men depending on the mechanism used (greased timber, wooden roller, carriage). Whitbread (1993) rightly suggests that the normal procedure was not hauling up but mooring.

⁷⁵ Morrison and Coates 1989, 20, 68; Coates and Shaw 1993, 88; Morrison et al. 2000, 277. The weight depended on the amount of gear left in the vessel, the ballast, and the ship's saturation of water.

⁷⁶ Raepsaet (1993, 247; 2008, 591–92) suggests a weight of 6–10 tons was not unusual and mentions rare instances of building material as heavy as 50–70 tons.

a weight of 100–150 kg, but this still did not make it easy.⁷⁷ By comparison, a fragmentary Athenian law of fifth-century B.C.E. date concerning shipsheds prohibits launching *triereis* with fewer than 120 men or hauling them up with fewer than 140.⁷⁸ Hauling ships 6–7 km, by comparison, maximized both the hauling capacity of the crew and the technological means of the Archaic and Classical periods.⁷⁹

Besides the difficulty in traction, the weight of ships introduced significant risks of damage in the transfer. The point of transition between the water and land was especially difficult even if cranes or rollers were used to move the vessel onto a wheeled sled. Over the course of the entire 6–7 km of portage, a *trieres* faced stress that could only be partly mitigated by use of additional wheels or a reinforced supporting matrix of pads, beams, and ropes.⁸⁰ There was also the risk of losing control of the load and damaging the ship, especially in areas of great slope; bollards, windlasses, ropes, and low walls were used to aid the porters. Moreover, a *trieres* 5 m wide was at risk of toppling off the sled and becoming damaged by the force of the fall. Finally, the ship posed a burden to the wheeled cart/sled and the porters;⁸¹ if broken under the sustained weight, the vessel could damage the ship, immobilize the road, and kill the labor. These factors made ship carting such risky business that a safe passage overland without incident was reported as remarkable and noteworthy.⁸²

The time required for the transfer of military vessels has been estimated at as little as three to four hours, or at most half a day, but this is a wildly optimistic guess based on rates of movement of heavy transport and the assumption that the *diolkos* road was constantly equipped for hauling ships. Our most detailed and reliable texts suggest that drawing machines or wagons were constructed for hauling ships on several different occasions. Thucydides (3.15) notes specifically that the Peloponnesians worked hard in 428 B.C.E. to prepare hauling apparatuses (ὄλκοῦς) for ship transfers, while Polybius (4.19.7–9, 5.101) remarks on the cost of the portage operation and the impossibility of moving decked ships overland. The portages did not occur fast enough to accomplish the desired strategic ends. Marcus Antonius' transfer, moreover, clearly put a road

into use that had not been outfitted in some time, for the inscription recording it (see below) reports it as an unbelievable event requiring “great planning” and only “a few days.” Ship portages were time-consuming, and they required significant infrastructural investments as crews repaired road surfaces, built cranes or rollers for transition, constructed sleds, and moved 25-ton machines one at a time from water to land, up the steep grade, and slowly down the other side of the ridge.

Portaging warships was a difficult enterprise that states and individuals sometimes did undertake, but transferring commercial vessels could never have occurred frequently. Unlike *triereis*, merchant ships were designed for bearing heavy cargoes, not for maneuverability. They were not hauled out onto slipways in shipsheds at the end of the sailing season but were built to remain in the water year-round and given a heavy lead coating for protection from rot and worms. From the fifth century B.C.E., only small merchant galleys and sailing ships carried loads less than 25 tons; freighters with midsized loads of more than 70 tons were not uncommon.⁸³ If we accept that many commercial caboteur vessels were significantly smaller and lighter (15–30 tons),⁸⁴ weight alone would have made all merchant ships too heavy to be transferred over with their cargoes and a mighty accomplishment without.

Transporting even the smallest unladed vessels across the isthmus would have introduced the same risks involved in hauling *triereis*, discussed above, but merchant ships were even less portable and more subject to damage.⁸⁵ Sailing ships were squat, round, and large-bellied, 4–10 m wide;⁸⁶ transporting these overland without their cargoes would have required incredible care to maintain balance and prevent toppling. And while fleets of *triereis* represented the investments of states, merchant vessels marked the capital investments of individuals or companies and were constructed with the expectation of a long life in the sea. If ship owners and merchants desired to maximize profits at the least risk to the vessels, moving them out of the water would have required an incredible optimism in profitability on the load.

The labor of hauling over commercial vessels would also have been difficult and expensive. Unlike military galleys, commercial ships lacked large crews to provide

⁷⁷ Cf. Werner (1997, 109–12) for similar figures. See Raepsaet (2008, table 23.3) for human capacities.

⁷⁸ *IG* 1³ 153 (translated in Arnaoutoglou 1998, 129–30).

⁷⁹ Raepsaet 2008, 592–94.

⁸⁰ Cook 1979, 153; Salmon 1984, 137 n. 12; Werner 1997, 109–14.

⁸¹ Raepsaet 2008, 591–92.

⁸² Inv. no. I-788-791; *CIL* 1(2) 2662; West 1931.

⁸³ For the size and weight of merchant galleys, see Casson 1971, 160–63 nn. 17, 36. For freighters, see Casson 1971, 169–73, 183–84, 189–90.

⁸⁴ Houston 1988.

⁸⁵ MacDonald 1986.

⁸⁶ Casson 1971, 168–70, 173–75, 189–90. See Houston (1988, table 4) for smaller vessels.

the labor of the transfer and would necessarily have had to depend on draft animals. If we use the same generous figure used earlier, 1.0 ton for the hauling capacity of a pair of yoked oxen, very small merchant galleys of 15–30 tons would require 30–60 oxen to be pulled overland empty. Hauling five small ships of this kind without their cargoes in a single day would have required 150–300 oxen, and the scenario quickly becomes ridiculous if we imagine the road facilitating more than 10 small ships/day. Paying for the ox drivers and the ox labor on both the ship and cargo, in addition to the transit tolls, would have generated enormous expense.

The infrastructure necessary for the operation, the difficulty involved, the potential risk of damage to the vessels in the crossing, and the cost of the portage worked against the development of the large-scale commercial operation commonly envisioned by modern scholars. The kind of merchant ship that could be transferred over the isthmus most easily—the small coastal vessel involved in cabotage—was not engaged in the sort of long-distance interregional trade that a portage road would have facilitated and benefited. And the sort of ship that had the most to benefit from being transported overland—the long-distance freighters—were too large to cart. Commercial freighters bound for eastern or western destinations normally went around Cape Malea, and very few if any would have gone over the Isthmus of Corinth. Scholars have rightly rejected the transfer of merchant ships as a frequent affair in antiquity. But if this is the case, how then do we explain the textual evidence?

THE SIGNIFICANCE OF PORTAGING IN ANCIENT TEXTS

The ancient texts for portaging the Isthmus of Corinth have usually been read as the most visible instances of portaging in an otherwise invisible current of constant traffic over the land bridge. However, it is better to ask, as a recent collection of essays on the subject does, what is the significance of portages?⁸⁷ When this becomes our question, we can read these texts in a very different light as descriptions of extraordinary stratagems that function to narrate dramatic military action and demonstrate the brilliance or skill of the individ-

ual accomplishing the portage. While the texts have sometimes been divided into two categories—specific portage events (Thucydides, Polybius, Livy, Dio Cassius) and nonspecific references (Aristophanes, Strabo, Pliny)—all in fact refer to heroic and clever stratagems that were famous in their own day and memorable and emulable in the centuries that followed.⁸⁸

Military Portaging in the Peloponnesian War

The notion of portaging an isthmus with ships begins with Herodotus (7.22–4), who tells the story of King Xerxes' excavation of a canal across the Athos isthmus on the eve of invading Hellas.⁸⁹ The canal cost the great Persian king three years of time and the guilt of hubris, and Herodotus (7.24) notes that Xerxes could just as easily have carried the ships over the isthmus (“παρεὸν γὰρ μηδένα πόνον λαβόντας τὸν ἰσθμὸν τὰς νέας διειρύσαι”). Moreover, in the following book, Herodotus makes the Isthmus of Corinth a strategic arena on the eve of Xerxes' invasion. The Peloponnesians began fortifying the wall as Xerxes' forces marched southward (Hdt. 8.40), and they hastened the project after the loss of Thermopylae, working night and day without rest to pile rock, wood, and sand (Hdt. 8.71). The wall was a great labor (Hdt. 8.74) that they undertook earnestly (“σπουδῆν ἔχοντες” [Hdt. 9.8]) for the sake of preserving their own freedom; the Athenians and their allies, for their part, advocated facing the Persians at sea, the only sure means of preserving the freedom of all Greeks (Hdt. 8.60). Herodotus, then, was the first Greek writer to interpret an isthmus as an arena for military stratagems to facilitate an expedition (the Persians at Athos) and to prevent a direct attack (the Peloponnesians).

Whether or not Thucydides intentionally imitates Herodotus on this point, he does clearly adopt the isthmus as a stage for strategic maneuvering and communicating sensational operations at points of transition in his narrative.⁹⁰ We first hear of portaging the Isthmus of Corinth in 428 B.C.E., following a meeting of Peloponnesian allies at Olympia. Envoys from Mytilene, who had recently revolted from Athens, requested assistance in striking Athens while Athens was weakened from disease and the cost of war.⁹¹ The Mytilenean plea for help convinced Sparta and its allies to reassemble

⁸⁷ Westerdahl 2006.

⁸⁸ In the interest of space, I have not generally included the Greek and Latin texts or English translations in this article. The reader may find links to all the texts for trans-isthmus portaging on the website <http://corinthianmatters.com>.

⁸⁹ The canal has been documented in recent years (Isserlin 1991; Isserlin et al. 1994, 1996).

⁹⁰ One major difference, of course, is that Herodotus makes the Isthmus of Corinth a barrier for preventing a barbarian tyrant from invading, while Thucydides turns the isthmus into a bridge for facilitating a Peloponnesian advance against Athens by sea.

⁹¹ Thuc. 3.8–14. For the context of this episode, see Salmon 1984, 311–12.

on the isthmus for an immediate allied attack on Athens. The Spartans, who arrived first, immediately set to work building ὄλκους for the purpose of attacking Athens on two fronts: land and sea (Thuc. 3.15). The brief passage reveals that the Peloponnesians had to prepare some kind of physical apparatuses (ὄλκους) that were not already present for hauling vessels over the isthmus, and that the Spartans “work zealously” (προθύμως) in the construction of facilities.⁹² Most importantly, the explicit purpose of preparing these was to enable a direct and furtive assault on Athens by sea in addition to land. Despite the Peloponnesian effort, the portage never occurred because of Athens’ preemptive strike on Corinthian territory (Thuc. 3.16). The first potential episode of ship transporting was a failure, but the passage functions in the narrative as a preliminary for the later transfer.

According to Thucydides, it was not until the early summer of 412 B.C.E. that the first real episode of transferring ships between gulfs took place. In that year, Athens was severely weakened by the disastrous Sicilian expedition (Thuc. 8.1–3), and the Chians, among others, were seeking to revolt from Athens and requested Spartan naval support through secret deliberations (Thuc. 8.5–7). The Spartans dispatched three messengers to Corinth to arrange that they might very quickly drag the ships over and embark to Chios (Thuc. 8.7). A subsequent meeting of the Peloponnesians occurred at Corinth, in which they decided to send fleets to Chios, Lesbos, and the Hellespont and developed a ruse: they would carry half the fleet across the isthmus first, which would divide Athenian attention between those that had departed and the remainder of the fleet (Thuc. 8.8). The events did not go as planned, for although they successfully transferred 21 ships (διεκόμισαν), the fleet was delayed in Kenchreai while the Corinthians finished their Isthmian games (Thuc. 8.9–10). The delay threw the entire operation into jeopardy as the Athenians became aware of the maneuver and followed the 21 ships along the coast of the southern Corinthia. The rest of the fleet remained in the Corinthian Gulf and apparently never crossed the isthmus.

The failed stratagem evidently left quite an impression on not only the Peloponnesians, who suffered damage to the fleet, but also the Athenians, who were nearly caught off guard. It was this event that evoked the famous line from Aristophanes’ *Thesmophoriazousae* that has been so frequently misread by scholars of the *diolkos*. In a bizarre scene in which Cleisthenes and an attendant seek to reveal that Mnesilochus, disguised as a woman, is actually a man, Cleisthenes becomes exasperated by Mnesilochus moving his phallus forward and backward to escape detection: “You have an Isthmus, man! Up and down you’re dragging your member more frequently than the Corinthians!” (Ar. *Thesm.*, lines 647–48). While Aristophanes omits the metaphorical equivalent of τὸ πῆος, scholars since the Byzantine period have interpreted the line as a reference to dragging ships (the phallus) up and down the isthmus (the crotch).⁹³ Modern scholars have often read these lines as an incidental mention of the portaging of commercial ships for quotidian economic purposes, but the obvious point of reference is the overland transfer of vessels (412 B.C.E.) that occurred a year or two before the play’s production (411 or 410 B.C.E.).⁹⁴ In the parallel metaphor, Aristophanes cleverly makes sport of Corinth’s reputation for sexuality and the failed stratagems of both Mnesilochus and the Peloponnesians.

For both the planned portage of 428 B.C.E. and the actual one of 412 B.C.E., Thucydides employs ship transfers for narrating furtive and rapid-fire naval offensives of the Peloponnesians against the Athenians for the sake of aiding other Greek cities. Elsewhere in his history, he names two other Peloponnesian portages across the lower and narrower Leukas isthmus—the transfer of 53 ships in 428 C.E. (Thuc. 3.81.1) and the movement of 60 ships in 425 B.C.E. (Thuc. 4.8.2)—that similarly function as stratagems to avoid detection by the Athenians. Both passages employ a language structure (some form of ὑποφέρω + τὸν ἰσθμὸν + ναῦς) that parallels the passage about the Isthmus of Corinth (Thuc. 8.7–8). All the portage references in Thucydides highlight the strategic potential of land bridges for Peloponnesian naval forces.

⁹² Lohmann (forthcoming) interprets this word as “slipway” and suggests that wooden rollers were the means by which ships were moved over the isthmus.

⁹³ Translation by the author. Cf. the scholia on the word “Ἰσθμός,” preserved in the 10th-century encyclopedia the *Suda*. The entry quotes these lines from Aristophanes and then explains “ἐπεὶ τὰς ναῦς διὰ τοῦ Ἰσθμοῦ εἰλκον οἱ Κορίνθιοι, ὥστε μὴ περιέρχεσθαι. τοῦτο δὲ δι᾽ ἰσθμονίσαι ἐκάλουν.” (Since the Corinthians dragged their ships across the Isthmus so as to

not sail around. They called this ‘crossing the Isthmus.’)

⁹⁴ See Sommerstein (1994, 1–3), who argues for a production date of spring 411 B.C.E. Some scholars have dated the production as late as 410 B.C.E. (e.g., Rogers 1904, 68–9; 1924, 127). Sommerstein (1994, 196) notes that the portage of 412 B.C.E. “will have made the *diolkos* an object of intense interest at Athens and may be responsible for the reference to it there.”

Portages of the Third and Second Centuries B.C.E.

After the portage of 412 B.C.E., we hear of no more transfers of warships until 220 and 217 B.C.E., when Demetrius of Pharos and Philip V, respectively, transported their fleets. In both cases, Polybius, the author of the accounts, follows Thucydides in narrating the portages as stratagems. In the first case (Polyb. 4.19.7–9), Demetrius of Pharos, stationed at Kenchreai with 50 ships,⁹⁵ was persuaded to aid the Macedonians by sending his fleet over the isthmus to attack the Aetolians in the western gulf. Demetrius, hotly pursued by the Rhodians, gladly accepted the advice of Taurion, who had fronted the expense of the portage. Like Thucydides, Polybius links Demetrius' transfer of ships to a plea for aid, but he adds the motivation of the pursuing Rhodians and Taurion's promise to front the cost.⁹⁶ The isthmus forms a medium for strategic action, which proves ultimately disappointing, as Demetrius missed the Aetolians by a full two days. Just as Thucydides notes the hard work of the Peloponnesians in preparing the Isthmus of Corinth for transferring ships, so Polybius notes the money required for the portage. The isthmus was not easy to cross with ships.

In Polybius' (5.101.4) second portage, the isthmus again serves as a medium for facilitating a decisive tactical maneuver. Having heard of the piracy of Scerdilaidas on merchant vessels around Malea, Philip V sets sail with 50 ships from the Aegean with the aim of gaining an advantage over the Aetolians. Philip sent his 12 decked ships around Malea and dragged the 38 lighter vessels (8 undecked ships and 30 *hemioliai*) over the isthmus.⁹⁷ Polybius is not clear why Philip V attempted the transfer of ships, but covert, hasty, and decisive action seems to be part of the reason, as does the young king's ambition for accomplishment. For immediately following the episode, Demetrius of Pharos encouraged Philip in his desires for a western expedition to Italy, noting (Polyb. 5.102.1) that Philip had already earned a reputation for ambitious undertakings, daring deeds, and the desire for world domi-

nation.⁹⁸ Crossing the Isthmus of Corinth apparently numbered among these heroic achievements.

Nowhere is the heroic nature of portaging in the second and first centuries B.C.E. clearer than in the portage of Marcus Antonius, the grandfather of the more famous Mark Antony, in his expedition against the Cilician pirates (102–100 B.C.E.). The episode is uniquely preserved as a Latin poem inscribed on a limestone slab, which originally belonged to a Roman monument and was found reused in a Byzantine ramp on the Lechaion Road in Corinth. The remarkable inscription records a transfer by Marcus Antonius in a series of elegiac couplets. A full translation is worth including here:⁹⁹

The thing that no one has attempted nor
 [considered or dared]
 Learn this matter, that we may report the deeds of
 the man with fame.
 Under the auspices of the proconsul [Marcus
 Antonius], the fleet
 was transferred over the Isthmus and sent across the
 seas.
 The proconsul set sail for Side, the propraetor Hirrus
 stationed the fleet in Athens because of the time of
 year.
 This affair was completed within a few days with little
 confusion,
 and with great planning and safety.
 The one who is honest praises the man, the one who
 is contrary [envies].
 Let men envy provided that they [consider] those
 whom it befits.

This honorary epigram in Latin verse explicitly commemorates the act of transferring ships as a glorious, epic, and unbelievable achievement that no one had even considered, let alone attempted. Gebhard and Dickie have shown that its metrical verse assumes the language of athletic accomplishment.¹⁰⁰ The extraordinary nature of the event is not entirely exaggerated, for the portage was the only certain transfer of ships by a Roman commander and probably the first since 217 B.C.E. (see below).¹⁰¹ The language of the inscription

⁹⁵ Polybius (4.16.6–9) gives this number.

⁹⁶ Walbank (1972, 40–8) has discussed Polybius' debt to Thucydides generally.

⁹⁷ See Casson (1971, 134) for the distinction between *cataphract* and *aphract*. Casson (1971, 116 n. 63) notes elsewhere that Polybius uses *cataphracts* (decked ships) as a general term for military vessels larger than *triereis*.

⁹⁸ See Gruen (1984, 374–75) for Polybius' retroactive assessment of Philip's ambition.

⁹⁹ Translation by the author. The inscription, inventoried as I-788-791, was published originally in Taylor and West (1928) and West (1931, 1–4). Subsequent improvements of the text appeared in *CIL* 1(2) 2662 and Dow (1951), and his-

torical context developed in Broughton 1946. See also Wiseman (1979, 495–96) and, more recently, Gebhard and Dickie (2003, 272–77) for a thorough discussion and a complete list of references. Allusions to the eastern campaign of Marcus Antonius are known from Livy *Per.* 68 and Cic. *De or.* 1.82.

¹⁰⁰ Gebhard and Dickie 2003, 275.

¹⁰¹ Taylor and West (1928, 20) thought that the uniqueness in the accomplishment was the transfer of larger war ships, but a variety of light craft were standard in Hellenistic and Roman republican fleets (Casson 1971, 123–35). It seems likely that these were the kinds of vessels carried, especially since this expedition dealt with pirates.

can be understood in terms of the historical narratives that highlight portaging as an exploit illustrating the greatness of the individuals involved. Commemorating the event in stone, perhaps at Isthmia near the *diolkos* road,¹⁰² only makes sense if portaging is a glorious accomplishment. Ironically, the name of the principal hero, Marcus Antonius, was erased not long after the Battle of Actium in 31 B.C.E., when the senate ordered the name struck from the *fasti*.¹⁰³

Uncertain Portages and Historical Narrative

By the later first century B.C.E., portaging ships marked the famous deeds of ancient history and functioned in historical writing as a kind of stratagem representing clever and skillful action by a general in time of need. And so, we find that in the Roman period moving ships overland was consistently associated with naval geniuses, heroes, and big personalities: Jason and the Argonauts, Semiramis, Dionysius I, Alexander the Great, Hannibal, and the Emperor Trajan, to name a few not discussed to this point.¹⁰⁴ The constant link between portage and powerful people served to reinforce the action as a heroic deed while also explaining points of transition in narratives of war. This pattern introduces a problem for the modern scholar. If portaging functioned in historical narratives to highlight the dramatic actions of significant people, how do we know whether a particular portage actually occurred or was invented for the purposes of compelling narration? Authors of the Roman era were themselves sometimes doubtful about the veracity of individual episodes,¹⁰⁵ but they still reported the episodes because of their rhetorical and entertainment value.

Consider, for example, Livy's (42.16) account of King Eumenes, who was wounded from an assassina-

tion attempt at Delphi, boarded in haste onto a ship, and taken to Corinth, where his ships were drawn over the ridge of the isthmus ("per Isthmi iugum navibus traductis"). Did the event actually occur in 172 B.C.E.? It is impossible to know for certain given the absence of supporting details. However, Livy follows the examples established by Thucydides and Polybius in making the rapid transfer of ships an impressive and remarkable feat inserted at a dramatic transition point in the narrative. In this case, the portage gives way to the secretive medical treatment of Eumenes on Aegina. We cannot say any more than that about the event.

The second example is Dio Cassius' (51.5) account of Octavian's portage of the Isthmus of Corinth in 30 B.C.E. Dio says that after Octavian's victory at Actium, he briefly took care of administrative matters in Greece and Asia and then departed to Italy for a month to grant amnesty and pardon and deal with veteran discontent. In this rapid-fire narrative, Octavian returned to Corinth from Italy in midwinter and carried his ships over the isthmus, allowing him to return to Asia by the time the news of his departure had reached Antony and Cleopatra. Octavian's portage of 30 B.C.E. has often been accepted as a fact in the history of the *diolkos*, but there are good reasons for questioning its historicity. For one, no other ancient source mentions this transfer, and most record only that Octavian followed Antony and Cleopatra the following year or attacked via a march through Syria.¹⁰⁶ Octavian could not have conveyed his full fleet across the isthmus since it included not only liburnians and *triereis* but also various kinds of larger polyremes, ships too large for overland movement.¹⁰⁷

Moreover, Dio may have had his reasons to invent or borrow the episode for his narrative. It is well

¹⁰² Taylor and West (1928, 20–1) reasonably suggest the isthmus as the original location of the inscription.

¹⁰³ Taylor and West 1928, 17–18.

¹⁰⁴ For Dionysius of Syracuse hauling 80 ships in an operation against the Carthaginian general Himilcon at Motye, see Polyaeus *Strat.* 5.2.6; Diod. Sic. 14.49–50. According to Arrian (*Anab.* 7.19.3), Strabo (16.741), and Quintus Curtius Rufus (10.1.19), Alexander the Great had a fleet of quinquiremes, quadriremes, *triereis*, and triacontors taken apart and hauled from Phoenicia to the Euphrates, where they were put back together and set sail for Babylon. Arrian (*Anab.* 5.8.5) notes elsewhere that Alexander had small ships sectioned and moved overland from the Indus River. Portages provided good stories for legendary figures: Diodorus Siculus (4.56) reports the marvelous story that the Argonauts sailed up the Tanais River and dragged their ship overland to follow another river; elsewhere, Diodorus (2.16–17) notes that Semiramis had 2,000 ships transported by camels. Hannibal's movement of the Tarentine ships in 212 B.C.E. was among the most famous overland transfers of antiquity (Livy 25.11.11–

20; Appian *Hann.* 34; Strabo 6.3.1). For further discussion of some of these episodes, see Casson 1971, 136; MacDonald 1986, 192; Raepsaet 1993, 250. See also Papafotiou (2007, 157–70), who includes many excerpts.

¹⁰⁵ Dio Cass. 50.12; Diod. Sic. 4.56.

¹⁰⁶ E.g., Appian (*B. Civ.* 1.5–6), Florus (2.21), and Velleius Paterculus (2.84–5) only record that Octavian rapidly followed Antony and Cleopatra to Alexandria. Suetonius (*Aug.* 17) notes that after dealing with matters in Italy, Octavian went to Egypt an indirect way via Asia and Syria, an observation reflected in Plutarch (*Vit. Ant.* 74).

¹⁰⁷ Florus (2.21) records that Octavian had 400 ships at Actium that were smaller than Antony's, and he captured whatever remained of Mark Antony's fleet after the battle; cf. Vell. Pat. 2.84–5. For the ships used at Actium and its aftermath, see Holmes 1928, 154–60; Casson 1971, 98–9, 141–47; Pelling 1996, 57. Werner (1997, 114) attempts to avoid the problem of size by suggesting that the smaller vessels in the fleet were transferred over.

known that this historian models his literary style, word choice, and characterization of speeches and events on Thucydides.¹⁰⁸ In this specific instance of trans-isthmus portaging, Dio borrows particular words and phrases—the aorist participle form of “ὑπερφέρω,” the accusative plural “τὰς ναῦς,” and the use of the adverbs “οὕτω ταχέως”—that reflect wording in Thucydides 3.81 and 8.7. Dio may give Octavian a portage episode because of the stories surrounding Mark Antony and his family. Antony’s grandfather, the famous orator Marcus Antonius, had portaged ships across the Isthmus of Corinth in 102–101 B.C.E. (see above), and this earlier portage, presumably recorded in Livy’s narrative for book 68 (now missing), had apparently occurred in the midst of winter and en route to Asia—two details that appear also in Dio’s account.¹⁰⁹ Dio was also aware that the triumvir Mark Antony was associated with a portage account after Actium, for Plutarch relates that Cleopatra made daring and dangerous plans to convey her fleet across the isthmus (300 stades wide) separating the Mediterranean from the Arabian Gulf and to sail away with Antony to found a new kingdom.¹¹⁰ Interestingly, Dio has Octavian portage ships in the same manner that Marcus Antonius the orator had done in 102–101 B.C.E. at a speed surprising Mark Antony and Cleopatra, preventing their own escape through portage. In narrating the transfer in this manner, Dio follows Thucydides and Polybius in adopting the isthmus as a medium for communicating strategic transition before decisive military action and heroic accomplishment demonstrating the man’s character and ambition.¹¹¹

These two episodes in Livy and Dio Cassius illustrate how portages could prove rhetorically significant regardless of whether they actually occurred. These patterns also explain the much later portage of the Isthmus of Corinth by the Byzantine admiral Niketas Ooryphas in 872 C.E., an episode clearly invented by mid 10th-century writers well aware of their ancient history.¹¹² What is nonetheless consistent in Livy, Dio, and the *Vita Basilii* is that portages represented extraordinary military action. That was, in fact, the entire point. As stratagems of war, moving ships overland pointed to the skill and craft of the porter.

Remembering Ancient Portages

The final two sources for portaging the Isthmus, Strabo and Pliny, have often been misinterpreted as contemporary accounts of the frequent transfer of ships, both military and commercial, but they are actually allusions to the extraordinary historical episodes of ship transfers that were famous in their own day. Strabo is particularly important, for he is the only writer of the Greek or Roman era to refer to the Isthmus of Corinth using the word *diolkos*, by which he meant “the narrowest part of the Corinthian Isthmus,” where the Temple of Poseidon is located (8.6.4), the shores of the twin gulfs squeeze the land (8.6.22), and the ships (πορθμεῖα) are hauled overland (8.2.1). Because Strabo visited the city of Corinth 15 years after its Roman refoundation, his comment about the ships has frequently been read as a contemporary observation on portaging merchant vessels in his day.

Strabo’s account of the Corinthia, in fact, is infused with literary and historical allusions to the ancient city and territory, and it follows a visual survey of the land from Acrocorinth, Corinth’s looming limestone acropolis (575 masl).¹¹³ Strabo’s references to ship dragging and the Temple of Poseidon function to ground a geographic zone—the *diolkos*, with its etymological sense of “portage” (δέλω)—in historical associations familiar from classical literature. Strabo’s observation about hauling ships forms a summary statement of the famous accounts in Thucydides and Polybius, and his use of the word “πορθμεῖα” to denote the small size of the ship may reflect an awareness of Polybius’ distinction between large and small vessels.¹¹⁴ Strabo’s (6.3.1) observation on portages has a parallel in a similar passage about transferring ships over the Tarentum isthmus, summing up the historical sources for Hannibal’s portage. His account is a secondary source for trans-isthmus portaging, a digest of earlier literature; he is not a contemporary observer of portages.

Pliny the Elder, the other general source for portaging, is also a secondary source that epitomizes the famous episodes of ancient history preserved in earlier authors. The brief description in his *Natural History* (4.9–10) dates to the late 70s C.E. and sums up regional geography through its traditional associations: the

¹⁰⁸ Millar 1964, 42; Reinhold 1988, 5–14; Swan 2004, 26–7.

¹⁰⁹ Cf. Cic. *de Or.* 1.82; Livy *Per.* 68; West 1931, no. 1.

¹¹⁰ Plut. *Vit. Ant.* 69.2–3; see also Reinhold 1988, 132–33. The portage would have required, Plutarch notes, a great quantity of money and force. Florus (2.21) may allude to this portage when he notes their flight to the ocean that was aborted because of Octavian’s rapid approach.

¹¹¹ The Battle of Actium represents Dio’s epic event in the turning point from republic to empire (Swan 2004, 16), and the portage consequently occupies a crucial middle ground

between Actium (book 50) and Alexandria (book 51). See Reinhold (1988, 125–29) for Octavian’s expeditious actions in the five-month period of the Egyptian campaign. On Dio’s depiction of Octavian’s accomplishments, see Reinhold and Swan 1990, 158–59.

¹¹² Pettegrew 2011.

¹¹³ Wallace 1969.

¹¹⁴ Rather than read the reference to *porthmeia* as Drijvers (1992) does, I see this as a concise restatement of Polybius.

Peloponnese resembling a leaf, an isthmus formed by encroaching gulfs, twin harbors, a dangerous circuit around Malea, and attempts to cut the canal. Some vessels, Pliny notes, are too large to be carried over the isthmus on trolleys. Since Pliny never visited the Corinthia, his account cannot be contemporary observation. The date of this publication (77–79 C.E.), moreover, was a full decade after Nero's partial excavation of canal trenches that destroyed part of the *diolkos* road. That the geographer says nothing of this, even though he mentions Nero's excavations, further confirms that he was no firsthand witness of portaging but was, like Strabo before him, adding historical texture to geographic summary. Through his learned study of ancient history, Pliny was aware of the famous episodes of ship transporting discussed earlier, even as he knew all the ambitious canal constructors. His record of portaging reflects Polybius 5.104 specifically, for that passage makes the distinction between large vessels that had to sail around the Peloponnese and smaller portable ships transferred across the land bridge in 217 B.C.E. His description of the Corinthia also reflects Strabo, who names the plane-tree shape of the Peloponnese (8.2.1), the concave shores of the Isthmus of Corinth (8.6.22b), Lechaion and Kenchreai (8.6.22a), and the dangers of journeying around the Peloponnese (8.6.20a), among others.

In short, Strabo and Pliny are summaries of heroic portages known from ancient history. Modern scholars who have read them as contemporary evidence for a full-scale portage operation in the first century, carried out for economic purposes, have misunderstood their nature as synthetic and summative statements of extraordinary events. The ordinary way that military galleys and commercial vessels sailed between eastern and western Greece in antiquity was circumnavigating Cape Malea.¹¹⁵

The movement of vessels weighing 15–30 tons over the Isthmus of Corinth always marked extraordinary action that occurred only a few times in antiquity. These transfers were remarkable in their own day, evoking comment from contemporary playwrights like Aristophanes. Marcus Antonius was so impressed with his accomplishment that he commemorated the event in a poem inscribed in stone, which the enemies of his grandson later sought to eradicate. In the first century C.E., every well-born man knew the famous

ship porters of antiquity and their arenas for their accomplishments. Well-educated men like Strabo and Pliny summed up these traditions because they marked extraordinary and heroic actions of the past.

The Diolkos and the Emporion

If the isthmus did not function as a regular commercial thoroughfare for ships and cargoes, what is to be made of the commercial image of the city and landscape so evident from ancient texts? Here, scholars have missed some of the subtleties of the arguments made by ancient authors, who generally do not mention portaging or intergulf shipping as a source of the city's income and wealth. Thucydides (1.13), who is usually cited for his explanation of the rise of Corinth as a maritime city at the crossroads, is silent about hauling ships or cargo and profiting in portage tolls, but he does clearly mention trading facilities as well as tolls on land-based traffic between the Peloponnese and Ionia. And Strabo (8.6.20), who noted that the landscape facilitated the exchange of goods from regions separated by great distance, suggests nothing about intergulf shipping. The only transit duties Strabo names in his discussion of Corinthian wealth are those charges on products imported or exported by land between the Peloponnese and Ionia.

For ancient writers, Corinth was a wealthy cosmopolis because it possessed on the isthmus a double *emporion* or trade mart for the redistribution of goods.¹¹⁶ The *emporion* consisted of the two major harbors, Kenchreai and Lechaion, as well as the site of Isthmia, the former providing permanent marts for receiving and concentrating goods from both directions, the latter acting as the site of periodic commercial transaction. Strabo (8.6.20) notes that sailors preferred to conduct their business at Corinth's *emporion* rather than sail all the way around Cape Malea. Dio Chrysostom has the famous Hellenistic Cynic philosopher Diogenes move to Corinth because of its situation at the principal crossroads of Greece, where the harbors and prostitutes attracted great crowds of fools.¹¹⁷ Aelius Aristides remarks that the poets termed Corinth "fortunate" because travelers from both seas landed there.¹¹⁸ In his *Isthmian Oration* (46.22–7), he depicts the entire isthmus awash in goods. John Chrysostom, in his work *In epistulam 1 ad Corinthios*, explains the Corinthian community's strife in terms of wealth resulting from

¹¹⁵Baladié (1980, 252–64) has shown that in Strabo's day, maritime traffic was rounding Cape Malea. Indeed, we find sailing around Malea frequently mentioned in ancient literature (e.g., Alciphron *Letters of Fishermen* 10; Arr. *Anab.* 2.1.2; Diod. Sic. 11.15.1, 11.84, 16.62; Dion. Hal. *Ant. Rom.* 1.72.2–3;

Hdt. 7.168; Heliod. *Aeth.* 4.16.7.1; *Hymn. Hom. Ap.* 388–439).

¹¹⁶For discussion of the concept of *emporion* at Corinth, with bibliography, see Pettegrew (forthcoming).

¹¹⁷Dio Chrys. *Or.* 8.5.

¹¹⁸Aristid. *Or.* 27 (*Panegyric in Cyzicus*).

the city's commercial facilities. In these depictions, Corinth was wealthy not because goods were being shipped across the *diolkos* but because the isthmus had the physical facilities—city, harbors, and sanctuary—for concentrating commercial exchange.

CONCLUSION

In this article, I have reexamined the evidence of archaeology, logistics, and texts to cast doubt on the common interpretation of the *diolkos* as a road used to facilitate constant commercial traffic through the region. In reconsidering the relevant ancient texts, we have found that all of them are convincingly read as references to exceptional and famous military portages and stratagems of ancient history, not constant commercial portaging. Our reexamination of the logistics of transferring ships and cargoes along a 6–7 km road provided insight into the practical difficulties of transisthmus shipments of different kinds. Our summary of the archaeological evidence for the road problematized the date of construction and the transshipment thesis generally. In short, there is no positive evidence to support the view that the *diolkos* was used for the voluminous transshipment of commercial goods on a major east–west trade route. Corinth benefited from its position on an isthmus because of the *emporion* on both shores, which gave the city advantages for trade in two regional markets.

If the road did not function principally as a commercial thoroughfare, it did serve a variety of practical purposes for Corinth throughout antiquity. It facilitated the transfer of heavy building materials (stone, timber, tiles) from the Corinthian and Saronic Gulfs for use at the major sites of Corinthian territory on or near the coast: Corinth, Lechaion, Perachora, Kenchreai, Isthmia, and Krommyon. It made easy the movement of goods produced on the isthmus, such as olive oil and quarried stone, for export to market. And it served as the principal pedestrian and carriage way to Isthmia for those arriving at Poseidonia on the Corinthian Gulf or cutting south from the coastal road east from Lechaion. In this sense, the road marked the center of the Isthmus of Corinth.

The road was used for military purposes on several occasions between the fifth century and late second century B.C.E. The overland transfer of enormous wooden vessels occurred as part of brilliant and remarkable strategic maneuvering. The logistics required for transferring these galleys pressed the limits of the engineering and heavy transport capacities of the Greek and Roman worlds. Ancient authors were

right to draw attention to these famous deeds because they were extraordinary. The more ordinary military use of the road, however, consisted of rapid communication between gulfs.

Ultimately, the *diolkos* is unique among the monuments of the Greek world, completely unlike the temples, theaters, stadia, gymnasia, and fortification walls that have been featured so prominently and repeatedly in the publications of Mediterranean archaeology. In modern scholarship, the *diolkos* has been central to discussions of the commercial and military facility of the Isthmus of Corinth. Interpreted at times as a commercial road for transshipment of cargoes, a portage road for transferring heavy building materials, and a military road for facilitating strategic action, the road clearly holds a unique position in the strategic, geopolitical, religious, and maritime history of not only the Corinthia but all of Greece.

Given the road's historical significance for discussions of ancient Mediterranean traffic, military maneuvers, economy, and trade, its visible deterioration over the last 50 years is surprising (online figures 7–11; cf. fig. 9). A comparison of photographs of the western end of the *diolkos* in the early 1960s with those of recent years shows how much damage has already occurred through erosion caused by waves from canal traffic. The tragic destruction that has resulted from long periods of neglect can be stopped through a proper investment of care. Archaeologists, historians, and classicists must unite with popular organizations and with appropriate bodies of the Greek state to help preserve this fascinating monument before it disappears altogether.¹¹⁹

MESSIAH COLLEGE
DEPARTMENT OF HISTORY
ONE COLLEGE AVENUE
GRANTHAM, PENNSYLVANIA 17027
DPETTEGREW@MESSIAH.EDU

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¹¹⁹For more information about campaigns to save the *diolkos*, see resources posted on <http://corinthianmatters.com>.

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