# The Insignificance of the Tigris and Euphrates Rivers in Premodern Anatolian History

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Anatolia is indispensable to the Tigris and Euphrates rivers. It contributes about 90% of the Euphrates' annual flow. Without Anatolia, the Euphrates would largely disappear. The Tigris, meanwhile, obtains 40% of its flow from Anatolia, relying more heavily on Iran for the rest of its water budget. Still, without Anatolia, the Tigris would be a much smaller and shorter river.[1]

While we understand (and to some degree, can quantify) the significance of Anatolia to the Tigris and Euphrates, we know precious little about the significance of the Tigris and Euphrates to Anatolia before the twentieth century. What role, if any, did the twin rivers play in the rise of Anatolian settlements, states, and civilizations? Historical surveys of premodern Anatolia are largely silent on this question, relegating the twin rivers to the backdrop of human affairs.[2] Likewise, the Tigris and Euphrates rarely matter in historical surveys of the Kurds, the dominant ethnic group in southeastern Anatolia.[3]

This chapter probes why histories of premodern Anatolia say little about the Tigris and Euphrates. The chapter argues that the marginalization of the Tigris and Euphrates in premodern Anatolian historiography is justified. It reflects the fact that the twin rivers were not significant factors in Anatolian history before the twentieth century largely because Anatolia had multiple aquatic worlds (or water resources) that made Anatolian society less reliant on the Tigris and Euphrates than Iraq. The richness and diversity of Anatolia's water resources, in turn, was made possible by Anatolia's high elevation and mountainous environment. Mountains are one of the two most important sources of precipitation in western Asia (the other being the sea). Because of their high peaks, the mountains of Anatolia (like mountains elsewhere) can capture ample moisture from passing winds to release it down to Anatolian societies.[4] To put the argument differently, even though the geographies of Anatolia and the Tigris-Euphrates basin considerably overlap, their premodern histories diverge greatly. Anatolian societies did not need the Tigris and Euphrates as much as their Iraqi neighbors did, thanks to their rich aquatic worlds, gifts of the Anatolian mountains. The chapter will support this argument by

1 Ayşegül Kibaroğlu, "The Euphrates-Tigris River Basin," in *Sustainability of Engineered Rivers in Arid Lands: Challenges and Responses*, eds. Jurgen Schmandt et al. (Cambridge: Cambridge University Press, 2021), 96.

2 For a representative sample, see Christian Marek, *In the Land of a Thousand Gods: A History of Asia Minor in the Ancient World*, trans. Steven Rendall (Princeton: Princeton University Press, 2016); Sharon R. Steadman and Gregory McMahon, eds., *The Oxford Handbook of Ancient Anatolia, 10,000–323 B.C.E.* (New York: Oxford University Press, 2011); Stephen Mitchell, *Anatolia: Land, Men, and Gods in Asia Minor*, 2 vols. (Oxford: Clarendon Press, 1993).

3 One of the most comprehensive surveys of Kurdish history in English mentions the Tigris River only three times. Hamit Bozarslan, Gengiz Gunes, and Veli Yadirgi, eds., *The Cambridge History of the Kurds* (Cambridge: Cambridge University Press, 2021). See also David McDowall, *A Modern History of the Kurds*, rev. ed. (New York: I.B.Tauris, 2004).

4 Ewan W. Anderson, *The Middle East: Geography and Geopolitics* (London: Routledge, 2000), 48

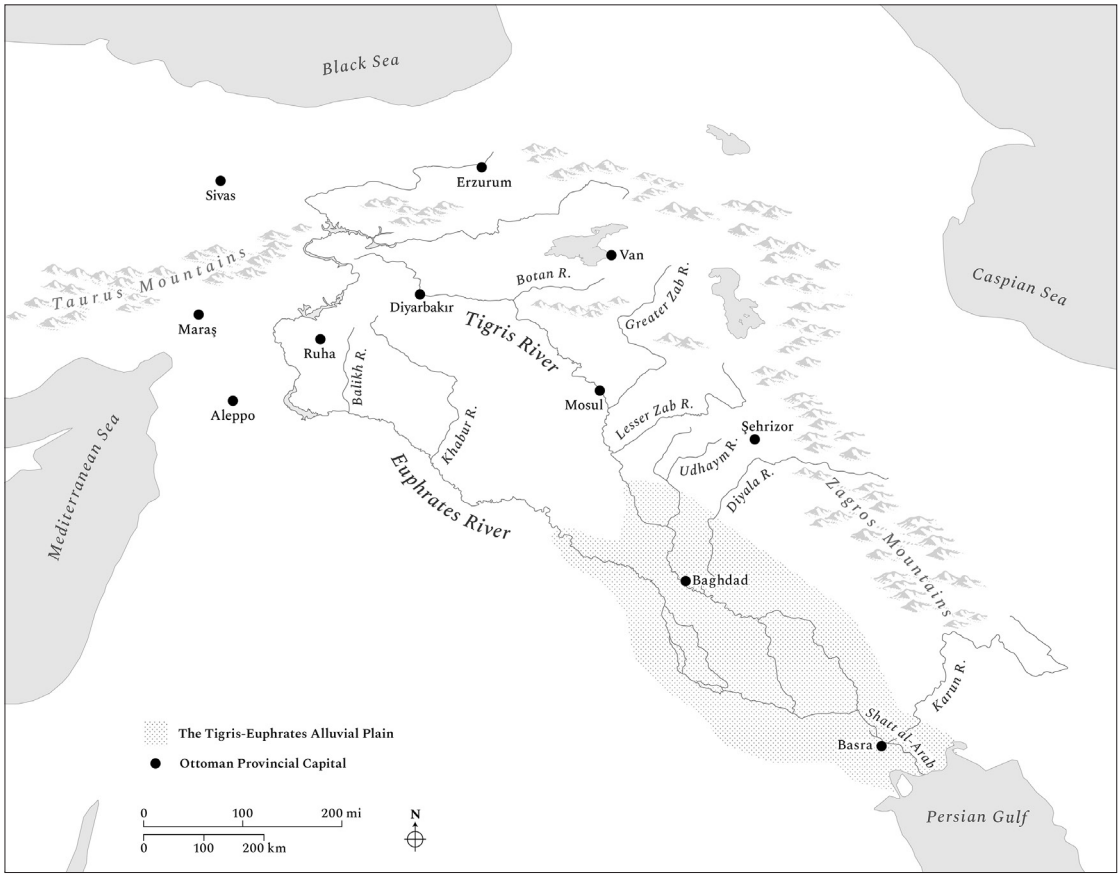



Fig. 1. The Tigris-Euphrates River system.

discussing three points. First, it will discuss why the Tigris and Euphrates were not significant for premodern Anatolia's agricultural economy. Then, it will discuss why the Tigris and Euphrates were not significant for premodern Anatolia's pastoral economy. Finally, it will discuss why the Tigris and Euphrates were not significant for premodern Anatolia's communication network.

Every history has its biases. This chapter is biased toward historical continuities or patterns to explain why the Tigris and Euphrates remained marginal to the survival and flourishing of Anatolian societies before the twentieth century. The chapter's focus on continuity does not imply the absence of change. Historians may find countless examples of change in Anatolian societies' relationship with the Tigris and Euphrates in the premodern era. Those changes, however, did not alter the salient fact that over the long term, crop farming, livestock management, and transportation could thrive in much of premodern Anatolia without the Tigris and Euphrates. Compare Anatolia's situation with Iraq, where the survival of urban, settled, and agricultural society hinged on the Tigris and Euphrates. In short, the chapter is biased toward continuities because they explain how premodern Anatolian societies could live and thrive over the long term independent of the Tigris and Euphrates. Countless changes happened in parallel to the continuities studied here, but those changes are beyond the scope of this inquiry.

Though most historians are interested in change, some patterns in human society did not fundamentally change for centuries and even millennia and deserve historical attention. It goes without saying that understanding continuity is a prerequisite to understanding change. Even in the age of artificial intelligence, continuity can be surprisingly powerful. As late as 2024, the German Bundestag (lower house of parliament of one of the world's most advanced economies) still relied on the fax machine for official communication.[5] Environmentally conscious historians, in particular, are attentive to the power and significance of continuity in history. In the words of Mississippi River historian Christopher Morris, "Just as a river flows at several speeds, faster at the top and center, slower at the sides and bottom, history moves at several paces at once."[6] In his *magnum opus The Mediterranean and the Mediterranean World*, Fernand Braudel identified three parallel "rhythms" in history. He named the fastest rhythm "the history of events," which he dismissed as a study of "surface disturbances, crests of foam that the tides of history carry on their strong backs."[7] Braudel warned that "we must learn to distrust this history with its still burning passions."[8] At the other end of the spectrum, Braudel identified the history slowest in pace, "whose passage is almost imperceptible, that of man in his relationship to the environment, a history in which all change is slow, a history of constant repetition, ever-recurring cycles." Braudel devoted Part I of his book, nearly half of the first volume, to this important, yet "almost timeless," history, without which—he believed—social history and the history of events could not be properly understood.[9] By focusing on the continuities in human-river interactions in the Tigris-Euphrates basin, this chapter is written in this Braudelian vein of history.

## Crop Cultivation

The Tigris and Euphrates derive their fame in popular consciousness, above all, from their role in supporting irrigation agriculture. Until the twentieth century, most irrigation activity along the Tigris and Euphrates clustered within the alluvial plain south of modern Iraq, the dotted region in **Fig. 1**. This is the flat region where the Tigris and Euphrates, instead of cutting deeply into the ground, begin to flow above the surrounding country, where they can easily flood and deposit most of their sediment load. Scholars call this micro-region of the river basin the "alluvial plain" because it is flat (a plain) and it is filled with riverine sediment deposits (an alluvium). Historically, the Tigris-Euphrates alluvial plain roughly corresponds to the ancient lands of Sumer and Akkad, the Ottoman provinces of Baghdad and Basra, and Arab Iraq (Irak-i Arab), as the region was referred to in Ottoman and Iranian literature until the late nineteenth century.[10] To avoid prolixity, this paper will simply refer to it as the alluvium or Iraq.

Far north of the alluvium, Anatolian farmers did not exploit the Tigris and Euphrates for irrigation purposes in a comprehensive and durable way, mainly for two reasons. The first is geographical. On the sandy lowlands of Iraq, the river channels flowed above the ground and were therefore easier to manipulate and divide into small irrigation canals. In

5 Esme Nicholson, "Fax Machines Permeate Germany's Business Culture. But Parliament is Ditching Them," *NPR*, May 31, 2024, https://www.npr.org/2024/05/31/1248426978/germany-fax-machines-parliament.

6 Christopher Morris, *The Big Muddy: An Environmental History of the Mississippi and Its Peoples from Hernando de Soto to Hurricane Katrina* (New York: Oxford University Press, 2012), 7.

7 Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, trans. Siân Reynolds (New York: Harper & Row, 1972), 1:21.

8 Braudel, *The Mediterranean*, 1:21.

9 Braudel, *The Mediterranean*, 1:20.

10 Zeinab Azarbadegan, "Imagined Geographies, Re-invented Histories: Ottoman Iraq as Part of Iran," *Journal of the Ottoman and Turkish Studies Association* 5, no. 1 (2018): 115–41.

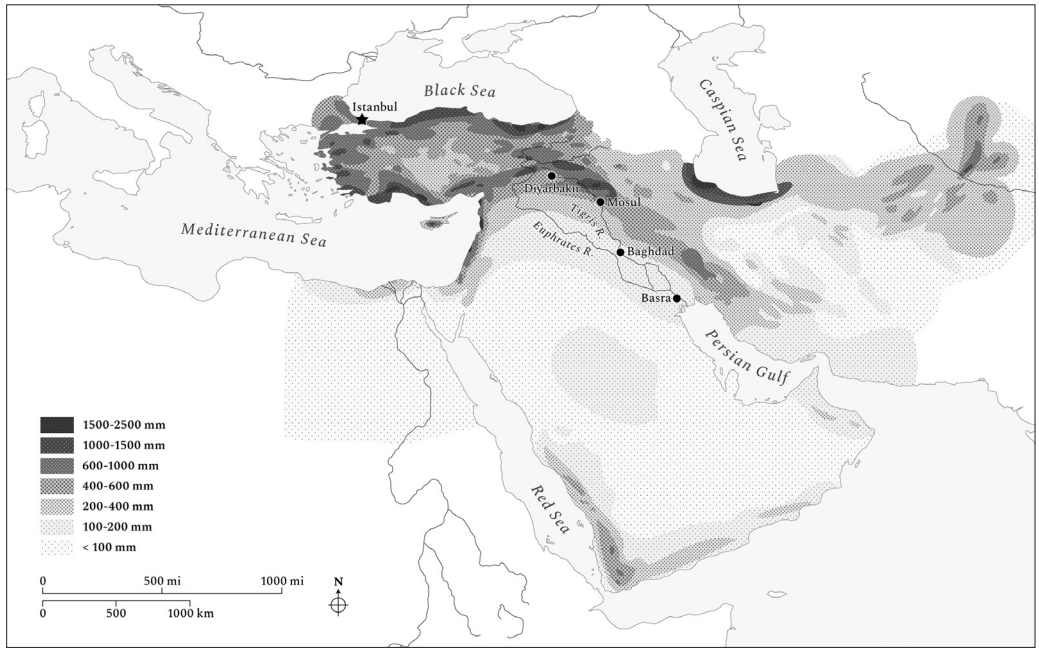



Fig. 2. Mean annual rainfall in the Middle East. After *Tübinger Atlas des Vorderen Orients* (Wiesbaden: L. Reichert, 1977–1993), A IV 4.

the rocky and mountainous geography of Anatolia, on the other hand, the rivers flowed deep into the ground and made the construction of cross-country canals very difficult. For much of history, Anatolian societies lacked the vanity and the heavy machinery to reengineer the Tigris and Euphrates for irrigation agriculture. Systematic plans to tap into the energy and irrigation potential of the Tigris and Euphrates in Anatolia did not materialize until the 1960s.[11]

Aside from geography, premodern Anatolian societies did not exploit the Tigris and Euphrates for irrigation because they had alternative sources of water to grow their crops. As Fig. 2 shows, virtually all of Anatolia receives more than 400 mm of rainfall per year, thanks to its high altitude, mountain chains (the Pontic and Taurus), and proximity to the Mediterranean and Black Seas. These geographical factors conspired to make Anatolia among the wettest regions of the Middle East. Most Anatolian farmers, as a result, survived and thrived economically with the aid of rainfall, independent of river water and irrigation. Distant from the Mediterranean and without mountains of its own, Iraq, on the other hand, receives less than 200 mm of rainfall per year, a wholly inadequate amount for crop cultivation. Without alternative sources of water to sustain their agricultural way of life, Iraqi farmers pioneered irrigation agriculture along the Tigris and Euphrates for most of history.[12]

11 Dale J. Stahl, "A Technopolitical Frontier: The Keban Dam Project and Southeastern Anatolia," in *Transforming Socio-Nature in Turkey: Landscapes, State and Environmental Movements*, eds. Onur İnal and Ethemcan Turnan (New York: Routledge, 2020), 31–51; Dale J. Stahl, "The Two Rivers: Water, Development and Politics in the Tigris-Euphrates Basin, 1920–1975" (PhD diss., Columbia University, 2014), 74–107; Arda Bilgen, "The Southeastern Anatolia Project (GAP) Revisited: The Evolution of GAP over Forty Years," *New Perspectives on Turkey* 58 (2018): 125–54.

12 Anderson, *The Middle East*, 48; Peter Beaumont, Gerald H. Blake, and J. Malcolm Wagstaff, *The Middle East: A Geographical Study*, 2nd ed. (New York: Halsted Press, 1988), 65.

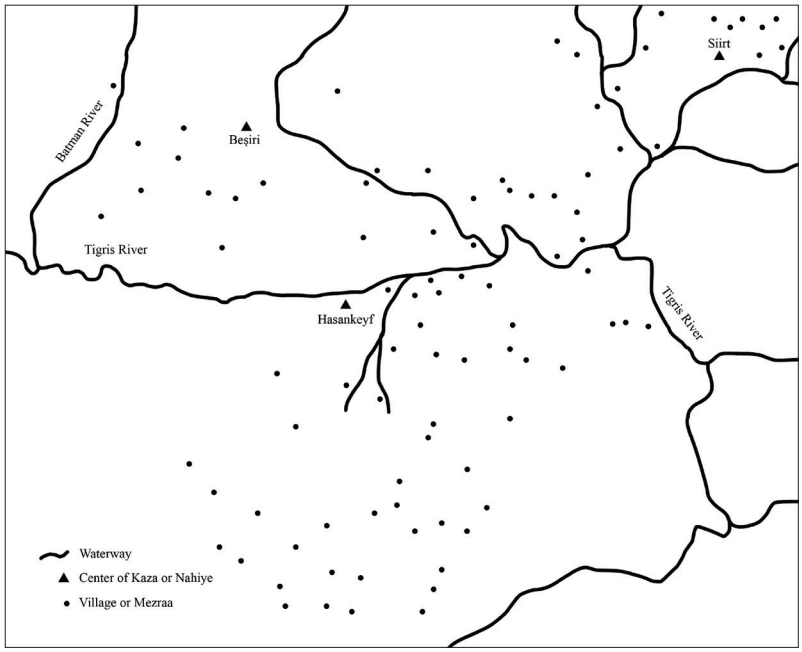



Fig. 3. Settlement distribution in the districts of Hasankeyf and Siirt, 1530. After *998 Numaralı Muhasebe-i Vilayet-i Diyar-i Bekr ve Arab ve Zü'l-Kadırıy-ye Defteri, 937/1530*, 2 vols. (Ankara: T.C. Başbakanlık Devlet Arşivleri Genel Müdürlüğü, 1998–1999).

Historical settlement patterns reflect the insignificance of the Tigris and Euphrates for Anatolian agriculture. The districts of Hasankeyf and Siirt along the upper Tigris have been well studied, and their settlements serve as a good case study. In Fig. 3, the settlements of Hasankeyf and Siirt during the 1530s appear randomly scattered without regard to the Tigris. The farmers of Hasankeyf and Siirt, after all, enjoyed ample rainfall and, for the most part, did not need to be anywhere close to the river to live a good and prosperous life. Had the Tigris been central to Anatolian agriculture, the settlements of Hasankeyf, Siirt, and other Anatolian towns would have concentrated around the river channels.

The situation is starkly different in Iraq. Since ancient times, settlements south of Mosul formed in linear arrangements following the contours of the Tigris and Euphrates channels. Unlike their neighbors in Anatolia, settlers in Iraq could not afford to spread out randomly. They had no choice but to congregate around the river channels.[13] This ancient pattern persisted into the Ottoman period. Fig. 4 provides a case study from the districts of Ana and Hit along the middle Euphrates during the 1530s. Here, settlements appear to hug the river channel, their only means to grow their crops.

In short, different settlement patterns developed in Anatolia and Iraq. In Anatolia, settlements randomly scattered due to the insignificance of the Tigris and Euphrates for agriculture. In Iraq, on the other hand, settlements formed in linear formation due to the centrality of the Tigris and Euphrates for agriculture. This sharp contrast between the two settlement patterns persists to this day, even though the introduction of the water pump and piped water distribution systems in the early twentieth cen-

13 Jaafar Jotheri and Mark B. Allen, "Recognition of Ancient Channels and Archaeological Sites in the Mesopotamian Floodplain Using Satellite Imagery and Digital Topography," in *New Agendas in Remote Sensing and Landscape Archaeology in the Near East: Studies in Honour of Tony J. Wilkinson*, eds. Dan Lawrence, Mark Altaweel, and Graham Philip (Oxford: Archaeopress, 2020), 283–305; Tony J. Wilkinson, *Archaeological Landscapes of the Near East* (Tucson: University of Arizona Press, 2003), 84–89; Carrie Hritz and Tony J. Wilkinson, "Using Shuttle Radar Topography to Map Ancient Water Channels in Mesopotamia," *Antiquity* 80 (2006): 415–24.

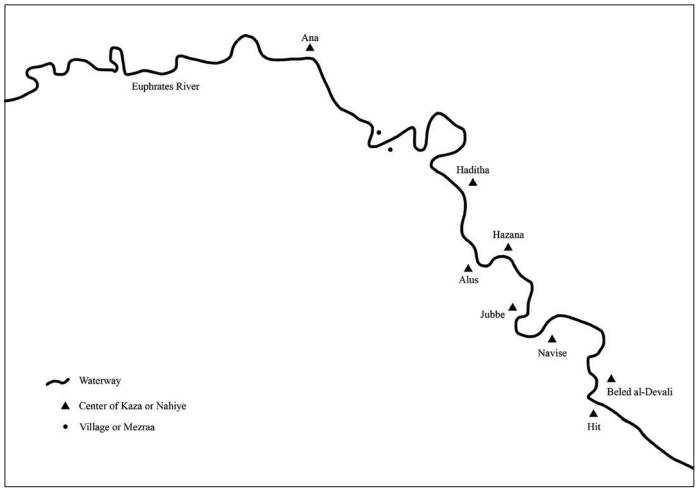



Fig. 4. Settlement distribution in the districts of Ana and Hit, 1530. After *998 Numaralı Muhasebe-i Vilayet-i Diyar-i Bekr ve Arab ve Zü'l-Kadırıyye Defteri, 937/1530*, 2 vols. (Ankara: T.C. Başbakanlık Devlet Arşivleri Genel Müdürlüğü, 1998–1999).

tury allowed settlements to disperse farther away from the river channels in Iraq.[14] The contrast becomes most visible when viewed from the night sky, in the dark. As NASA Earth Observatory images show, south of Mosul, settlement lights follow the contours of the Tigris and Euphrates. In Anatolia, meanwhile, lights scatter without regard to the river channels.[15]

To recapitulate, before the twentieth century, the Tigris and Euphrates were not significant factors in the Anatolian agricultural economy. Most Anatolian farmers could not build cross-country canals along the rivers due to the rocky and mountainous terrain of their homeland. Even if they could, why would they make all the investment in building an irrigation infrastructure, knowing that their land received sufficient rainfall to water their crops? Cheaper, rainfed agriculture is also more environmentally sustainable than irrigation. It does not typically cause salinization, which plagued the irrigation culture of Iraq.[16] The Tigris and Euphrates do not feature prominently in premodern Anatolian historiography partly because they played a minor role in the region's agricultural economy.

## Animal Husbandry

Even though popular culture associates the Tigris and Euphrates mostly with irrigation agriculture, the rivers were no less important for livestock herding. In fact, a history of the pastoral economy in the Middle East cannot be written without reference to both rivers.

The Tigris and Euphrates solved a dilemma every pastoralist in the Middle East had to grapple with, represented in Fig. 5. On one hand, the need of livestock for pastures is constant around the year. Livestock do not take a break from grazing. On the other hand, the availability of pastures in the Middle East is seasonal. Pastures are most abundant during the win-

14 Stahl, "The Two Rivers," 65–68.

15 "Night Lights Change in the Middle East," NASA Earth Observatory, accessed February 18, 2023, https://earthobservatory.nasa.gov/images/90100/night-lights-change-in-the-middle-east.

16 Thorkild Jacobsen and Robert M. Adams, "Salt and Silt in Ancient Mesopotamian Agriculture," *Science* 128, no. 3334 (1958): 1251–58; Mark Altaweel, "Simulating the Effects of Salinization on Irrigation Agriculture in Southern Mesopotamia," in *Models of Mesopotamian Landscapes: How Small-Scale Processes Contributed to the Growth of Early Civilizations,* eds. Tony J. Wilkinson, McGuire Gibson, and Magnus Widell (Oxford: Archaeopress, 2013), 219–38; Michael P. Charles, "Irrigation in Lowland Mesopotamia," *Bulletin on Sumerian Agriculture* 4 (1988): 1–39; Piet Buringh, *Soils and Soil Conditions in Iraq* (Baghdad: Ministry of Agriculture, 1960), 83–114. For a useful global review of salinization, see William D. Williams, "Salinization of Rivers and Streams: An Important Environmental Hazard," *Ambio* 16, no. 4 (1987): 180–85.

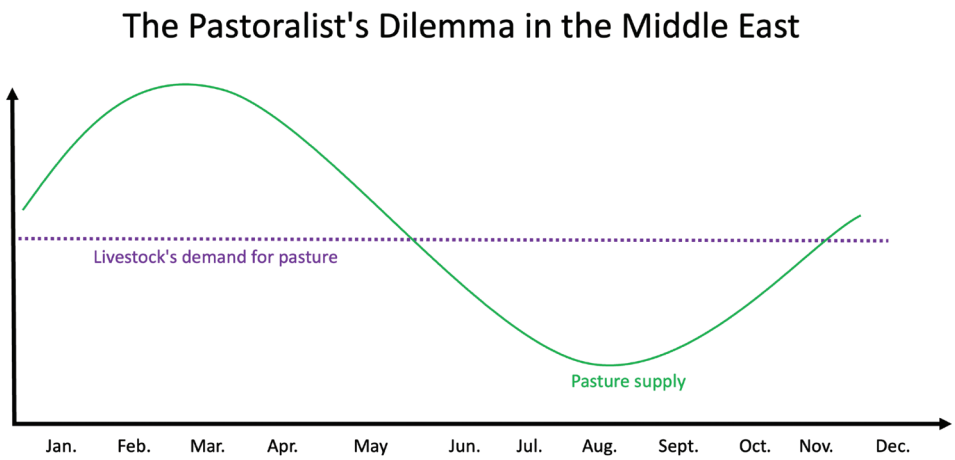



Fig. 5. A schematic representation of the pastoralist's dilemma in the Middle East.

ter and the spring seasons, when virtually the entire year's rainfall in the Middle East occurs; but pastures become scarce in the summer and early fall, due to extreme heat and the lack of rainfall, both of which burn and kill most pastures. The bulk of Anatolia south of Ankara and Lake Van, as well as Iraq, Syria, and Iran, receives virtually no rain between June and September.[17] Because of this dilemma (the livestock's constant need for pastures and the seasonality of pastures), most pastoralists in the Middle East struggled to find a source of pastures in the summer.

For millennia, the Tigris and Euphrates filled part of this regional gap and became a major source of summer pastures. As Fig. 6 shows, the Tigris and Euphrates sink low in the summer and early fall. As the river waters retreat, they leave behind ample pastures for pastoralists around the region to graze their livestock when pastures across the Middle East are in acute shortage. Put differently, the Tigris and Euphrates' flood cycle is well synchronized with the needs of livestock in the Middle East; it declines at the right time and makes the riverine vegetation accessible to livestock when they most need it.[18] Iraq, the only region in the river basin regularly flooded by the Tigris and Euphrates, thus emerged as a major summer pastureland for pastoralists in the Middle East.[19] As Fig. 7 shows, pastoralists in the river basin typically spent their winter and spring months in nearby deserts like those of Syria and Arabia, when they were carpeted in grass

17 Moshe Brawer, ed., *Atlas of the Middle East* (New York: MacMillan, 1988), 14.

18 Not all rivers are as hospitable to livestock. The Nile, for instance, floods in the summer, depriving pastoralists of summer pastures.

19 Robert McC. Adams, *Heartland of Cities: Surveys of Ancient Settlement and Land Use on the Central Floodplain of the Euphrates* (Chicago: University of Chicago Press, 1981), 11; Robert McC. Adams, "Shepherds at Umma in the Third Dynasty of Ur: Interlocutors with a World beyond the Scribal Field of Ordered Vision," *Journal of the Economic and Social History of the Orient* 49 (2006): 133–69; Marek Stępień, *Animal Husbandry in the Ancient Near East: A Prosopographic Study of Third-Millennium Umma* (Bethesda, MD: CDL Press, 1996); Anne Porter, *Mobile Pastoralism and the Formation of Near Eastern Civilizations: Weaving Together Society* (New York: Cambridge University Press, 2012); Tate Paulette, "Pastoral Systems and Economies of Mobility," in *Models of Mesopotamian Landscapes: How Small-Scale Processes Contributed to the Growth of Early Civilizations*, eds. Tony J. Wilkinson, McGuire Gibson, and Magnus Widell (Oxford: Archaeopress, 2013), 130–39; Faisal H. Husain, *Rivers of the Sultan: The Tigris and Euphrates in the Ottoman Empire* (New York: Oxford University Press, 2021), chap. 4.

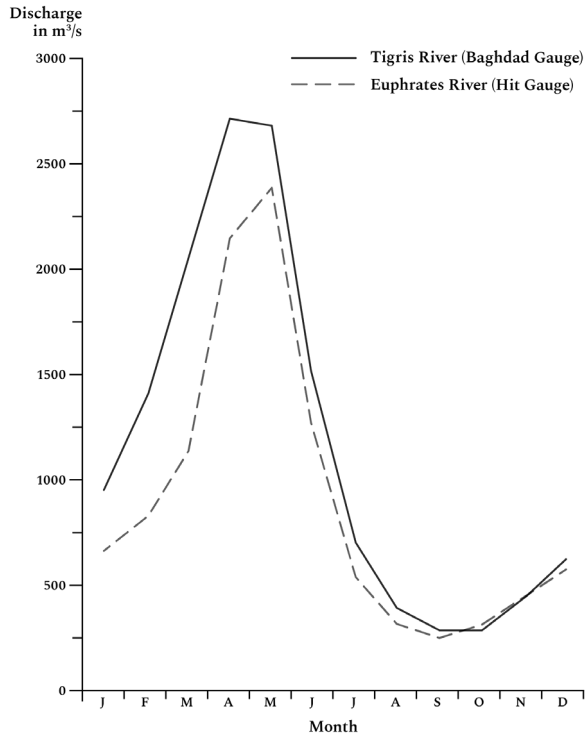



Fig. 6. Mean monthly discharge of the Tigris and Euphrates Rivers. After *Tübinger Atlas des Vorderen Orients* (Wiesbaden: L. Reichert, 1977–1993), A V 4.

following the winter rains. In the summer and early fall, pastoralists would converge back to the Tigris and Euphrates to graze their animals on the vegetation left behind by their flood.[20] Some geographers call this river-centered pastoral system "meadow transhumance."[21]

Central to the pastoral economy of Iraq, the Tigris and Euphrates were nonetheless marginal to the pastoral economy of Anatolia. For most Anatolian pastoral groups, the rhythm of pastoral movement was not defined by the Tigris-Euphrates flood cycle. Rather, it was defined by the Taurus and Pontic Mountains that surround Anatolia. In winter and spring, most Anatolian pastoralists grazed their livestock in the foothills of their mountains, which were green thanks to the winter and spring rainfall. And in the summer and the early fall, they did not have to go down to the river valley. Instead, they moved up to the high summits of their mountains, when snowpack in the mountains melts away and leaves behind fresh pastures for their flocks to graze on.[22] In other words, unlike the pastoralists of Iraq, most Ana-

20 George B. Cressey, *Crossroads: Land and Life in Southwest Asia* (Chicago: J. B. Lippincott, 1960), 16–17, 38.

21 Lajos Rácz, *The Steppe to Europe: An Environmental History of Hungary in the Traditional Age*, trans. Alan Campbell (Knapwell, UK: White Horse Press, 2013), 47–49.

22 For a case study of this pastoral system in Mardin, see Nejat Göyünç and Wolf-Dieter Hütteroth, *Land an der Grenze: Osmanische Verwaltung im heutigen türkisch-syrisch-irakischen Grenzgebiet im 16. Jahrhundert* (Istanbul: Eren, 1997), 42. Likewise, Mongol armies, when they arrived in the Middle East, utilized this pastoral system. They summered in the mountains of Ala Taq, north of Lake Van and southwest of Sultaniyya, and wintered in the low-lying regions of Arran, Mughan, the Jaghuta River, and south of Lake Urmiya. See Beatrice Forbes Manz, *Nomads in the Middle East* (Cambridge: Cambridge University Press, 2021), 119. The summer pasturelands for some Anatolian herders were fertile lowlands, such as western Amid (Diyarbakır) and Sarısu, about 10 miles north of Lake Van. See Tapu ve Kadastro Genel Müdürlüğü, Kuyud-ı Kadime Arşivi, Tapu Tahrir Defterleri (hereafter TKG.KK, TT) 58, p. 134a; TKG.KK, TT 59, p. 95a.

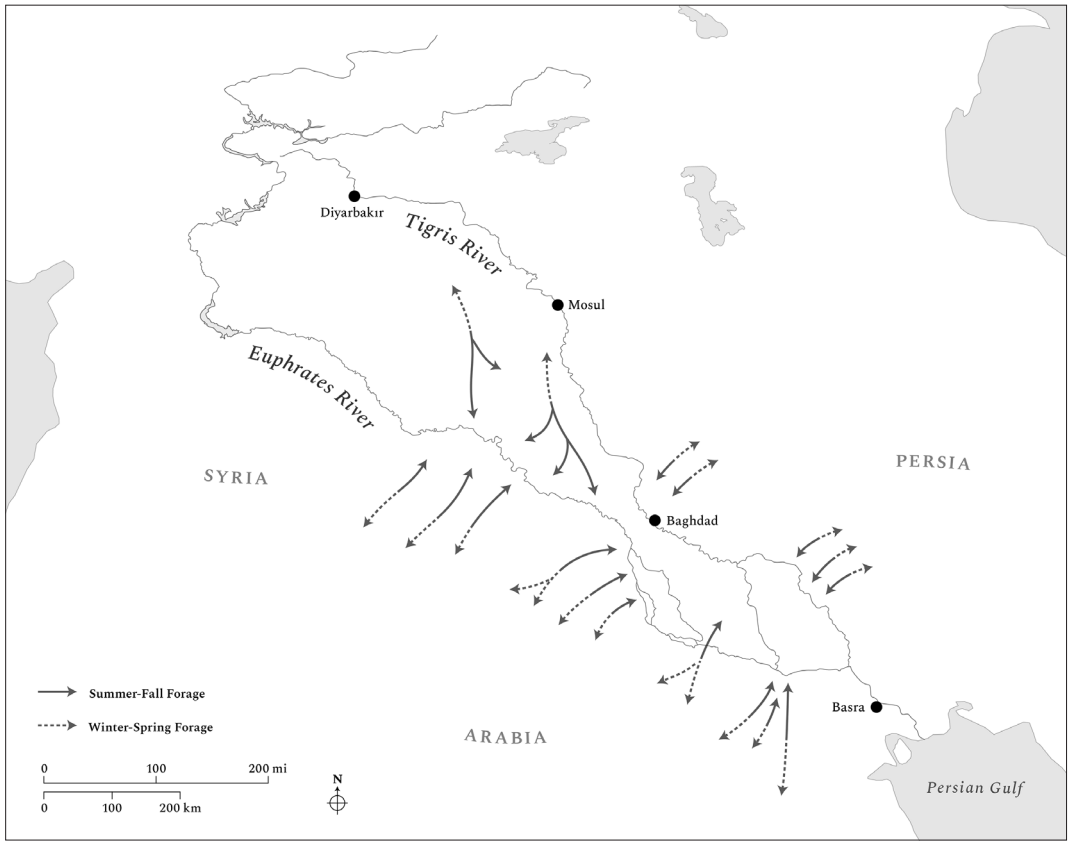



Fig. 7. The movement of shepherds in the lower Tigris-Euphrates basin. After Graham Williamson, "Iraqi Livestock," *Empire Journal of Experimental Agriculture* 17 (1949): 51.

tolian pastoralists followed the traditional system of transhumance that other Iranian, Kurdish, and Mediterranean pastoralists have followed for millennia. They wintered in the valleys, and they summered in the mountains.[23]

There were, of course, exceptions. Some Anatolian pastoral groups did graze their flocks along the Tigris and Euphrates in different times of the year. In the sixteenth century, at least some members of the Boz Ulus confederation pastured their animals in the summer along the Murad River, a major source of the Euphrates.[24] About 45,000 households of the Qara Ulus confederation pastured about 120,000 sheep in Baghdad, very likely along its waterways.[25] The el-Vahi tribe summered in Bingöl (north of Diyarbakır) and wintered "along the shores," an Ottoman source wrote, a reference that could mean the shores of any river or lake, including the shores of the Tigris and Euphrates.[26] But these exceptions do not undermine the overwhelming general pattern, in which most Anatolian groups pastured their livestock in the summer in highlands rather than in the

23 Manz, *Nomads in the Middle East*, 6–7; *Tübinger Atlas des Vorderen Orients* (Wiesbaden: L. Reichert, 1977–1993), A X 11.

24 TKG.KK, TT 60, p. 2a.

25 TKG.KK, TT 228, fol. 45r.

26 TKG.KK, TT 58, 140a.

river plain. They participated in traditional transhumance, not in meadow transhumance.

To summarize, the Tigris and Euphrates occupy a marginal place in premodern Anatolian historiography in part because they were not central to Anatolia's animal herding economy. Most Anatolian pastoralists did not need the summer pastures generated by the Tigris and Euphrates every year because they had an alternative source of summer water and pasture—their mountains.

## Communication

In addition to supporting crop cultivation and animal husbandry, the Tigris and Euphrates played a third critical role in human history by supporting communication. The longest river system in Asia west of the Indus (the Tigris being about 1,180 miles and the Euphrates 1,700 miles long), it formed a natural communication network that facilitated the movement of peoples and goods between the Taurus Mountains and the Persian Gulf. For the Ottoman state between the sixteenth and eighteenth centuries, transportation was the most important service the rivers performed, far more critical to its priorities than the rivers' agricultural services.

Two factors made river transportation more crucial to the Ottoman state than other considerations. First, the Tigris-Euphrates system flowed along the Ottoman frontier with Iran, its main rival in the east. The river basin was thus a militarized zone, the site of frequent military deployments and major garrisons. Baghdad City symbolized the militarization of the river basin during the Ottoman period. The janissary and artillery corps alone stationed in Baghdad ranged between 1,000 and 10,000 men, depending on the rhythm of military activity in the east.[27] This is not to mention local and tribal forces recruited by the Ottoman provincial government, which were often far greater in number.[28] To support its military operations and garrisons in the east like Baghdad, more than 1,000 miles away from the imperial center, the Ottoman state needed the Tigris and Euphrates to regularly transport provisions, heavy military equipment, and men. Second, the Ottoman state needed the transportation services of the Tigris and Euphrates to rebalance natural resources along the river basin. Iraq experienced an acute shortage of grain, timber, and metals, without which the Ottoman state could not maintain the heavy military presence it needed to ward off threats emanating from Iran and elsewhere. Grain was essential to feed thousands of Ottoman soldiers, metal to manufacture weaponry, and timber to build a navy. Between the sixteenth and eighteenth centuries, the Ottoman state relied on the Tigris and Euphrates to solve this environmental problem through regular shipments of grain, timber, and metal from upstream areas of surplus in Anatolia to downstream areas of need in Iraq.[29]

Anatolian settlements played an active role in this Ottoman system of river transportation. Most important among them was Birecik on the upper Euphrates, which became the base of the Ottoman squadron on the Tigris and Euphrates, referred to in Ottoman administrative parlance as the Shatt al-Arab or Shatt River Fleet (*Donanma-i Nehr-i Şatt*). From the middle of the sixteenth century, the Ottoman shipyard in Birecik built hundreds of ships and introduced a modified form of the latest Mediterranean watercraft at the time—the galley, galliot, frigate, and galleon, to name only the most important vessel types. But much of the skilled labor force in the shipyard (e.g., carpenters, caulkers, and shipwrights) was not local to southeastern Anatolia; it mostly originated instead from the shores of the Mediterranean and Black Seas.[30]

27 Faisal H. Husain, "The Tigris-Euphrates Basin under Early Modern Ottoman Rule, c. 1534–1830" (PhD diss., Georgetown University, 2018), 64–65.

28 Our knowledge of local units (*yerlü neferat*) is patchy. We know that in 1733, for instance, they numbered 4,051 men. Osmanlı Arşivi, Maliyeden Müdevver Defterler 9934, 86 (15 Şevval 1146/21 March 1734).

29 Husain, *Rivers of the Sultan*, 33–34, 55–58, 152–57.

30 Husain, *Rivers of the Sultan*, 43–55.

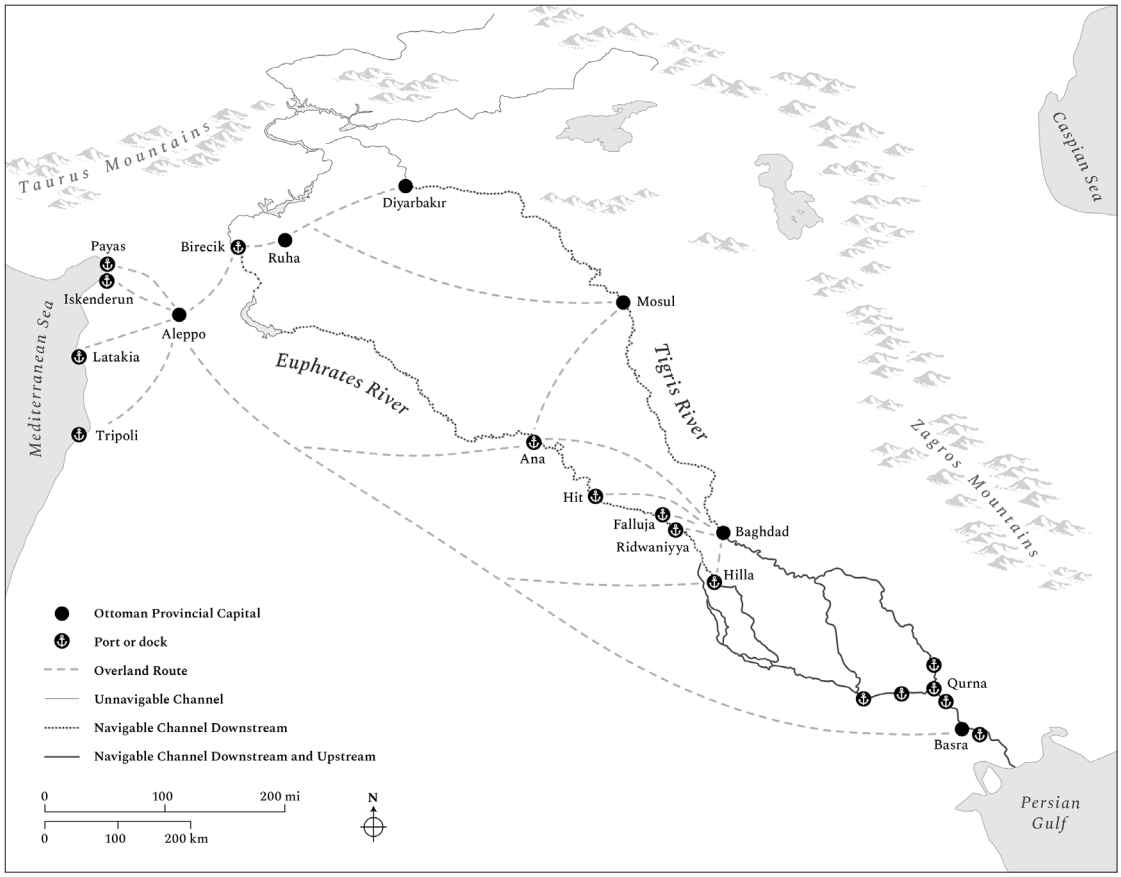



Fig. 8. Communication routes in the Tigris-Euphrates basin.

Aside from Birecik on the upper Euphrates, the Anatolian cities of Amid (modern Diyarbakır) and Hasankeyf became major centers for the construction of a more traditional watercraft called *kelek*, an ancient raft made of timber and brushwood bundles laid upon inflated goat and sheep skin. Particularly in the seventeenth and eighteenth centuries, the Ottoman government relied on the *kelek* industry of Diyarbakır and Hasankeyf to supply its army in the east with grain and weapons while fighting in the east. To support the *kelek* makers (*kelekçiyan*) serving the needs of the Ottoman army, the Ottoman government augmented their supplies of raw material, especially watertight animal skins, acquired from eastern Anatolia and Syria. Unlike in the Birecik shipyard, where most shipwrights came from outside, the *kelek* makers of Amid and Hasankeyf were local. By the seventeenth century at the latest, they set up their own guilds (*esnaf*) and appointed their own leaders who could represent and defend their interests in state courts.[31]

Even though Anatolian settlements actively participated in the Ottoman system of river transportation, the peculiar hydrology and geography of Anatolia constrained the utility of river transportation to the region. Until the introduction of steam navigation in the nineteenth century, the Tigris and Euphrates were

31 Husain, *Rivers of the Sultan*, 28–31.

one-way roads. They were primarily navigable only downstream, from Anatolia in the north to Iraq in the south. Upstream navigation was very difficult and possible only within the flatlands of Iraq, due to river rapids and northerly winds that ships encountered as they sailed into the deep north. For these environmental reasons, the Tigris and Euphrates were historically of limited utility to the Anatolian economy. By water, locals of Anatolia could travel and export goods to the south, but they could not travel and import anything back to the north by boats. The trip back to Anatolia had to be done by land. In other words, for the most part, in the transportation network of the Tigris and Euphrates, Anatolia could only be a benefactor, not a beneficiary; it could only give, not take. As for transportation between east and west, the Tigris and Euphrates were not just useless, but they also formed obstacles. Travelers could only cross the waterways through a few settlements with a functioning bridge or by hiring or building boats before continuing the overland journey (Fig. 8).

The limited significance of river transportation in premodern Anatolian history explains why pack animals had always been the primary mode of transportation in the region. With pack animals, the people of Anatolia could trade and travel in both directions not only with the south but also with their neighbors in all directions, who could not be reached by boat. Ottoman historians have documented the role of the camel in Anatolian trade at length.[32] For postal purposes, the horse was the animal of choice.[33] In mountainous regions, the donkey proved to be the steadiest, hardiest, and most sure-footed transportation vehicle.[34]

Put briefly, the Tigris and Euphrates formed a vital link between Anatolia and Iraq, but they imposed many limitations on the movement of people and goods from and to Anatolia. In Anatolia's geography, upstream and mountainous, pack animals overshadowed watercraft as the primary mode of transportation.

## Conclusion

This chapter argued that before the twentieth century, the Tigris and Euphrates played a relatively minor role in Anatolian history, at least compared to the central role they played in the history of Iraq. Rich and diverse aquatic worlds (made possible by high elevation and mountain chains) minimized Anatolia's dependence on the Tigris and Euphrates. They endowed Anatolian farmers with sufficient rainfall to grow their crops without need for irrigation water from the Tigris and Euphrates; they endowed Anatolian herders with sufficient summer pastures to graze their livestock without need for the riverine vegetation of the Tigris and Euphrates; and they limited the utility of the Tigris and Euphrates for travel and trade. The Tigris and Euphrates, as a result, never became central to Anatolian agriculture, mobile pastoralism, and communication. Even though the physical geographies of Anatolia and the Tigris-Euphrates system overlapped considerably, the overlap in their premodern histories was minor.

32 See, for example, Onur İnal, "One-Humped History: The Camel as Historical Actor in the Late Ottoman Empire," *International Journal of Middle East Studies* 53 (2021): 57–72; Suraiya Faroqhi, "Camels, Wagons, and the Ottoman State in the Sixteenth and Seventeenth Centuries," *International Journal of Middle East Studies* 14 (1982): 523–39; Halil İnalcık, "'Arab' Camel Drivers in Western Anatolia in the Fifteenth Century," *Revue d'Histoire Maghrebine* 10, no. 31–32 (1983): 256–70.

33 Koh Choon Hwee, "The Mystery of the Missing Horses: How to Uncover an Ottoman Shadow Economy," *Comparative Studies in Society and History* 64, no. 3 (2022): 576–610.

34 Peter Mitchell, *The Donkey in Human History: An Archaeological Perspective* (New York: Oxford University Press, 2018), 81–86.