Connectivity and Communication in the Achaemenid Empire

Henry P. Colburn*

Abstract
The vast territorial extent of the Achaemenid Empire is often assumed to have impeded connectivity and communication within the empire. This paper challenges the validity of this assumption. Two factors in particular favor this conclusion—the presence of an extensive road network and the high communication speed in the empire, made possible by the *pirradazish* service. Together, they demonstrate the enormous potential for movement and interaction throughout the empire.

Keywords
Communication speed; connectivity; Achaemenid Empire; *pirradazish*; postal history.

The Obstacle of Distance

The Achaemenid Empire was among the largest empires of the ancient world. It covered a land area five times greater than any of its predecessors and was matched, later, only by the Xiongnu confederation and the Han Dynasty in China. Although its size is frequently commented upon, the impact of the empire’s geography on its overall character and its day-to-day operations has rarely been articulated. Most scholarship assumes implicitly that the empire’s size inhibited connectivity and communication. Robin Lane Fox, in his biography of Alexander, went so far to as to write that “centralized rule is the victim of time and distance and in an empire where a royal letter could take three months to go from Phrygia to the Persian...
Gulf, power had to be local to avoid dilution by mountains and slow roads” (Lane Fox 1973: 96). This remark encapsulates neatly the effects of such assumptions: local political autonomy was a necessity, cultural and economic interactions were limited, and rebellions were frequent, in the absence of strong imperial oversight.

But how valid are these assumptions? The empire’s vast size certainly affected movement and communication within the empire, as it did in all pre-modern societies, but, as Roger Matthews has asserted, common-sense assumptions are rarely the best guide to assessing the relationship between Near Eastern empires and geography (Matthews 2003: 143). Rather, these assumptions need to be tested or at least subjected to critical scrutiny. Here, the study of the Mediterranean world is a useful exemplar because of the attention given to its geography by students of its history. Two studies stand out: Fernand Braudel’s *La Méditerranée et le monde méditerranéen à l’époque de Phillippe II* (1949), and Peregrine Horden and Nicholas Purcell’s book *The Corrupting Sea: A Study in Mediterranean History* (2000). Braudel recognized the problems inherent in the vast extent of the sixteenth-century Spanish Empire, noting that “Spain waged an unremitting struggle against the obstacle of distance” (Braudel 1972: 374), but he also argued that the geography of the Mediterranean actually facilitated connections between different regions, in large part because the practice of coastal navigation made it difficult for any place to be bypassed entirely; the Mediterranean was thus “scarcely different from a river” (Braudel 1972: 103-8). Similarly, Horden and Purcell emphasize the “connectivity” of the Mediterranean (Horden and Purcell 2000: 123-72). This term, originally borrowed from graph theory, refers to “the various ways in which micro regions cohere, both internally and also with one another – in aggregates that may range in size from small clusters to something approaching the entire Mediterranean” (Horden and Purcell 2000: 123). In the Mediterranean the means by which people contended with the challenges of geography thus actually created connectivity between distant places, a connectivity belied by distance alone. This in turn created the conditions necessary to political, economic, and cultural interaction and integration across the Mediterranean world.

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2) This remark belies the importance of the excellent study by Wilkinson 2003. But, although he does address many points relevant to the interaction of geography and empire, including movement (60-2), he mentions the Achaemenid Empire only in passing and does not consider empires in any broad sense.
This paper uses the Mediterranean as an intellectual paradigm for re-examining connectivity in the Achaemenid Empire. Although the geography of the Near East is essentially the inverse of that of the Mediterranean, consisting of high mountains, plateaus, and alluvial floodplains, the means by which the challenges presented by this geography were addressed in the empire created connectivity in a comparable manner (but note Braudel’s [1972: 171-88] likening of the Sahara to the Mediterranean). Two factors are particularly suggestive in this respect. The first is the presence of an extensive infrastructure of movement that served to connect the far-flung places of the empire with each other and with its major centers. This infrastructure consisted primarily of a network of roads, though rivers, canals, and trails also played a significant role. The most famous section of this road network is the segment connecting Susa to Sardis, but the Persepolis Fortification Archive, a large corpus of administrative texts on clay tablets excavated at Persepolis (Briant et al. 2008; Henkelman 2008a: 65-179; Hallock 1969), indicates that the network extended north, to Hyrcania and Parthia, and east, to Kandahar, India, and Bactra. Moreover, archaeological fieldwork of various kinds is increasingly elucidating the routes and character of these roads and the facilities that supported their use. Even though it promoted a different form of connectivity, this infrastructure can be regarded as a sort of functional equivalent to the Mediterranean Sea. This comparison is even more apt, given the riverine nature of the Mediterranean resulting from coastal navigation: coasts, like rivers and roads, are linear and interconnect the places along them. Secondly, the pirradazish service, a postal relay system, served to connect the various parts of the empire to each other by means of high-speed communication. By using comparative data from a similar institution, the American Pony Express, the actual speed of communication in the Achaemenid Empire can be estimated. When compared to the speed of communication in the Roman Empire, whose parts are traditionally regarded as having been interconnected by the Mediterranean, this estimate is especially suggestive of a high level of connectivity in the Achaemenid Empire.

The Infrastructure of Movement

The most basic prerequisite for connectivity in premodern empires is an infrastructure of movement. As Braudel put it, “The Mediterranean has no unity but that created by the movements of men, the relationships they imply, and the routes they follow” (Braudel 1972: 276). This infrastructure
typically consists of a network of roads, rivers, and canals for overland travel, and a series of ports and anchorages for seaborne travel. Given the geography of the Achaemenid Empire, travel by road presumably played a more prominent role than seaborne movement. Certainly it is better understood, although future research may demonstrate that water routes, such as Darius’s canal connecting the Nile to the Red Sea, operated in a manner comparable to the roads and were important in their own right (for a preliminary discussion see Cataudella 2002). By their very presence these roads created the potential for connectivity within the empire. Though overland travel in antiquity is generally characterized as slow, inefficient, and costly, the actual data for the potential for movement are more encouraging. One particularly important study uses ethnographic data on Nepali porters to challenge the traditionally perceived limitations on the transportation of bulk goods by lands (Malville 2001). These findings suggest that human porters can move loads of sixty to one hundred kilograms a distance of ten to fifteen kilometers per day without the benefit of roads. This may not be the most efficient means of long-distance transport, but it demonstrates the potential for overland movement on a smaller scale. Moreover, the use of pack animals dramatically increases both distance and carrying capacity. Mules, for example, can carry loads of 150-180 kilograms up to twenty-four kilometers per day, and lighter loads of seventy to eighty kilograms as far as thirty to forty-eight kilometers per day. Likewise, camels are known to carry much heavier loads, up to 300 kilograms, some thirty kilometers per day (Raepsaet 2008, 589). These figures do not take into account the transportation of fodder, and they pertain to the movement of freight rather than that of people, but they still demonstrate the potential for the overland movement of goods, people and ideas over great distances.

In the Achaemenid Empire the network of roads is typically referred to by the term “royal road,” on account of Herodotus’s reference (5.52) to “royal stations” along one well known segment of it, and by analogy with the Neo-Assyrian royal roads and the kings’ highways of more recent European history. This network has been studied several times in the past, though generally with a focus on reconstructing the major routes (e.g., Graf 1994; Briant 2002: 357-64; 2012; Seibert 2002). But this is only one component of the network, and this study will consider not only the routes themselves but also the network’s overall extent and the conditions that prevailed along it. The purpose of this exercise is to demonstrate that, despite the empire’s large size, its infrastructure facilitated the movement of people, goods, and ideas to even its remotest reaches, thereby creating the potential for connectivity.
Extent. The evidence for the extent and nature of the road network comes from references in Elamite and Aramaic documents and Greek authors and from archaeological fieldwork. The Persepolis Fortification Archive (Briant et al. 2008; Henkelman 2008a: 65-179; Hallock 1969), especially, provides evidence for the imperial road system in several ways. Most notably, the texts recording the disbursement of travel rations (designated ‘Q’ texts by Hallock) often refer to the travelers’ destinations or points of origin, and many of these places are far beyond the local area of Persepolis and Susa. A single ‘journal’ text (PF 1953), in which annual disbursements were tabulated, also refers to a trip made from Arachosia to Susa. These origins and destinations are summarized in Table 1 below (see also Giovinazzo 1994; Seibert 2002).3

Many of the locations that appear in the Persepolis Archive are in the eastern empire, demonstrating the regularity of communication between these places and the imperial court. This communication is further evidenced by an Elamite tablet discovered at Kandahar, which is much like those from Persepolis (Helms 1997: 101; Kuhrt 2007: 814-15). Additionally, the Aramaic tablets in the archive also refer to travel between Persepolis, Babylon, and Bactria (Azzoni 2008: 260-1), and one document from the Arsham correspondence (TADA E A6.9) is an authorization from Arsham for his subordinate Nehtihor to draw rations on a trip from Susa (presumably) to Egypt.

Routes. The actual routes of these roads can be gleaned in various ways, but none is comprehensive, and most rely on assumptions of continuity with earlier or later periods (Graf 1994). This is not inherently problematic, because pre-industrial land routes tend to remain stable over long periods of time. Braudel, for example, considered the study of land (and sea) routes part of the history of “man in his relationship to the environment, a history in which all change is slow, a history of constant repetition, ever-recurring cycles” (1972: 20, 276-95; also Astour 1995: 1401). This assumption also makes the routes in question somewhat predictable, but it does not mean that every known major route was an Achaemenid royal road.

A few routes are attested in texts. Though some of the toponyms cannot be identified, the document carried by Nehtihor (TADA E A6.9) authorizing him to draw rations provides some idea of the route he took (see Graf 1994: 179 for the places mentioned). The journey probably began in Susa and went north and west via Lahiru (on the border of Elam), Arzuhin (south of the Lower Zab), Arbela, Hazza (southeast of Nineveh), and Ubasie (north of Ashur), and then southwest to Damascus, whence it presumably

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3) I am especially grateful to Wouter Henkelman for information from unpublished tablets.
Table 1: Origins and destinations of trips referred to in Q and V texts from the Persepolis Fortification Archive

<table>
<thead>
<tr>
<th>Origin or Destination</th>
<th>Tablet</th>
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<tbody>
<tr>
<td>Arachosia</td>
<td>PF 1351, 1385, 1439, 1443, 1474, 1484, 1510, 1953, 2049, PFNN 0257, 0881, 1761, 1898, 2062, 2503</td>
</tr>
<tr>
<td>Areia</td>
<td>PF 1361, 1438, 1540, 2056, PFa 29, PFNN 1713</td>
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<tr>
<td>Assyria</td>
<td>PF 1574, PFNN 0515</td>
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<tr>
<td>Babylon</td>
<td>PF 1512, PFNN 0534</td>
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<tr>
<td>Bactria</td>
<td>PF 1555, PFNN 1507</td>
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<tr>
<td>Drangiana</td>
<td>PFNN 0690, 0827, 2096</td>
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<tr>
<td>Ecbatana</td>
<td>PFNN 2502</td>
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<tr>
<td>Egypt</td>
<td>PF 1544</td>
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<tr>
<td>Hycrania</td>
<td>PFNN 2512</td>
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<tr>
<td>Kandahar</td>
<td>PF 1358, 1440, 1550, PFNN 0534, 1573, 2383</td>
</tr>
<tr>
<td>Kerman</td>
<td>1289, 1330, 1332, 1348, 1377, 1398, 1399, 1436, 1466, PFa 14, PFNN 0445, 0498, 0615, 0626, 0692, 0765, 0801, 0809, 0820, 0946, 1044, 1081, 1580, 1585, 1621, 1662, 1864, 2139, 2259, 2261, 2543</td>
</tr>
<tr>
<td>Lebanon</td>
<td>PFNN 1609, 1631</td>
</tr>
<tr>
<td>Media</td>
<td>PF 1480, PFa 31, PFNN 2261</td>
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<tr>
<td>Parthia</td>
<td>PFNN 1657</td>
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<tr>
<td>Sagartia</td>
<td>PF 1501, PFa 31, PFNN 2040, 2261</td>
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<tr>
<td>Sardis</td>
<td>PF 1321, 1404, PFNN 0901, 1809</td>
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continued to Egypt. And there is Herodotus’s (5.52-4) well known description of the Susa-Sardis road, according to which the road went from Susa through the Zagros Mountains, north along the plains east of the Tigris into Cissia and Armenia, then west through Cilicia, Cappadocia, and Phrygia to Sardis. This much is straightforward enough, but Herodotus specifies that the route crossed the Halys River and went through the Cilician Gates,
which has struck some commentators as unnecessarily circuitous. Likewise, the distances he provides cannot easily be made to match the route, and various alternative routes have accordingly been proposed to account for this discrepancy (Graf 1994: 175-80; French 1998; Debord 1995; Müller 1994; Lendle 1987). It suffices to point out that this road did not exist solely to link Susa to Sardis. Rather, it was part of the larger network of roads, and a route that may be circuitous if one is traveling from Sardis to Susa is not necessarily so if one is attempting to reach a place between them. The centrality of this road for the Greeks belies the importance, or even the preeminence, of the empire’s eastern routes, as illustrated by the Persepolis Fortification Archive.

Other classical authors also provide evidence for the routes of these roads. Xenophon’s description of the route taken by the army of Cyrus the Younger (Anabasis 1.2.5-7.1) is often taken as evidence for a southerly royal road through Anatolia. The passages in Arrian (fl. second century CE) and Curtius (fl. first century CE) that discuss the movements of Alexander’s army are used in the same way. Although these writers do not refer explicitly to royal roads, their work suggests the extent of the empire’s road network, because these armies generally followed pre-existing routes such as roads or rivers. Isidore of Charax (fl. first century BCE–first century CE) wrote a now fragmentary work entitled Parthian Stations, an itinerary of the overland route from Antioch to India (FGrH 781). This work was probably written sometime after 26 BCE and refers to conditions in the Parthian rather than the Achaemenid Empire, but the route (and perhaps the system of stations) was probably in use in Achaemenid times. These sources suggest that the eastern empire was accessible via a southerly route from Persepolis to the Indus river valley and a northerly route from Ecbatana through Hyrcania to Bactra and Kandahar, and this is borne out by the Persepolis Fortification Archive. And the itineraries from earlier periods suggest that Mesopotamia was crisscrossed by routes throughout its history, although it is difficult in some cases to distinguish between travel by road and travel by river (Astour 1995).

Textual sources of this sort, usually in conjunction with topographical knowledge, have traditionally been the main evidence for the routes of the royal road system, but in recent years archaeological fieldwork has also begun to provide complementary evidence of various kinds. For example, the roads in Palestine have been reconstructed on the basis of the settlement pattern (Roll and Tal 2008). This approach assumes that the major sites were connected to each other by roads and that roads of particular
importance were protected and controlled by forts. This approach is possible in Palestine because of the relative comprehensiveness of archaeological fieldwork there and the comparatively small size of the region. The period of Achaemenid rule is especially well understood in Palestine in archaeological terms, which in turn facilitates reconstruction of settlement patterns. Unfortunately the utility of this approach is limited for larger areas with less archaeological coverage and where the Achaemenid period is still not well understood archaeologically. Another approach is the identification of sites of comparable size and consistent spacing over a linear distribution, as has been done in two surveys in southwestern Iran, one on the Deh Luran plain and the other in the Mamasani District (Wright and Neely 2010: 112; Askari Chaverdi et al. 2010: 294). These sites have been interpreted as stations along the royal road, partly because their size and spacing do not fit with the observed settlement patterns. The designs of these surveys are informed in part by the expectation that there were stations in these areas, but this does not invalidate the proposed interpretation of these sites. Another technique is the use of satellite photographs to identify “hollow ways,” that is, shallow linear depressions created by repetitive movement along them. These hollow ways result from both the movement of farmers and herdsmen between villages and fields and traffic on trans-regional roads. In this latter context, they have been used to reconstruct some of the roads of the Neo-Assyrian empire in northern Mesopotamia, which were previously best understood through textual evidence (Wilkinson et al. 2005, 32-7). These roads remained in use under Achaemenid rule; indeed, the route taken by Nehtihor through northern Mesopotamia follows what must have been a Neo-Assyrian road. Finally, the Darb Rayayna, a road between Armant in the Qena Bend in Upper Egypt and the Kharga Oasis in the Western Desert, shows signs of use under Achaemenid rule, in the form of demotic and hieroglyphic graffiti at Armant dating to the eighteenth year of the reign (522-486 BCE) of Darius I (Di Cerbo and Jasnow 1996). Further epigraphic research and analysis of the ceramic sherds littering the desert roads may elucidate the route network in Egypt.

Conditions. Although the roads were probably largely unpaved, there are some indications to the contrary. Two stretches of stone pavement have been identified as possible segments of the Persepolis-Susa road, a 7-meter-wide cobblestone section, and a 5-meter section of flagstones with curb (Sumner 1986: 17). Neither can be dated definitively, although sherds from the Achaemenid period were found at several places on the former
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This suggests that the royal roads may have been partly paved, although such pavement may have been limited to the vicinities of cities or to the most important arteries, such as the Persepolis-Susa road. The latter would have been an important route for the movement of the Great King and the imperial court, and recent excavations of what had previously been identified as a station at Qaleh Kali suggest that the structures there were more monumental than would be expected for a mere way station (Potts et al. 2007; 2009; there is also some question as to how far off the road these structures are). This road may thus have served as a processional route, or perhaps its frequent use by important travelers simply necessitated better road conditions and facilities, but, in either case, such pavement was probably not typical of the road system. The ancient road cleared at Gordion is probably a better indication of the typical road. This segment of road was approximately 6.25 meters wide, with a packed gravel surface and curbstones and a ridge down the middle dividing the road into two lanes (Graf 1994: 177; Young 1963: 348-9, fig. 2). The road avoids and therefore postdates the Middle Phrygian tumuli, and excavations have turned up sherds from the late sixth century BCE, suggesting that it was constructed during the Achaemenid period. Proximity to Gordion might have caused this road to receive more attention than those in more rural parts of the empire, and it is possible that improvements were added in the Roman period, but there is no reason to suppose that this sort of road was beyond the technological or administrative abilities of the Achaemenids. Finally, a segment of rock-cut road at Madakeh has also been associated with the Persepolis-Susa road (Kleiss 1981: 48-51). Many rock-cut irrigation channels are known from this region in Iran, but the width (5 m) and location of this particular feature are consistent with its being part of the road (see also Sumner 1986: 17). The cutting of this segment would certainly have been enormously labor intensive, and its construction demonstrates Achaemenid investment in road building.

In addition to the roads themselves, there are some indications of the facilities and maintenance of the road network. Of particular importance are the way stations, although evidence for them is limited. Many of the toponyms appearing in the Fortification Archive probably name the sites of way stations, but their identification remains uncertain (Potts 2008).

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4) According to Miller (1997: 115 n. 34), citing a personal communication from Keith DeVries, the interpretation of this segment of road as the royal road has been dropped. No reasons are provided for this change.
Only a handful (all in Iran) have been identified archaeologically, and most of these have been subject to only cursory investigation. These include two stations near Germabad and at Madakeh on the Persepolis-Susa road (Kleiss 1981), one at Tang-i Bulaghi near Pasargadae (Asadi and Kaim 2009: 1-11), and one at Deh Bozan between Susa and Ecbabatana (Mousavi 1989). But their remains are still suggestive. For example, the recently excavated building at site 64 in Tang-i Bulaghi (near Pasargadae) consists of a courtyard surrounded by thick walls, with several smaller rooms adjoining it. This description fits several different known types of ancient buildings, but it is at least broadly consistent with the characteristics of ancient caravanserais recently defined by Yifat Thareani-Sussely (2007: 123-6). The station near Madakeh is also comparable to the Tang-i Bulaghi building and to Thareani-Sussely’s model. This proves nothing, but it does not disprove the assumptions typically made in the scholarly literature about the nature of these stations, namely, that they combined the functions of caravanserais, guard posts, and supply depots. This is also consistent with their possible use by the imperial mail service, as the spacing of the stations an average of twenty-four kilometers apart (per Herodotus’s description of the road) made them suitable to both the rapid exchange of horses by mounted couriers and overnight use by slower travelers. Xenophon (Cyropaedia 8.6.17) uses the term *hippōn* ("of horses") to refer to the stations, implying the presence of stables. Moreover, the travel documents from Persepolis and TADAE A6.9 demonstrate the function of these stations as supply depots for official travelers (Briant 2012), as do the Aramaic documents from Tel Arad, in southern Palestine (Naveh 1981), and from Khulmi in Bactria (Briant 2009: 149), which refer to the disbursement of rations to travelers. In addition to the excavated stations there is another, also on the Persepolis-Susa road, which is currently the subject of more exhaustive archaeological study. This is the station at Qaleh Kali, near Jinjun, in the Mamasani District in Fars (Potts et al. 2007, 2009). The excavation continues, but the preliminary results suggest more than a caravanserai or stable. The building has been described by the excavators as a portico, including a stone floor, column bases, short staircases, and some associated mud-brick remains. The elaborate nature of the column bases and the presence of delicate glass and fine stone tablewares are especially suggestive that this facility catered to a more exclusive clientele than did the typical station. This may have been the result of Qaleh Kali’s location along—or at least not far from—the Persepolis-Susa road, which was one of the major arteries of the empire, especially for royal and court traffic (Tuplin 1998).
The Persepolis Fortification Archive also provides limited evidence for the maintenance of the roads. Several texts (e.g., PFa 15, 21, 30, 31) refer to “road counters” or to people who have “computed the road” (e.g., PFa 19, 22, 30). The precise natures of these people and activities are not yet clear, but educated guesses can be made. PFa 30 is particularly illustrative: lines 8-10 refer to how, in 502 BCE, one Ambadush and his four companions, who are identified as road counters, waited six days for Darius at a place called Hadaran after having computed the Ramitepe road. The implication of this and of the gangs of workers that sometimes accompany these road counters is that their responsibilities were not just to provide accurate measurements for the roads, as their name implies, but also to ensure their good repair (Hallock 1978: 114-15; T uplin 1997: 406-9; cf. Aelian, *De natura animalium* 15.26, in which the Great King orders the road from Susa to Media cleared of scorpions). The evidence from Persepolis can be applied directly only to its administrative remit, which would have included much of Fars (Henkelman 2008a: 110-8), but it is not unreasonable to think that similar officials existed throughout the empire. The misleadingly precise and frequently inaccurate distances cited by Herodotus and Xenophon, for the Susa-Sardis road and the route taken by the army of Cyrus the Younger respectively, might be evidence for this, if, as has often been suggested, they made use of maps, itineraries, or, in Xenophon’s case, milestones (Tuplin 1997: 404-9; Rood 2010). Indeed, according to Pho- tius’s epitome (ninth century CE), Ctesias provided a “calculation of the staging-posts, and distances in day-journeys and parasangs from Ephesus to Bactra and India” (*FGrH* 688 F33; trans. J. Robson). At any rate, it would certainly not be surprising for a land empire to invest in the maintenance of its roads.

The impression gained from the material presented above is of an empire connected by means of a network of roads, with Persepolis and Susa as major hubs (Figure 1). Although the actual routes of these roads are not always known, especially in the eastern half of the empire, their existence is not in question, and the Achaemenids clearly invested in their construction and maintenance, thus creating conditions conducive to movement and connectivity. There is nothing to suggest that a journey along the roads was necessarily slow and cumbersome, as some scholars have supposed (e.g., Miller 1997: 114-17). This undermines the notion of an empire consisting of spatially disconnected parts; this infrastructure actually created opportunities for political, economic, and cultural interaction. The case of Tamukkan (Taoce) is particularly illustrative of the latter. References in the
Figure 1: Major routes of the Achaemenid Empire. From Amélie Kuhrt, *The Persian Empire* (Routledge, 2007). Reproduced by permission of Taylor & Francis Books UK.
Persepolis Fortification Archive show that between 502 and 498 BCE this coastal town on the Bushehr peninsula was visited by large groups of workers. The ethnonyms that refer to these workers indicate that they came from all over the empire: Skudrians (i.e., Thracians), Egyptians, Lycians, Bactrians, and Cappadocians (Henkelman 2008b: 308-9). Their movement throughout the empire was facilitated by the road network and its associated infrastructure: the tablets in which these workers appear record the rations they drew while traveling to or from Tamukkan. In this five-year period Tamukkan must have been a hotbed of cultural exchange, as the workers in these groups interacted with each other and with the Persians living and working there. That the results of this interaction are not evident in the archaeological record is presumably a result of lack of preservation or excavation, but the case of Tamukkan does show how instrumental the empire’s infrastructure of movement could be in creating the conditions necessary for connectivity.

**Communication Speed**

As Braudel understood, pre-modern communication speed can be used as a proxy for connectivity. This is because, before the advent of the telegraph, the primary mode of transmitting news and information across long distances was the transport of written documents by couriers (and others). The delay between the sending and the receipt of a letter, for example, can indicate how well its carrier overcame the challenges presented by the geography of the landscape he had to traverse (Braudel 1972: 355-74). Historians of Rome have employed similar methods for antiquity, employing in particular the speed with which the emperor’s name was replaced in the dating formulas in Egyptian documents by that of his successor as a gauge of how swiftly news traveled to Egypt from various parts of the empire (Duncan-Jones 1990: 7-29; Kolb 2000). This attests not only to the speed and frequency of travel but also the efficiency of the mechanisms in place to facilitate it. For the Achaemenid Empire, however, the standard assumption, informed by ideas about the disconnected nature of the empire and the slow speed of overland travel, is that communication was inherently and unavoidably slow.

This notion owes its origin to the Greeks, especially to Herodotus. In his description of the royal road and in the passage preceding it (5.50, 53), in which Aristagoras of Miletus attempts to convince King Cleomenes of
Sparta to lend aid to the Ionian revolt, he states that the journey from Sardis to Susa took three months. This may have been true under certain conditions, especially in the case of an army advancing through hostile territory, which is the context in which Herodotus makes these remarks, and it has been argued that one of Herodotus’ purposes in this passage is to emphasize the potential difficulty of invading the Achaemenid Empire (Pelling 2007: 195-6). The trip could, perhaps, actually be completed in much less time, and probably usually was. Xenophon, for example (Agesilaus 1.10), refers to the same trip taking half the time. The issue here is that Susa and the rest of the empire were, for the Greeks, very distant, and this is what informed their remarks about communication speed. Because communication speed, like much of Achaemenid history, has often been approached from a Greek standpoint, this impression has continued to shape modern scholarship on the subject.

The question, then, is how to measure communication speed in the empire without having to rely on incidental statements in Greek authors whose purposes are at variance with this research goal. Braudel used letters as a means of measuring communication speed; unfortunately the extant letters from the Achaemenid period are not dated as closely as their sixteenth-century European counterparts. The method used by historians of Rome (i.e., noting delays in changing Egyptian dating formulas to reflect the accession of a new emperor) is theoretically possible because of the existence of exact-day dating in the Achaemenid Empire, but there is evidence only for Artaxerxes I’s succession to the throne after the death of Xerxes in 465 BCE, and then only in a single document (references in Depuydt 2008: 9). The data are thus inadequate for determining an overall pattern of communication speed.

This situation can be improved by the use of a comparative approach in order to make greater use of the limited evidence available for the empire. Such an approach is possible because of the similarities between the pir- radazish service, the system of couriers that served as the swiftest terrestrial form of communication in the empire (Silverstein 2007: 9-28; Briant 2002: 369-70), and the Pony Express, a postal service that operated in

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5) This document (TADAE B2.2) suggests that it took four months for news of Xerxes’ death to reach Upper Egypt. An Idumaean ostracon bears a date of 1 Sivan, first year of Philip III (i.e., 17 June 323 BCE), showing that news of Alexander’s death at Babylon on June 11 reached southern Palestine within a week (Porten and Yardeni 2003, 213). These wildly divergent figures demonstrate the frailty of this evidence for gauging communication speed, especially given the limited data.
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There is nothing mortal that is faster than the system that the Persians have devised for sending messages. Apparently, they have horses and men posted at intervals along the route, the same number in total as the overall length in days of the journey, with a fresh horse and rider for every day of travel. Whatever the conditions—it may be snowing, raining, blazing hot, or dark—they never fail to complete their assigned journey in the fastest possible time. The first man passes his instructions on to the second, the second to the third, and so on.

Xenophon (Cyropaedia 8.6.17-18) provides a similar description of its operation. The service is called angarēion in Greek, the exact meaning and origin of which are obscure (Pontillo 1996). It has been associated with the unattested Old Iranian term *fratačiš, which occurs in the Persepolis Fortification Archive in Elamite as pirradazish and which is translated as “express runner” or “fast messenger” (Hallock 1969: 42; Tavernier 2007: 421; Henkelman 2008a: 199-200 n. 428; Seibert 2002: 32-5). References to pirradazish horses and the rations issued to them indicate that these express runners were probably mounted couriers (Gabrielli 2006: 49-50). Relay systems of mounted couriers have existed throughout the Old World since at least the fifth century BCE (Silverstein 2007; Gazagnadou 1994), but the best data for the speed of such a system are for the Pony Express, which operated between St. Joseph, Missouri, and Sacramento, California, in the American West, from 1860 to 1861. The similarity between the pirradazish service as Herodotus and Xenophon describe it and the Pony Express has often been noted, and this similarity, as well as the availability of data, makes the Pony Express a good subject for comparison with the Achaemenid pirradazish service. Such a comparison relies on assumptions that cannot easily be proven and that are made for the purposes of simplification. They are made explicit below for the sake of methodological transparency.

The route used by these couriers was the royal road system. This is a reasonable assumption, for which there is some evidence. Most important is the

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6) The barīd, the imperial postal system used by many premodern Middle Eastern Islamic empires, although closer in time and space to the pirradazish service, is less suitable for comparison, because the data for the speed with which it operated are generally derived from literary references to specific trips rather than actual records of the postal system itself. In general, see Silverstein 2007.
evidence for the stations along the roads, which would have facilitated the changing of horses and riders. Also, a tablet from the Persepolis Fortification Archive (PFNN 1809; Lewis 1997: 342-4) recording the issuance of rations to a man named Datiya on a trip from Sardis to Persepolis labels him as a *pirradazish*, which may indicate that he was authorized to use the horses and stations of the imperial mail service for his journey. Four other men similarly labeled are also recorded as drawing rations for a trip to Sardis (PF 1321), and individuals identified in this way appear in sixteen other tablets, usually on their way to or from the king.7

*The route described by Herodotus is accurate.* This assumption is more problematic, and several alternatives to the route described by Herodotus have been proposed (Graf 1994: 175-80; French 1998; Debord 1995; Müller 1994; Lendle 1987). For the purposes of this study, however, the issue is moot, because the approximate distances of the two main alternatives vary by less than 300 kilometers; it will be shown below that this difference is not significant. For the sake of argument, I assume that the route described by Herodotus is accurate and, accordingly, use the length of that route for my calculations. This assumption sidesteps several other thorny issues as well, such as the nature and length of the units of measure used by Herodotus and his sources for this information.

*The horses used for the pirradazish service could travel at speeds comparable to those used in the Pony Express.* Evidence for the types of horses used by the *pirradazish* service is limited. Osteological study of horse remains from sites in Iran suggests an average height of 125-30 centimeters at the withers, which would, by modern standards, make these horses ponies (Gabrielli 2006: 5-10; but see 61-2 for the hypothesis that *pirradazish* horses were generally 135-7 cm tall). The Pony Express used a variety of horses, most of which were mustangs and some of which may have been ponies (Corbett 2003: 84-6). It is likely, however, that the best horses available were procured in both cases. Indeed, in the Persepolis Fortification Archive there are references to horses specifically identified as being for the *pirradazish* service, suggesting both careful selection and high standards (Gabrielli 2006: 49-50; the tablets are PF 1672, 1700, 2061, 2062, 2065, PFNN 0228, 0642, 1232; cf. Esther 8:10). Likewise, frequent references in ancient authors to the quality of “Nisaean horses,” named for the plain

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7 These are PF 1285, 1315, 1319, 1320, 1329, 1334, 1335, 2052, PFNN 0916, 0570, 1271, 1325, 1950, 2063, 2261, 2424, and 3051.
in Iran where they were bred, further indicate that the fastest horses were available to the *pirradazish* service (Gabrielli 2006: 17-34).

*The riders in the pirradazish service changed horses at every station.* This assumption contradicts Herodotus (8.98), who says that the horses and riders changed at every station, which were each spaced a day’s ride apart. But, according to his description of the royal road, the average distance between stations is approximately twenty-four kilometers, and a person could cover this distance on foot in a single day, and a horse could do so in slightly more than an hour. This distance is borne out by the stations identified in archaeological surveys in Mamasani and the Deh Luran plain in southwestern Iran. These stations are generally closer together than this, about seventeen to eighteen kilometers apart, but this is not highly incongruent with Herodotus’s description of the road and may simply reflect an increased administrative presence due to proximity to the imperial capitals (Askari Chaverdi et al. 2010: 294; Wright and Neely 2010: 112). The stations were thus clearly not a full day’s ride apart. Moreover, veterinary research suggests that this spacing of stations was conducive to the long-term health of the horses (Minetti 2003). Indeed, in the various postal relay systems for which there is sufficient data, the spacing of stations was typically between sixteen and twenty-five kilometers, and in the Pony Express approximately twenty kilometers (Minetti 2003; Frajola et al. 2005: 161-5). Xenophon even states that Cyrus “experimented to find out how great a distance a horse could cover in a day when ridden hard but so as not to break down, and then he erected post-stations at just such distances” (*Cyropaedia* 8.6.17; trans. W. Miller). Finally, although the travel rations mentioned in the Persepolis Fortification Archive were generally issued on a daily basis, including to the *pirradazish* service, the horses were not necessarily changed only once a day, because horses and riders presumably drew rations only from the station at which they stopped for the day (Hallock 1969: 6). All of these factors support the assumption of this paper, that riders changed horses at every station rather than daily, notwithstanding Herodotus’s statement.

All these assumptions might make one balk at the tenuousness of the following comparison, but the overall difference between the *pirradazish* service and the Pony Express is not great; these assumptions have been laid out not to undermine the comparison but to demonstrate what has been simplified for the sake of argument. We can consider the communication speed of the Pony Express to be a maximum, which the *pirradazish* service would have been unlikely to exceed, especially without stirrups. This is still
a useful exercise for the purposes of this study, because the objective is to
gauge how the geographic dynamics of the empire affected its operation.

The actual comparison is straightforward. There are travel times known
for 104 eastbound Pony Express trips, the fastest being nine days, and the
slowest thirty-one (on account of interference by Native Americans), giv-
ing an average of 13.2 days to complete the trip (Frajola et al. 2005:
86-91). In general, though, the delays were probably not as great as in the
American West. Likewise, there are travel times known for 140 westbound
trips, the fastest again being nine days and the slowest thirty-six (also
delayed on account of Native Americans), for an average of 12.5 days to
complete the trip (Frajola et al. 2005: 94-9). The overall average is thus
12.9 days. The route of the Pony Express was a total of 2964 kilometers, so
the riders traversed an average of 230 kilometers per day (Frajola et al.
2005: 161-5). Using the total length of 2673 kilometers for the royal road
from Sardis to Susa, the trip could be made by the pirradazish service in
11.6 days, or probably a little longer given the lack of stirrups and horse-
shoes. Persepolis, just over 500 kilometers from Susa, could be reached in
an additional 2.2 days at the same speed. Likewise, if it is roughly 2762
kilometers (by my own measurement) from Persepolis to Memphis, the
satrapal capital in northern Egypt, the journey could be made by the pir-
radazish service in 12.0 days at the same speed.

This estimate for communication speed in the empire is not revolution-
ary; a century ago Riepl provided a similar estimate of eight to ten days to
reach Susa from Sardis (Riepl 1913: 194), but this estimate and the many
subsequent ones that range between one and two weeks for this same jour-
ney have no explicit bases, meaning that it has hitherto been impossible to
decide which estimate is the most accurate. The estimate presented in this
paper at least provides grounds for its acceptance or rejection that are
methodologically more robust. Its appropriateness as an indicator of the
speed of the pirradazish service is supported by the limited data for the
speed of the barid, the imperial postal system used by many of the pre-
modern Islamic empires in the Middle East. The barid operated in a man-
ner similar to both the pirradazish service and the Pony Express, and the
extent recorded speeds for it are, on the whole, consistent with the speed

8) I include outliers in the data which were caused by Native American interference because
it is not unreasonable to assume that similar delays occurred in the Achaemenid Empire, as
the entire territory of the empire was not consistently under Achaemenid control, e.g., in
the Zagros Mountains, for which see Briant 2002: 726-33.
of 230 kilometers per day proposed for the Achaemenid Empire (Silverstein 2007: 193). The *barid* and the *pirradazish* service operated in the same geographic setting and, in many cases, along the same routes, making this estimate still more plausible.

This estimate for Achaemenid communication speed represents a maximum for the speed of movement in the empire. The overwhelming majority of movement would have been much slower, because it would have consisted of freight, porters, elite travelers, work crews, and armies, but the fact that people and information could move this swiftly throughout the empire is indicative of connectivity, as events in one part of the empire could have a swift effect elsewhere. For example, the preparations made by Artaxerxes II in response to the revolt of Cyrus the Younger (whom Artaxerxes defeated and killed in 401 BCE), including the mustering of a large army at Ecbatana, were made possible by the empire’s connectivity (Briant 2002: 629). Likewise, goods and ideas could circulate all over the Near East and beyond.

**Comparisons and Implications**

If connectivity results from the means by which people overcome the challenges presented by geography, it is unreasonable to assume that connectivity was low in the Achaemenid Empire. This much is suggested by the two factors elucidated in this paper: first, the creation of an infrastructure of movement consisting of an extensive road network that linked places as distant as Kandahar and Memphis and facilitated the movement of people, goods, and ideas throughout the empire; and second, the speed at which the *pirradazish* service probably operated indicates that, under optimal conditions, the great distances between the various parts of the empire were not impediments to the timely exchange of important information. The combination of these two factors indicates strongly that there was a higher level of connectivity in the empire than has typically been assumed, despite the fact that it had no Mediterranean at its center. Even though the actual effects of this connectivity are not always visible archaeologically, the symbolic integrative function of roads, mounted couriers, or even products with distinctly imperial associations cannot be underestimated. For example, the knowledge that Persepolis or Susa lay at the other end of a road might have been a powerful unifying force in the creation of an imperial identity (Earle 1991).
The actual degree of connectivity in the empire is best brought out by a comparison with the Mediterranean, and, in particular, with the Roman Empire. Both empires had infrastructures of movement that connected their most central places with their most remote. These infrastructures are difficult to compare because of the geographic differences between the Near East and the Mediterranean, but there are some notable similarities, such as the networks of roads maintained by the empires. A more interesting comparison, however, is that of communication speed, because this can provide a sense of how successful the Achaemenids and the Romans were in overcoming the challenges inherent in the geographies of their respective empires. The time elapsed between the death of an emperor in Italy and the use of his successor’s name in the dating formulas in Egyptian documents averages fifty-seven days (Duncan-Jones 1990: 15). This figure is increased by seasonal variation, as the Mediterranean was generally unnavigable in winter, but, even in summer, thirty days is considered swift for this journey (Duncan-Jones 1990: 26). This is equivalent to sixty-two kilometers per day, nearly four times slower than the estimate for the Achaemenid Empire. Communication on land by means of the imperial postal service (the cursus publicus) was generally faster but still only averaged about seventy-five kilometers per day (Kolb 2000, 323-5; under exceptional circumstances it could have operated more swiftly). At this rate it took an average of 13.1 days for information to reach Trier from Rome and at least 17.5 days to reach Colchester, the capital of Roman Britain.

This comparison is not meant to suggest anything about the relative connectivity of these two empires, but that they were at least commensurate. But this commensurability has significant implications for the study of Achaemenid imperialism. The Roman Empire was highly centralized, and provincial administrators such as Pliny the Younger (d. c.113 CE) frequently referred matters to the emperor’s attention, even if only for approval after the fact; indeed, at the apogee of the empire’s size, the emperor had to govern largely by correspondence (Millar 2004: 23-46). Moreover, as studies of Romanization have shown, the empire was sufficiently interconnected for there to be a significant level of cultural interaction among the various social and ethnic groups that comprised its population. There is even debate as to the degree to which it may have been economically integrated. This picture of a centralized and interconnected empire is very different from the typical vision of the Achaemenid Empire. Yet the empires had similar capacities for connectivity; either these differences need to be explained by something other than differences in
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geography or the Achaemenid Empire was more centralized and more integrated than current assumptions allow. This comparison suggests at least that assumptions about the connectivity of the Roman Empire and the resulting research questions asked about it are applicable also to the Achaemenid Empire, and the onus is on scholars to demonstrate whether or not that is the case.

Bibliography

Abbreviations

PFNN: unpublished Persepolis Fortification Tablets read by Wouter Henkelman (personal communication).


