

Hybridizing Camels in Sixteenth-Century Selanik: Mobility, Natural Knowledge, and Ottoman Debates about the Breeding of the Rumis

by Aleksandar Shopov

ABSTRACT

With their potential to move goods across the spaces of empire, camels were closely associated with Ottoman mobility. In the 1570s, the Ottoman Imperial Council ordered two groups of two-humped Bactrian camels to be sent from Crimea and southern Anatolia to the port city of Selanik to be hybridized with one-humped camels. This attempt to intervene in the bodies of animals can be seen in the context of an increasingly technological understanding of animals, one that was integral to the formation of the Ottoman state, and a new ability to mobilize environments, finances, and knowledge. In addition, this article connects the case of the camel-breeding program in Selanik to the rise of communities of rural experts and to the Ottoman understanding of the hybrid origins of the “Rumis,” the Ottoman elites.

INTRODUCTION

In 2006 an archaeological team discovered the skeleton of an Ottoman camel in a cellar in Tulln, Austria. As the BBC later reported, DNA analysis showed that the camel was a hybrid, the offspring of “a one-humped, dromedary mother and a two-humped, Bactrian father.” According to the report, the camel had lived at the end of the seventeenth century, when the Ottoman army had attempted to conquer Vienna; it had been “bred for war,” an assumption that held echoes of longstanding Orientalist anxieties about Islam and “Turks”; and had roved far from what the author of the article assumed was its “traditional heartland in the Middle East and Africa.”¹

Department of History, Binghamton University, PO Box 6000, Binghamton, NY 13902-6000; ashopov@binghamton.edu.

I thank Marisa Mandabach for her help editing this article and Cemal Kafadar, Himmet Taşkömür, Lisa Onaga, Gabriel Rosenberg, Tamar Novick, and Marianna Szczygielska for their comments on earlier versions, as well as the two anonymous reviewers for their invaluable feedback.

¹ Jonathan Webb, “Intact Ottoman ‘War Camel’ Found in Austrian Cellar,” BBC News, April 2, 2015, <https://www.bbc.com/news/science-environment-32145248>.

Osiris, volume 40, 2025. © 2025 History of Science Society. All rights reserved. Published by The University of Chicago Press for the History of Science Society. <https://doi.org/10.1086/735523>.

Contrary to scholarly and popular assumptions that Ottoman hybrid camels were instruments of war, the early modern Ottoman state selectively bred camels throughout the Balkans and Anatolia not just to aid in conquest but also to enhance their capacity to transport goods and people across the sprawling empire. While attention has been paid to the hybridization of camels across medieval Central Asia and Iran, where camels were in demand for their ability to carry heavy loads along the Silk Road,² there is a widespread belief that, following the establishment of global oceanic routes in the early modern period, the Ottoman Empire became marginal to the global production and flow of goods and trade. This article discusses the mobility of camels in relation to the Ottoman hybrid *baḥātī* camel-breeding program initiated in the mid-sixteenth century. Organized by the expanding Ottoman imperial bureaucracy, the breeding program was carried out in the countryside around Selanik (Thessaloniki). Located near the Vardar Delta, the breeding site featured rich pastureland.³ To create the *baḥātī* camels, Ottoman bureaucrats organized the transport of state-owned two-humped camels from Crimea and southern Anatolia over vast distances to be bred with the local one-humped camels. Half of the offspring of the pairings were then returned to the state. The hybrid offspring may have been better suited than their parents were to the diet available in Southeastern and Central Europe. The region around Selanik was a major salt-producing area and furnished the large amount of salt required by two-humped camels.

Ottoman historiography has already paid attention to the mobility of people. Reşat Kasaba coined the term “moveable empire” to discuss the importance of mobile groups of people who shaped Ottoman institutions.⁴ In her recent study on camelids in colonial Spanish America, Mackenzie Cooley argues that “the nature of the New World did not simply mix with that of the Old according to preordained ecological niches” but was “filtered by human choice and political whim.”⁵ Similarly, the Ottoman camel-breeding program near Selanik exemplifies how, in the sixteenth century, nature underwent a reorganization amid the novel political and economic developments of imperial formation. By following the movements of Takanawa draft oxen in early modern Japan, Youjia Li in this volume brings to light the production of bovine knowledge and the emergence of epistemic categories of cattle before the intrusion of Western imperialism.⁶ Similarly, by following the movements of camels, this article points to the involvement of different social groups in the production of knowledge about crossbreeding camels and to the application of this knowledge to debates on human diversity.⁷

² Richard W. Bulliet, *The Camel and the Wheel* (Cambridge, MA: Harvard Univ. Press, 1975); Bulliet, *Cotton, Climate, and Camels in Early Islamic Iran: A Moment in World History* (New York: Columbia Univ. Press, 2009).

³ On swamps used for breeding camels in Iraq and Arabia, see Bulliet, *Camel and the Wheel*, 167; D. T. Potts, “Camel Hybridization and the Role of *Camelus bactrianus* in the Ancient Near East,” *Journal of the Economic and Social History of the Orient* 47, no. 2 (2004): 160.

⁴ Reşat Kasaba, *Moveable Empire: Ottoman Nomads, Migrants, and Refugees* (Seattle: Univ. of Washington Press, 2009).

⁵ Mackenzie Cooley, *The Perfection of Nature: Animals, Breeding, and Race in the Renaissance* (Chicago: Univ. of Chicago Press, 2022), 154.

⁶ Youjia Li, “Oxen in the City and Beyond: Moving Bovine Bodies and Knowledge Production in the Early Modern Period, 1653–1868,” this volume.

⁷ Recently Camille Schneider has reconsidered the relationship between learned discourse and practitioners of animal breeding in the European Middle Ages; see Schneider, “Changing Natures: On Theory and Practice of Breeding in the European Middle Ages,” *Histories* 3, no. 3 (2023): 231–44.

In the same period, the Mughal emperor Jalāl al-Dīn Muḥammad Akbar (r. 1556–1605) organized programs to engineer “superior” camels by mixing two-humped with one-humped breeds.⁸ An illustration found in a manuscript copy of the Persian classic *Haft Awrang* (Seven thrones), by Nūr al-Dīn ‘Abd al-Raḥmān Jāmī (1414–1492), suggests that similar hybrid breeding programs were also carried out in the Safavid Empire (fig. 1). Indeed, both Safavid and Ottoman merchants conducted long-distance trade with camels, even during the wars between these two empires at the end of the sixteenth century.⁹ In its careful depiction of the physical differences between the hybrid offspring and its parents, the image exemplifies the interest of early modern Afro-Eurasian societies in observing, controlling, and benefiting from camel hybridizations.¹⁰

The camel-breeding program near Selanik can be viewed in a more global context; the bodies of animals and the knowledge and techniques that were used to “improve” or mobilize them played a role in the development of early modern Asian empires.¹¹ In the Ottoman case, animals were becoming more mobile, and, as we will see, this mobility, facilitated by provincial treasuries and other administrative innovations, was a central concern of the Ottoman state, which increasingly viewed animals, as well as plants, as mobile products of human ingenuity that could be both moved and manipulated by technological processes under the control of the expanding central government.¹²

Camels’ reputation as hardy beasts of transport, or “ships of the desert,” can obscure their entanglements with the environments through which they moved and the societies who moved, and were moved by, them. In the Ottoman case, the mobility of camels depended on a new imperial infrastructure for their transport, breeding, and care, including dedicated stables, caravanserais, and grazing land. Like the peasants whom Gabriela Soto Laveaga finds central to the making of scientific knowledge and technology in twentieth-century Mexican science, Ottoman peasant communities, motivated by tax exemptions, also produced expert knowledge about camel breeding as well as the chemical processes involved in the production of sulfur and tar, ingredients in a balm that protected the camels’ skin.¹³ Indeed, the project to breed baḥāfī camels

⁸ Nazer Aziz Anjum, “Camel as Transport Animal in Mughal India,” *Proceedings of the Indian History Congress* 67 (2006–2007): 244–50. Camels were among the earliest examples in Mughal miniature painting of “composite animals” (i.e., representations of animals made up of human figures). See Robert J. Del Bonta, “Reinventing Nature: Mughal Composite Animal Painting,” in *Flora and Fauna in Mughal Art*, ed. Som Prakash Verma (Mumbai: Marg Publications, 1999), 69–82.

⁹ Andräs Riedlmayer, “Ottoman-Safavid Relations and the Anatolian Trade Routes: 1603–1618,” *Turkish Studies Association Bulletin* 5, no. 1 (1981): 7–10. On the global reach of Ottoman merchants in the sixteenth century, see Cemal Kafadar, “A Death in Venice (1575): Anatolian Muslim Merchants Trading in the Serenissima,” *Journal of Turkish Studies* 10 (1986): 191–219.

¹⁰ On the physical characteristics of the hybrid camel, see Bulliet, *Cotton, Climate, and Camels*; Canan Çakırlar and Rémi Berthon, “Caravans, Camel Wrestling and Cowrie Shells: Towards a Social Zooarchaeology of Camel Hybridization in Anatolia and Adjacent Regions,” *Anthropozoologica* 49, no. 2 (2014): 237–52; Potts, “Camel Hybridization”; Maurizio Dioli, “Dromedary (*Camelus dromedarius*) and Bactrian Camel (*Camelus bactrianus*) Crossbreeding Husbandry Practices in Turkey and Kazakhstan: An In-Depth Review,” *Pastoralism* 10, art. no. 6 (2020), <https://doi.org/10.1186/s13570-020-0159-3>.

¹¹ For instance, several different kinds of camels were recorded in the Manchu-Han dictionary of the Qing dynasty (*Yuzhi wuti Qingwen jian* 御製五體清文鑑), possibly indicating an official breeding program. I thank Fa-ti Fan for pointing this out.

¹² On a shift in the formation of administrative techniques, procedure, training, and recruiting that served the expanding Ottoman central government in the 1530s, see Abdurrahman Atçıl, *Scholars and Sultans in the Early Modern Ottoman Empire* (Cambridge: Cambridge Univ. Press, 2017), 124–28.

¹³ Gabriela Soto Laveaga, *Jungle Laboratories: Mexican Peasants, National Projects, and the Making of the Pill* (Durham, NC: Duke Univ. Press, 2009).

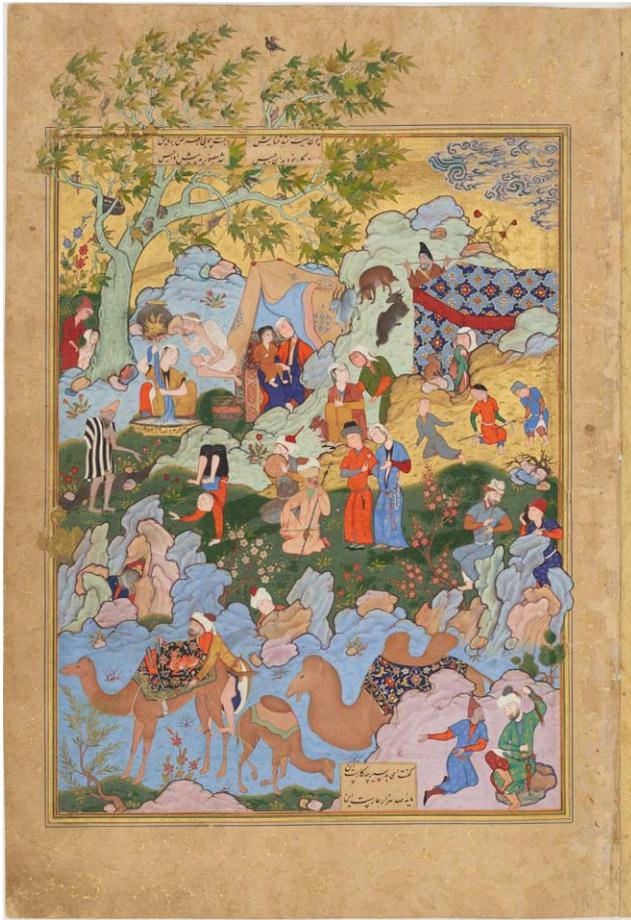


Figure 1. Miniature in *Nūr al-Dīn ‘Abd al-Raḥmān Jāmī, Haft Awrang (Seven thrones)*, mid-sixteenth century. National Museum of Asian Art, Smithsonian Institution, Freer Collection, Purchase—Charles Lang Freer Endowment, F1946.12.30.

arose at a time when natural histories of camels were being redefined. Sixteenth-century Ottoman scholars and bureaucrats questioned older authorities of the natural world and increasingly took into account the expertise of communities of practitioners, including countryfolk and nomads, confirming Sonja Brentjes’s call to think about Islamic natural sciences in relationship to concrete practices.¹⁴

The breeding of hybrid camels can also be viewed in relationship to debates in Ottoman society about human diversity and the origins of the Rumis. *Rumis*, which can be translated as “people of the former Roman world,” was a term used by the early modern Ottoman elite to position itself as the inheritor of classical antiquity and to lay claim to universal imperial rule. In the sixteenth century, the creation of the Rumis was ascribed to the breeding of the Turkmen and Tatars who had arrived with the

¹⁴ Sonja Brentjes, “Strengthening Regional and Local Histories,” in Nahyan Fancy et al., “Current Debates and Emerging Trends in the History of Science in Premodern Islamicate Societies,” *History of Science* 61, no. 2 (2023): 137–38, a roundtable organized by Fancy and Justin Stearns.

Ottoman conquests of Rum (the Balkans and western Anatolia), a region that included Selanik, with the Christians who already lived there. Ottoman camel breeding was informed by such ideas, and by an emerging discourse on heredity spurred by the growing mobility of people, plants, and animals outside their natural and historical environments.¹⁵ This included observations about the animals' offspring in these new settings.¹⁶

CAMELS IN THE EARLY MODERN OTTOMAN STATE

The hybrid camels bred near Selanik, known for their tolerance of cold climates and rough terrains, would have helped the Ottoman military to traverse the mountainous terrains of the Balkan Peninsula and Central Europe even in winter.¹⁷ Ottoman nomads used camels to transport salt within western Anatolia, and merchants used them in long-distance caravans between Iran and Anatolia and across the Ottoman Balkans to Hungary and the Adriatic.¹⁸ In the second half of the fifteenth century, the Ottoman state began keeping records of the supply of camels in the imperial stables.¹⁹ By the mid-seventeenth century, the palace administration in Istanbul had six thousand camels and a rigorous and sex-differentiated system for their upkeep.²⁰ The Ottoman administration developed elaborate practices to care for camels, specifying the precise amount of fodder (barley and straw) each animal required and formulating recipes for balms that protected the camels from insects and sun.²¹ With the help of camels, the Ottoman Imperial Council was able to weave administrative and economic ties throughout a vast region between the Indian Ocean and Hungary. As goods and people moved through this geography, camels' bodies came to be seen as subjects for human intervention, especially since their value as beasts of burden hinged on their health and ability to avoid and survive injuries. Members of the growing Ottoman bureaucracy, in particular, recognized an incentive to breed strong, hardy camels.

FROM CREATURES OF WONDER TO FEATS OF TECHNOLOGY

In his *Mevā'idü'n-Nefāis Fī Kavā'idü'l-Mecālis* (Tables of delicacies concerning the rules of social gatherings), a late sixteenth-century work on etiquette, the Ottoman scholar and bureaucrat Gelibolulu Muşafā' Alī (1541–1600) includes a chapter titled

¹⁵ On the rising interest in physiognomy in sixteenth-century Ottoman society, see Emin Lelić, "Ottoman Physiognomy (*İlm-i Firâset*): A Window into the Soul of an Empire" (PhD diss., Univ. of Chicago, 2017).

¹⁶ On early modern notions of heredity in a Western European context, see Staffan Müller-Wille and Hans-Jörg Rheinberger, eds., *Heredity Produced: At the Crossroads of Biology, Politics, and Culture, 1500–1870* (Cambridge, MA: MIT Press, 2007).

¹⁷ On the perception and use of the hybrid camel as a pack animal suitable for mountainous transport across Asia, see Richard Tapper, "One Hump or Two? Hybrid Camels and Pastoral Cultures," *Production pastorale et société* 16 (1985): 66–67.

¹⁸ See Halil Inalcik, "'Arab' Camel Drivers in Western Anatolia in the Fifteenth Century," *Revue d'histoire maghrébine* 10, no. 31–32 (1983): 256–70. See also Suraiya Faroqhi, "Camels, Wagons, and the Ottoman State in the Sixteenth and Seventeenth Centuries," *International Journal of Middle East Studies* 14, no. 4 (1982): 523–39. For the nineteenth century, see Onur İnal, "One-Humped History: The Camel as Historical Actor in the Late Ottoman Empire," *International Journal of Middle East Studies* 53, no. 1 (2021): 57–72.

¹⁹ Ahmet Uzun, *İktisâdi ve malî yönleriyle İstabl-ı Âmire (1500–1900)* (Ankara: Türk Tarih Kurumu, 2020).

²⁰ İsmail Hakkı Uzunçarşılı, *Osmanlı devletinin saray teşkilâtı* (Ankara: Türk Tarih Kurumu, 1984), 495.

²¹ Faroqhi, "Camels, Wagons, and the Ottoman State."

“Comparison to Beasts of Burden,” which compares the camels to a “fully loaded ship in way stations on land” and likens “pack mules . . . [,] well-trained pack horses . . . and choice horses” to different cargo-carrying seafaring vessels.²² Grading zoological difference in terms of use value for specific commercial purposes as if animals were cargo ships, the text also subtly acknowledges that animals are to some extent forms of human-made biotechnology, an insight that distinguished his comparison of camels to ships from earlier ones.²³

Other contemporaneous depictions of camels similarly emphasized that they could be crafted into a form of technology. For instance, in 1582, Istanbul’s various artisans, including camel drivers and their camels, formed a procession in front of the sultan, Ottoman officials, foreign ambassadors, and the general public to showcase their technological achievements and innovations. A vivid miniature created in Istanbul in 1588 commemorated the event, depicting a drum-banging, pace-making camel driver in the lead (fig. 2).²⁴ Ferāhī’s *Sūrnāme*, a contemporary narrative description of the same event, compares the camels in the procession to a *mahfel* (platform) that moves without wiggling.²⁵ The invocation of a *mahfel* subtly acknowledges camels as a product of artisanal craftsmanship.

Drivers often pushed pack animals (*mekkāre*) to their limits to obtain maximum performance. An imperial order of 1587 suggests that this gave rise to some debate in Ottoman society; it reports that an Istanbul market inspector had been concerned with irregularities in the treatment of animals used to transport goods in the city, which had resulted in injuries.²⁶ The 1584 devaluation of the Ottoman *akçe* may have played a role in the declining conditions of animals in the city, as the skyrocketing costs of fodder and upkeep compelled members of the guild of porters (*hammāl*) to cut corners.²⁷ The understanding of pack animals as a mobile technology therefore entailed an increased burden on the animals themselves.

BREEDING OPERATIONS IN SELANIK

Muṣṭafā ‘Alī’s comparison of camels to ships occurred at a time when the Ottoman state was mobilizing resources to transform camels into a superior mobile technology through breeding. What was behind this transformation? What circumstances, social groups, political structures, and environments facilitated it? What practices were related to the moving and hybridization of camels, and what forms of knowledge were produced in the process?

²² Douglas S. Brookes, trans., *The Ottoman Gentleman of the Sixteenth Century: Mustafa Ali’s Mevā’idü’n-Nefāis Fī Kavā’idi’l-Mecālis (Tables of Delicacies concerning the Rules of Social Gatherings)* (Cambridge, MA: Department of Near Eastern Languages and Civilizations, Harvard Univ., 2003), 136.

²³ Muḥammad ibn Mūsa Damīrī, *Kitāb hayāt al-ḥayawān al-kubra* (Cairo, 1278 AH [1861–1862 CE]), 1:18; Muḥammad ibn Mūsā ad-Damīrī, *Ad-Damīrī’s “Ḥayāt al-ḥayawān”* [A zoological lexicon] (London: Luzac, 1906), 1:27.

²⁴ Topkapı Palace Museum Library, Istanbul (hereafter cited as TSMK), H.1344, folş. 397b/398a.

²⁵ Ferāhī, *Sūrnāme: Bir özge âlem: Osmanlı payitahtında 1582 şenliği*, ed. Mehmed Özdemir (Ankara: Grafikler Yayınları, 2016), 200.

²⁶ Ahmed Refik, *On Altıncı Asırda İstanbul Hayatı (1593–1591)* (Istanbul: Devlet Basımevi, 1935), 66–67.

²⁷ On earlier regulations, which go back to the 1502 law code of the city of Bursa, and later ones concerning the wellbeing of animals used by porters, see Nejdert Ertuğ, *Osmanlı Döneminde İstanbul Hammalları* (Istanbul: Timas Yayınları, 2008).

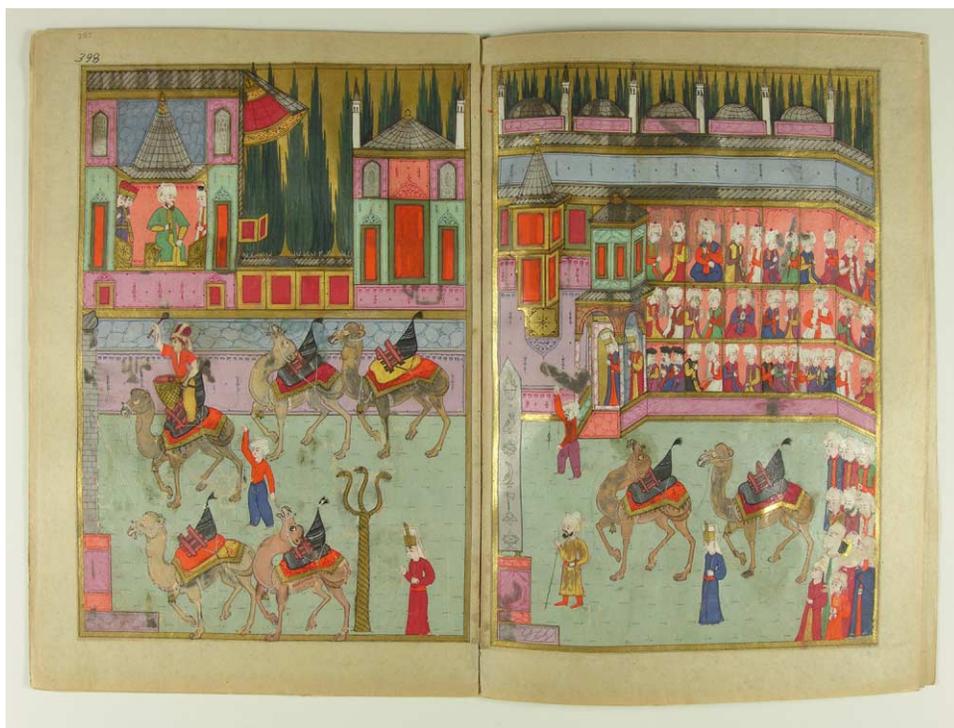


Figure 2. Miniature from *Süsnâme-i Hümayün* (1588), *Topkapı Palace Museum Library, Istanbul*, H. 1344, fol. 398a. Image courtesy of *Milli Saraylar İdaresi Başkanlığı (Directorate of National Palaces, Turkey)*.

The history of the Selanik breeding program offers some answers to these questions. In 1568 an Ottoman surveyor sent by the Imperial Council in Istanbul to survey the region of Selanik in the Ottoman Balkans recorded in a nearby settlement a group of twenty-one Muslim households belonging to the fief (*tîmâr*) assigned to the imperial camel drivers (*tîmâr-ı sârebânân-ı mirî*).²⁸ The survey noted that the households were exempt from extraordinary taxation (*‘awâriż-i dîvânîye ve tekâlîf-i ‘örfîye*),²⁹ the emergency wartime levies that provided crucial and increasingly reliable cash income for the Ottoman state in the second half of the sixteenth century.³⁰ Exemptions were granted only by the Imperial Council, and only to those peasants who could perform crucial services, such as the upkeep and protection of roads or fortresses; the production of materials, such as gunpowder or salt used in certain types of manufacturing; or the cultivation of rice.³¹ In this case, the exemption was justified on the grounds that “the aforementioned mount the female camels they owned with the male camels belonging to the [Ottoman] state (*mirî*).”³² The survey further noted that these villagers

²⁸ Presidential State Archives of the Republic of Turkey, Ottoman Archives (T.C. Cumhurbaşkanlığı Devlet Arşivleri Başkanlığı, Osmanlı Arşivi), Istanbul (hereafter cited as BOA), TT.d.165, fol. 196.

²⁹ BOA, TT.d.165.

³⁰ Halil İnalcık, “Military and Fiscal Transformation in the Ottoman Empire: 1600–1700,” *Archivum Ottomanicum* 6 (1980): 315.

³¹ Ömer Lütfi Barkan, “Avâriż,” *İA* 2 (1991): 13–19.

³² BOA, TT.d.165, fol. 196. “Mezbûrun mülkleri olan dişi develerine mirî erkek develer asub.”

were responsible for feeding the offspring until they turned three, whereupon half were given to the state and the other half were retained by the villagers for their own use.³³

The survey depicted the villagers as humble agriculturalists who may have only recently settled there.³⁴ The community paid agricultural tithes for cotton, grains (barley, oats, wheat), vegetables, apples, and grapes. They also operated a kiln for firing quicklime (calcium oxide). The survey described the land on which they resided as *mezra* 'a, or reclaimed agricultural lands, a fact that indicated relatively recent settlement.³⁵ Indeed, although the survey did not specify the villagers' origins, the first recorded individual name, Eymir, is frequently found in Oghuz Turkic onomastics. In the early modern world of camel breeding, the name Eymir (variant Eymür) was particularly significant because it was tied to the Turkish-speaking Oghuz tribes, the western Turkic people from the Khwarazm region and the fringes of the Karakum Desert, who were famed for their expertise with camels and were indispensable in the trade along the Silk Road connecting China with western Asia.³⁶ Referenced in sources after the eleventh century as Turkmen, these breeders of camel and other livestock migrated with the expansion of the Seljuk Empire to Anatolia, where the name Eymir was extensively recorded in fifteenth- and sixteenth-century Ottoman taxation surveys as the name of villages, nomadic groups, and individuals.³⁷ Thus, Eymir, the first recorded individual in the Selanik community of camel breeders, likely hailed from a Turkmen group with expertise and experience in camel breeding and management.³⁸

Other sources provided an even fuller picture of the Selanik breeding program, including the type of camels the Ottoman state supplied to the breeders there. In the winter of 1579, the Imperial Council sent an order to the governor and judge of Kefe (present-day Feodosia) in Crimea to dispatch twelve male camels—*bügür*, a two-humped camel—to another breeding site, in Vardar Yenicesi (present-day Giannitsa), a town fifty kilometers northwest of Selanik, to be bred with local one-humped female camels called *ärväna* (fig. 3).³⁹ In late medieval literature written in Turkish, the term *bügür* could mean either a two-humped or a male camel. However, from

³³ BOA, TT.d.165, fol. 196.

³⁴ Aleksandar Stojanovski, ed., *Turski Dokumenti za Istorijata na Makedonskiot Narod, opsiren popisen defter za Solunski ot sanjak od 1568/69* (Skopje: Drzaven Arhiv na Republika Makedonija, 2002), 4:481–82.

³⁵ A few *mezäri* ' around Selanik were recorded in the seventeenth century as belonging to the imperial stables. See Rhoads Murphey, "The Functioning of the Ottoman Army under Murad IV, 1623–1639/1032–1049: Key to the Understanding of the Relationship between Center and Periphery in Seventeenth-Century Turkey" (PhD diss., Univ. of Chicago, 1974), 110–11.

³⁶ Murphey, "Functioning of the Ottoman Army," 111. Bulliet is of the opinion that the Abbasid ambassador Ibn Fadlan's reference to "Turkish camels" on his journey through Oghuz territory in the tenth century is a reference to a breed different from those he was familiar with in Iraq, from where he hailed. See Bulliet, *Cotton, Climate, and Camels*, 112.

³⁷ Behset Karaca, "1522–1532 Tarihlerinde Menteşe Bölgesi Yörükleri," *Fırat Üniversitesi Sosyal Bilimler Dergisi* 18, no. 2 (2008): 403–33; Halil İncalcık, "The Yörüks: Their Origins, Expansion and Economic Role," *Cedrus: Akdeniz Uygarlıkları Araştırma Dergisi* 2 (2014): 470.

³⁸ In the Balkan Peninsula, they were called Yörük (from the Turkish *yörü/yürü*: "to walk"). See İncalcık, "Yörüks," 473.

³⁹ BOA, A.DVNS.MHM.d.181, fol. 10. "Kefe begine ve kâzısına ve nâzırne hüküm ki hâlen Vardar Yenicesin' de vâki' olan ärväna döl develer için iki kaçâr bügür deve lazım olmagin vuşul buldukda sen ki nâzırın muķâta'a akçesinden kifâyet miķdârı akçe virub dađı fermân olub iki kaçâr bügür deve aldırub döl için Vardar Yenicesine irsâl eylesin."



Figure 3. The approximate routes of the two-humped camels sent to be used for breeding hybrid camels in Vardar Yenicesi (Giannitsa) and Selanik. Map: © Earthstar Geographics.

the sixteenth century onward, Ottoman dictionaries and foreign observers alike use this term exclusively for a two-humped camel.⁴⁰

Another imperial decree the following year ordered the governor and judge of Niğde, a city in the Taurus Mountains in southern Anatolia, to send “six two-humped camels” (*altı mehār būğūr develeri*) to be bred with “the one-humped female [*döl*] camels in Selanik (fig. 3).”⁴¹ The use of the term *mehār* (or *mihār*) further indicates that the Anatolian two-humped camels were used for caravan trade, since it refers to the wooden peg placed in the nostrils of the camel to which were attached the reins, which could be used to lash camels together into a caravan.

Niğde’s location near several passes in the Taurus Mountains placed it at a crossroads of long-distance caravan trade routes. These routes crisscrossed the Ottoman Empire, linking Iran and China in the east to Anatolia and the Mediterranean in the west as well as the rich agricultural lands of the Çukurova plain in the south. The region was a center of camel breeding throughout the Ottoman period, especially the

⁴⁰ See *Tarama Sözlüğü* (Ankara: Ankara Üniversitesi Basım evi, 1995), 1:684; Tapper, “One Hump or Two?,” 58. See also İhsan Abidin, *Anadolu Develerinin Irkları, Bakılması, Hastalıkları* (Istanbul: Becidyay, 1915), 10.

⁴¹ BOA, A.DVNS.MHM.d.39, fol. 214. “Niğde begine ve kâzısına hüküm ki: hâlen Selanik’de olan döl develeri altı mehār būğūr develeri lazım olmağın buyurdum ki hüküm-i şerîfim varıcak döl için ol câniblerden altı mehār būğūr develeri tedârik eyleyub südde-i sa’âdetime irsâl eylesin.”

breeding of two-humped camels. A 1563 Ottoman survey of the Çukurova plain, which was probably used by the camel breeders in Niğde as a winter pasture, registered another individual named Eymir as the superintendent of the nomadic Turkmen tribe of Kuduzlu.⁴² The survey does not specify whether this nomadic group was involved in camel breeding, but it seems likely given that the Ottoman surveyors noted the locations of pastures used by the group, indicating some form of pastoralism.

Connections between Niğde, in the region of Karaman, and Selanik, the site of the camel-breeding program, go back to at least the second half of the fourteenth century, when Selanik became part of the Ottoman principality. Arab camel breeders were among the first nomadic groups to cross the Dardanelles in the 1350s, following the crossing of the Ottoman frontier raiders to the Balkan Peninsula.⁴³ By the fifteenth century, Ottoman fief holders in the region around Selanik included a number of people hailing from Karaman, and some of their names indicate Mongol origins.⁴⁴ In other words, camels and camel breeders had already settled the region around Selanik by the fifteenth century.

How and when did Turkmen breeders of two-humped camels come to settle around the Taurus Mountains? They may have migrated from Central Asia following the establishment of Seljuk rule in Anatolia at the end of the eleventh century. Richard Bulliet has suggested that some of these groups had already begun breeding hybrid camels by the tenth century, especially in the northern Karakum Desert, a major link in the Silk Road.⁴⁵ Turkmen camel breeders also moved west with the Mongol conquests in the thirteenth century. The Mongol Ilkhanid Empire (1256–1353) used camels in the first half of the fourteenth century to facilitate regular shipments of medicine from Anatolia to the capital Tabriz.⁴⁶ Camels played a crucial role in the Ilkhanids' attempts to expand trade routes across Iran, the Caucasus, and Anatolia, and to facilitate trade between China and the Mediterranean. Hence, the high Taurus Mountains may have served as pastures for camel breeding as early as the Ilkhanid period.

The two different locations specified as the sources for the camels—first, the steppes north of the Black Sea, and second, southern Anatolia—indicate that the Ottoman administration was trying out different camel-breeding grounds, perhaps because the first attempts had not yielded satisfactory results. Vardar Yenicesi was fifty kilometers northwest of Selanik in the vicinity of the Pajak/Paiko (1,650 m) and Kožuf (2,100 m) Mountains. Were the two-humped camels of the steppes regarded as better suited to the harsher winter conditions there? Were the two-humped camels shipped from southern Anatolia thought to be more suitable for the breeding project around Selanik, where the proximity of the Aegean Sea creates a warm climate similar to that of the Çukurova region in the Mediterranean? The decision to tap into different breeding

⁴² Yılmaz Kurt, *Çukurova Tarihinin Kaynakları V: 1563 Tarihli Kars-i Maraş Sancağı Mufassal Tahrir Defteri* (Ankara: Türk Tarih Kurumu, 2011), 227. Toward the end of the eighteenth century, the number of camels in this region decreased. See Zübeyde Güneş Yağcı, "Hac ve Askeri Yol Üzerinde Bir Menzil: Adana Menzili," *Çukurova Araştırmaları Dergisi* 1, no. 1 (2015): 61.

⁴³ Inalcik, "'Arab' Camel Drivers," 256–70.

⁴⁴ İsmet Etemov, "Timari v Solunsko," in *Turski Izvori za B'lgarskata Istorija, Seria XV–XVI*, ed. Nikolai Todorov and Boris Nedkov (Sofia: B'lgarska Akademia na Naukite, 1966), 433; Nikola Popov, "Timari v Avrethisarsko i Solunsko," in Todorov and Nedkov, *Turski Izvori za B'lgarskata Istorija*, 397, 399.

⁴⁵ Bulliet, *Cotton, Climate, and Camels*, 112–13.

⁴⁶ Zeki Velidi Toğan, "Reşideddin'in Mektuplarında Anadolu'nun iktisadi ve Medeni Hayatına ait Kayıtlar," *İstanbul Üniversitesi İktisat Fakültesi Mecmuası* 15 (1953): 34.

grounds was made by an increasingly mobile group of Ottoman scholar-bureaucrats, who began to meticulously observe and write about the nature of the different camel breeds.

REWRITING NATURAL HISTORIES

By the second half of the sixteenth century, technological know-how had become an essential part of the education of the expanding Ottoman bureaucracy, which stretched across regions from the Adriatic Sea to the Indian Ocean. Depending on the city or region where they were appointed, Ottoman judges were expected to be knowledgeable about local industries, such as mining, shipbuilding, and agriculture.⁴⁷ The Imperial Council included two chief judges (*kāzī* ‘*asker*) from Rumelia and Anatolia, scholar-bureaucrats, who were responsible for the appointment of judges and professors. These two officials at the top of the hierarchy were required during their earlier career to take on numerous judgeships and madrasa (college) appointments throughout the empire. The contours of this type of career path (*‘ilmiye*) emerged in the second half of the fifteenth century, but crystallized in the 1530s. Familiarized with regional geographies, such scholars often produced works recording their observations about the natural world.⁴⁸

The two shipments of two-humped camels from Crimea to the Ottoman Balkans occurred while such itinerant scholar-bureaucrats were reconfiguring the natural history of camels in their writings. In his 1598 cosmography *Menāzirü’l-‘Avālim* (Observations of the worlds), in an entry on Būdhe, a region of Sind along the Indus River, Mehmed ‘Āşik recalled encountering two-humped camels in 1584 and 1585 on a campaign from the Caucasus to Crimea. He wrote that two-humped camels were able to carry enormous loads, and the Nogai Tatars with whom he had conversed had reported that such camels were being bred at the edge of the steppes (*Deşt-ı Kıpçāk*).⁴⁹ Mehmed ‘Āşik then referenced *Āthār al-Bilād wa-Akhhbār al-‘Ibād* (Buildings of the regions and reports of the believers), a work by thirteenth-century Persian cosmographer Zakarīyā b. Muḥammad al-Qazwīnī, which claimed that two-humped camels of this kind had been exported to “Horāsān and Fars” (Persia), where they were mated (*fahl idüp buna çekerler*) with one-humped camels to produce baḥātī camels.⁵⁰ Mehmed ‘Āşik further noted that he had observed two-humped camels in the steppe of present-day southern Russia.⁵¹ He speculated that the geographical range of the breeding of two-humped camels must have spread (*iblag*) over time, an acknowledgment that breeding practices move across spaces and have histories.⁵² As deputy judge to the Ottoman judge of Selanik, Taşköprülüzāde Kemālüddīn Mehmed Efendi, Mehmed ‘Āşik was familiar with the community of camel

⁴⁷ Atçil, *Scholars and Sultans*, 175.

⁴⁸ Aleksandar Shopov, “In the Balsam Orchard with Şālih Çelebi Celālüzāde (d. 1565): First-Person Narrative and Knowledge in Ottoman Egypt,” in *Crafting History: Essays on the Ottoman World and Beyond in Honor of Cemal Kafadar*, ed. Rachel Goshgarian, Ilham Khuri-Makdisi, and Ali Yaycıoğlu (Boston: Academic Studies Press, 2023): 255–76.

⁴⁹ Āşik Mehmed, *Menāzirü’l-‘Avālim*, ed. Mahmut Ak (Ankara: Türk Tarih Kurumu, 2007), 2:518. See also MS Mixt. 314, fols. 123b, 124a, Österreichische Nationalbibliothek, Vienna.

⁵⁰ On early Islamic sources that give a similar account of the breeding of two-humped camels, see Bulliet, *Camel and the Wheel*, 170–71; Bulliet, *Cotton, Climate, and Camels*, 109–10.

⁵¹ Āşik Mehmed, *Menāzirü’l-‘Avālim*, 3:1241–42.

⁵² Mehmed, 3:1241–42.

breeders there. His survey of the Islamic charitable foundations of Selanik, made in 1592 and 1593, would have included properties in the countryside.⁵³

In his observations of the natural world, Meḥmed ‘Āşık nearly always provided exact dates and details about the capacity he was working in, often naming the government official with whom he collaborated and providing detailed descriptions of his conversations that emulated judicial recordkeeping practices. His additions to the natural history of camel breeding, therefore, closely reflected his work.

In Iran, breeding one-humped with two-humped camels—described by earlier Muslim geographers and authors of treatises on animals—produced an offspring known for its agility and superior load-bearing ability. In the words of Abū ‘Uthmān al-Jāḥiẓ (776–868), the author of one of the most authoritative medieval works on animals (whose grandfather was a Black camel driver), the offspring of this breeding practice (the male called *bukht* and the female called *jammaza*) “combine the qualities [*hiṣāl*] of the swift camels [*al-irāb*] with the virtues of the two-humped ones.”⁵⁴ This practice was introduced in the second century BCE during the Parthian Empire, and intensified in the early Islamic period with the growing traffic along the Silk Road and the arrival of large numbers of one-humped camel breeders in Iran and northern Afghanistan, especially around the Abbasid garrison city of Balkh.⁵⁵ By the tenth century CE, the nomadic Oghuz Turks, who lived in the northern Karakum Desert, were breeding hybrid camels, and with the establishment of the Seljuk Empire this practice spread to Anatolia. While earlier Arabic works such as al-Jāḥiẓ’s *Kitāb al-ḥayawān* (Book of animals) considered camels to be incompatible with Rum’s climate,⁵⁶ for Meḥmed ‘Āşık, the natural history of camels in the sixteenth century required an update.

His report joined a growing discourse among Ottoman scholar-bureaucrats on how to improve the performance of plants, animals, and landscapes in the Ottoman state. For example, *Ḥadīs-i Nev: Tārīḥ-i Hind-i Garb* (Fresh news: A history of India in the West), the earliest known treatise written in Turkish about the history, conquest, peoples, plants, and animals of the Americas, was written in Istanbul around 1580. The work’s second section, on the conquests of the Americas, is a compilation of Spanish and Latin works that gives a pithy illustration of how Ottoman authors viewed the relationship between the environment and improved plant and animal varieties.⁵⁷ Describing this “newly visible world,” the author registered plants and animals (avocado, armadillo, guava, turkey, corn, etc.) as well as their economic value and medicinal uses. In an intriguing scene set in an open plain on the island of Hispaniola, the author emphasizes the fertility of the island’s soil, in which old plants ripen at a wondrous rate. By emphasizing how the qualities of plants improved with their transfer to new soil, the work reflects the idea—which by the 1580s was generally accepted by Ottoman scholars and bureaucrats—that the entire natural world was on the move and was about to be improved.

Debates were emerging on how to improve the mobility of goods and people across distant geographies. Meḥmed ‘Āşık’s report on camels is part of a description of himself on the move in a military campaign that extended the Ottoman Empire to the

⁵³ Mehmed, 1:LXI.

⁵⁴ Abī ‘Uthmān ‘Amr ibn Baḥr al-Jāḥiẓ, *al-Ḥayawān*, ed. ‘Abd al-Salām Muḥammad Hārūn (Miṣr, Maktabat Muṣṭafā al-Bābī al-Ḥalabī, 1938 [1357]), 138. For a full translation of this section, which translates *al-irāb* as “Arab,” see Bulliet, *Cotton, Climate, and Camels*, 110.

⁵⁵ Bulliet, *Cotton, Climate, and Camels*, 112.

⁵⁶ Bulliet, 107.

⁵⁷ Bulliet, 29–35.

shores of the Caspian Sea, linking the empire to central Asia and further east to China. In the 1560s, the Ottoman Imperial Council had planned a canal to connect the Caspian Sea with the Black Sea in order to facilitate the movements of the Ottoman army, merchants, and pilgrims from the east.⁵⁸ Such projects represent a shift, as many in Ottoman society began to see the geographical world as waiting to be improved: land could be turned into sea to facilitate Ottoman global dominance through the flow of people and goods.

NEW ENVIRONMENTS AND COMMUNITIES OF KNOWLEDGE

A similar interest in improving landscapes can be observed in the region around Selanik. The choice of the city as a center of Ottoman camel breeding reflects its transformation into a major port and manufacturing center. State-owned camels were used to transport a wool broadcloth called *çuka* (*çuha*) that was produced locally in Selanik by another group of immigrants, this time from the west: the city's many Sephardic Jewish artisans, who were settled and welcomed by the Ottoman sultan Bayezid II (r. 1481–1512) following their persecution and expulsion from Spain in 1492. This robust community, which by 1530 or 1531 numbered 2,645 households (a majority of the city's population), used their technological know-how to transform Selanik into a center for specialized wool production by organizing the production of *çuka*.⁵⁹ The high-quality wool fabric was then transported to the market in Istanbul, where it had been used from at least the 1510s for the winter clothing of the janissaries, the Ottoman standing army, soon replacing imported wool coming from Italy.⁶⁰ Selanik's Jewish community also took part in the vibrant trade between Ottoman cities in Syria and the Adriatic, bringing large numbers of camels through Selanik.⁶¹

Selanik's position as a manufacturing center depended on the ability to move goods and people across vast spaces. Wool from the mountainous regions of Macedonia flowed into the city, and salt, used in animal husbandry, flowed out. In 1530, Selanik yielded 4,000,000 akçe to the imperial treasury from customs dues, and 2,102,016 from the salt pans in its vicinity.⁶² Breeding camels that could perform better in colder climates promised the taming of the mountainous routes between Selanik and the Adriatic coast to the west, and Istanbul to the east. By the second half of the sixteenth century, camels in Anatolia were delivering goods to Istanbul even in the late autumn and winter.⁶³ In the 1580s, two decades after the earliest reference in 1568 to the camel-breeding operation north of Selanik, the Ottoman administration mentioned Selanik's camels as a preferred means for transporting *çuka* from the city to Istanbul

⁵⁸ Halil İncelik, "Osmanlı-Rus Rekabetinin Menşei ve Don-Volga Kanalı Teşebbüsü (1569)," *Bellesten* 12, no. 46 (1948): 371–73.

⁵⁹ BOA, TT.d.167, fol. 85.

⁶⁰ Özgür Kolçak, "Selanik Yünlü Dokumacılığının Tarihsel Gelişimi (1500–1620): Yeni Bulgular Işığında Genel Bir Değerlendirme," *Osmanlı Araştırmaları Dergisi* 31 (2008): 102.

⁶¹ A *responsa* issued by the Selanik rabbi Shelomo ben Hason notes that a Jewish merchant who had perished in the fire that engulfed the city in the summer of 1620 had, together with his father, brought merchandise loaded on camels from the northern Syrian city of Aleppo. See Asher Khananel and Eli Eshkenazi, *Evreiski Izvori za Obshtestveno-ikonomichestko razvitie na balkanskite zemi prez XVII vek* (Sofia: Bülgarska akademiia na naukite, 1958), 2:201–4.

⁶² BOA, TT.d.167, fol. 85.

⁶³ Ömer Döşemetaş, "27 Numaralı Mühimme Defteri'nin Özet, Transkripsiyon, ve Değerlendirmesi (1–140)" (master's thesis, Atatürk Üniversitesi, 2014), 119–20.

(though in one such order from this period the fabric was transported by sea due to an insufficient number of state camels).⁶⁴

Selanik was not an isolated case of increased textile production having an impact on camel breeding. Bulliet has discussed the relationship between the growing importance of trade across the Silk Road and the early breeding of the hybrid camel.⁶⁵ One of the most crucial goods in the Anatolian section of the Silk Road was wool from the Angora goat. Until the acclimatization of Angora goats in South Africa in the nineteenth century, the only source of this wool was Ankara and its surroundings, where the Angora goat was introduced and developed as a new breed—most likely by the nomadic Turkmen communities settling in Anatolia with the Seljuk and Mongol conquests.⁶⁶ Well into the Ottoman period, long-distance camel caravan trade was the only way to transport camlets—cloaks made of angora wool—to the western Anatolian coast, and from there to global markets.

Camels were not the only hardy animals moving across Ottoman geographies. In 1577 horses were sent to Istanbul from Wallachia and Moldavia (present-day Romania and Moldova) to be used in the royal foundry.⁶⁷ Similarly, in 1562 and 1563 oxen originating in Aleppo were documented in the grounds of Topkapı Palace in Istanbul, where palace officials recorded their daily diet and kept track of expenses.⁶⁸ Evliya Çelebi, a native of Istanbul known for his ten-volume work recording his travels, claimed that, following the conquest of Egypt, Egyptian oxen, which produced a tremendous amount of milk, were transported to the cattle farm of Sultan Selim I (1512–1520).⁶⁹ Expanding urban populations in the sixteenth century catalyzed attempts to improve dairy production by introducing new breeds of cattle. The new breeds required special regimes of care.

The shipment of male camels to Selanik was enabled by the expansion of the Ottoman financial apparatus. In the 1560s a provincial treasury had been created in Caffa to fund state-related expenses.⁷⁰ Indeed, the imperial order of 1579 had specified that camels from Crimea were to be purchased with tax farming revenues under the control of the Ottoman provincial treasury in Caffa.⁷¹ Between the 1540s and 1570s a number of such treasuries were established across the empire, accelerating the mobility of both animals and plants—for instance, the transporting of pomegranate trees for the royal gardens.⁷² By the mid-seventeenth century, these new biotic introductions were joined by a new science of flower breeding that emerged in Ottoman Istanbul, with breeders across the city and neighboring towns creating hundreds of new varieties of hyacinths, tulips, and daffodils.⁷³ This increased mobility was linked to the belief that their forms could be improved through selective breeding.

⁶⁴ BOA, A.DVNS.MHM.d.58, fol.184.

⁶⁵ Bulliet, *Camel and the Wheel*.

⁶⁶ Kafadar, “Death in Venice,” 205.

⁶⁷ Refik, *On Altıncı Asırda İstanbul Hayatı*, 6.

⁶⁸ Topkapı Palace Museum Archives, Istanbul (hereafter cited as TSMA), d. 5637, fol. 1.

⁶⁹ Evliya Çelebi, *Evliya Çelebi Seyahatnâmesi: Topkapı Sarayı Bağdat 304 Yazmasının Transkripsiyonu, Sızini*, vol. 1, ed. Orhan Şaik Gökyay (Istanbul: Yapı Kredi Yayınları Ltd. Şti., 1996–2007), 206.

⁷⁰ Arif Bilgin, *Osmanlı Taşrasında Bir Maliye Kurumu: Bursa Hassa Harç Eminliği* (Istanbul: Kitabevi, 2006).

⁷¹ BOA, A.DVNS.MHM.d.181, fol.10/31.

⁷² Shopov, “In the Balsam Orchard”; Refik, *On Altıncı Asırda İstanbul Hayatı*, 6.

⁷³ Aleksandar Shopov, “Flower Breeding in Early Modern Istanbul: A Science of Seeds,” *Isis* 113, no. 3 (2022): 588–96.

Entrepreneurial financial officers in the Ottoman provinces also played a role in facilitating the movement of camels. In 1563 Keyvan Beg, a financial officer in the Ottoman provincial treasury in Algiers, sold his farm estate near Edirne to Mehmed Çelebi Efendi, the chief financial official of Topkapı Palace, who was responsible for imperial finances. The sale contract gave Mehmed Çelebi Efendi effective ownership of built structures on the land, including a camel stable (*deve āhūr*) for six trains (*kaṭār*) of camels, or a total of thirty-six camels.⁷⁴ The document specified that the stable was covered with costly roof tiles typically reserved for houses in the city, showing that camel-keeping operations could require a significant investment in materials. Camel stables are often referenced in documents recording the sale of private properties and farm estates along major roads.⁷⁵ And not only stables: the finance director and historian Defterdār Sarı Mehmed Paşa (d. 1717) wrote that builders from the imperial arsenal in Istanbul were sent to the cities along the Danube to construct ships designed to transport camels across the river.⁷⁶ As the Ottoman Empire hybridized camels through selective breeding, material frameworks evolved to accommodate their bodies. As mentioned above, the Ottoman survey recorded the camel breeders near Selanik as producers of quicklime (*kireç*), a crucial material for stables and other buildings that enabled the breeding operations.

A tight-knit network of caravanserais emerged across the Ottoman Empire in the sixteenth century, with those specializing in camels acquiring the name *deve hanları* (camel inns). One such caravanserai was built in 1572 in the eastern Anatolian city of Erzurum, which connected the Caucasus and Iran to Anatolia and Syria.⁷⁷ Another example in the same city was built in the early eighteenth century, with pulleys fixed to the beams for unloading the camels.⁷⁸ These camel caravanserais were known by merchants as well as camel herders as places where one could purchase or rent camels.⁷⁹ The Ottoman government also built camel stables. Mehmed Paşa, grand vizier between 1632 and 1637, ordered the construction of seventeen caravanserais each capable of accommodating one hundred camels.⁸⁰ North of Selanik, in Üsküb (Skopje), a hub of long-distance trade located at the junction of Ottoman trade routes, twelve caravanserais were constructed in the fifteenth and sixteenth centuries.⁸¹ The largest, the still intact Kurşunlu Han, dates to the mid-sixteenth century, making it exactly contemporary to the camel-breeding program near Selanik. A large stable attached to the main building used for lodging merchants can still be seen. By this period, Skopje had such a developed market for buying and selling camels that provisions regulating the fees for camel transactions were included in the provincial legal code.⁸²

⁷⁴ Türkiye Diyanet Vakfı İslâm Araştırmaları Merkezi, Istanbul Kadı Sicilleri, Istanbul (hereafter cited as İKS), Balat Mahkemesi 2, fol. 74b–2.

⁷⁵ In another court document from 1557–1558 related to a sale of a camel stable in Çorlu, the building is not described as having roof tiles. See İKS, Balat Mahkemesi, 1, fol. 35b.

⁷⁶ Defterdar Sarı Mehmed Paşa, *Zübde-i Vekayiât Tahlil ve Metin (1066–1116/1656–1704)*, ed. Abdülkadir Özcan (Ankara: Türk Tarih Kurumu, 1995), 380.

⁷⁷ Zerrin Köşklü, “Erzurum’da Osmanlı Dönemi Hanları,” *Sosyal Bilimler Enstitüsü Dergisi Journal of the Institute of Social Sciences* 5 (2010): 115.

⁷⁸ Köşklü, “Erzurum’da Osmanlı Dönemi Hanları,” 118.

⁷⁹ Faroqhi, “Camels, Wagons, and the Ottoman State,” 526.

⁸⁰ Murphey, “Functioning of the Ottoman Army,” 99.

⁸¹ Lidija Kumbaradži-Bogoevik, *Osmanliski spomenici vo Skopje* (Skopje: Islamska zaednica vo RM-Skopje, 1998), 148–65.

⁸² Mehmet İnbaşı and Eyüp Kul, *Balkanlarda bir Türks şehri: Fetihden XVIII Yüzyıla kadar* (Ankara: Türk Tarih Kurumu, 2018), 239; Ahmed Akgündüz, *Osmanli kanunnâmeleri ve hukuki tahlilleri* (Istanbul: Osmanlı Araştırmaları Vakfı, 1990), 2:521–27.

The mobility of camels required protected areas for their grazing, reshaping Ottoman landscapes. In 1576, the Imperial Council issued an order regarding an area near Selanik where the Vardar River forms a delta before emptying into the sea. Three villages in this region had received exemption from extraordinary taxation in exchange for feeding and caring for the camels.⁸³ The order noted that the number of state-owned camels in the area had dwindled from as many as eight hundred to just eighty-five, and blamed this on incursions by water buffalo into the protected area where the camels pastured.⁸⁴ In the early seventeenth century, twenty-five square kilometers of protected land in the province of Selanik were dedicated to the imperial stables, three square kilometers to meadows (*çayır-hā*), and slightly less to open fields (*mezra'a*).⁸⁵ This was not an isolated case. Many protected forests were used as camel pastures along the road between Selanik and Istanbul. In 1585, one such forest near the village of Dimotika, about halfway between Istanbul and Selanik, was intentionally burned by a peasant who owned agricultural fields bordering it.⁸⁶ This was reported to the local judge by two state camel keepers.

In the sixteenth century, the villagers of Notiya (present-day Notia), some 120 kilometers east of Selanik in the foothills of Kožuf Mountain, received relief from extraordinary taxation in return for producing significant amounts of tar (*katran*) that was to be used for the upkeep of state-owned camels.⁸⁷ Such tar production, which required burning wood in an oxygen-deficient environment, came at the expense of other uses of the forest and registers the Ottoman state's investment in subsidizing the chemical production processes involved in camel transport. The mobility of camels was linked to reconfigurations of landscapes, manufacturing in the countryside, and the production of knowledge.

Another example regards the production of sulfur.⁸⁸ In 1572 Christian agriculturalists from the village of Leskofçe (Leskoec), near the city of Ohrid, claimed that they could produce sulfur in a mine near their village.⁸⁹ They may have made this claim in the hope of being relieved from extraordinary taxation.⁹⁰ In addition, the Ottoman inspector of the province noted in 1606 that peasants were receiving loans, and that creditors forced higher interest rates than agreed upon, leading peasants to abandon their land.⁹¹ The sulfur produced in Leskofçe was sent to a facility in Selanik—some 280 kilometers east of Ohrid—where it was used in the production of gunpowder, but also possibly for the care of camels, since sulfur, again, was used in the balm rubbed on camels.⁹² In the second half of the sixteenth century, communities in Ottoman Macedonia were laying claim to

⁸³ Faroqhi, "Camels, Wagons, and the Ottoman State," 527–28.

⁸⁴ BOA, A.DVNS.MHM.d.27, fol. 373.

⁸⁵ Murphey, "Functioning of the Ottoman Army," 110–11.

⁸⁶ BOA, A.DVNS.MHM.d.55, fol. 387.

⁸⁷ TSMA, d.888, fol. 1.

⁸⁸ Dušanka Šopova, *Makedonija vo XVI i XVII Vek: Dokumenti od Carigradskite Arhivi (1557–1645)* (Skopje: Institut za Nacionalna Istorija, 1955), 31.

⁸⁹ Šopova, *Makedonija vo XVI i XVII Vek*, 31. Despite the resistance of the fief holder, the government in Istanbul investigated the case, and production was initiated.

⁹⁰ See Inalcik, "Military and Fiscal Transformation," 315.

⁹¹ Aleksandar Shopov, "Between the Pen and the Fields: Books on Farming, Changing Land Regimes, and Urban Agriculture in the Ottoman Eastern Mediterranean ca. 1500–1700" (PhD diss., Harvard Univ., 2016), 413–14.

⁹² Djurdjica Petrović and Dušanka Bojanić Lukać, "Dobijanje Šalitre u Makedoniji od Polovine XVI do Polovine XIX veka," *Vesnik Vojnog muzeja JNA* 10 (1964): 23–56.

the knowledge of producing goods vital to the construction of the Ottoman state and the care of its camels.

“GOOD BREEDING”

Of the twenty-one camel breeders recorded in the 1568 survey of the settlement near Selanik, four had the patronymic Abdullah (Slave of God), indicating previous enslavement or conversion to Islam. The inclusion of such outsiders into this Anatolian Turkmen community raises an interesting question. Can we discern a relationship between this social mixing and the very project—the mating of different varieties of camels to produce a hybrid offspring—with which the community was tasked?⁹³

Entanglements of ideas about human and nonhuman diversity and breeding were common in this period of the Ottoman Empire. For instance, *Künhü'l-ahbâr* (Essence of history), a world history written in 1595 by Muştafâ 'Alî, invokes the grafting of fruit trees as a metaphor for the identity of the Muslim people living in the Ottoman Balkans and western Anatolia, whom Muştafâ 'Alî calls Rumis, or “people of the [former] Roman world.” Distinguishing “a select community of pure, pleasing people” from “most of the other inhabitants of Rum [who] are of confused ethnic origins” and descended from “infidels,” he called upon the figure of “two different species [sing. *cins*, pl. *ecnās*] of fruit-bearing trees” that, when crossed, preserve “the best qualities of their progenitors.”⁹⁴ Cemal Kafadar has interpreted this text as an instance of the “plasticity of identities that had gone into the making of the neo-Rumis.”⁹⁵ Cornell Fleischer also notes the invocation of Rum as a “breeding ground” for the creation of a new cultural and political tradition.⁹⁶ Muştafâ 'Alî references the grafting of two different types of fruit trees. Here, his language recalled descriptions of grafting found in the early Ottoman agricultural treatise *Revnağ-ı Būstān* (Splendor of the garden), whose anonymous author defined grafting as the combination of one variety with another (*bir cinse bir cinsi ulaştırma*).⁹⁷

The analogy between the grafting of fruits and the emergence of the Rumis reflects a more general sixteenth-century Ottoman awareness of the mobilities of plants, animals, and humans as subject to technological processes determining the course of history. Muştafâ 'Alî discussed the history of the Rumis in another work, *Hālātü'l-Kāhire mine'l-Ādātü'z-Zāhire* (The conditions of Cairo concerning her actual customs). The

⁹³ The likening of the children in some nomadic communities in Anatolia to “young camels” (*köşek*) is attested in the twentieth century. See Ahmet Önkal and Nebi Bozkurt, “Deve,” in *TDV İslâm Ansiklopedisi*, ed. TDV İslâm Araştırmaları Merkezi, 1994, <https://islamansiklopedisi.org.tr/deve>.

⁹⁴ Muştafâ b. Ahmet b. Âlî, *Künhü'l-ahbâr* (Istanbul: Takvimhâne-i Âmire, 1277), 16; translated in Cornell H. Fleischer, *Bureaucrat and Intellectual in the Ottoman Empire: The Historian Mustafa Ali (1541–1600)* (Princeton, NJ: Princeton Univ. Press, 1986), 254.

⁹⁵ Cemal Kafadar, *Between Two Worlds: The Construction of the Ottoman State* (Berkeley: Univ. of California Press, 1995), 28.

⁹⁶ Kafadar, *Between Two Worlds*, 254–55.

⁹⁷ Zafer Önlü, ed., *Revnağ-ı Būstān* (Ankara: Turk Dil Kurumu, 2000), 44. On this treatise, see also Aleksandar Shopov, “The Vernacularization of Sixteenth-Century Ottoman Agricultural Science in Its Economic Context,” in *Living with Nature and Things: Contributions to a New Social History of the Middle Islamic Periods*, ed. Bethany J. Walker and Abdelkader al-Ghous (Göttingen: V&R unipress, 2020), 639–81. On grafting trees in early modern Ottoman literature and praxis, see Shopov, “Grafting in Sixteenth-Century Mamluk and Ottoman Agriculture and Literature,” in *History and Society during the Mamluk Period (1250–1517): Studies of the Annemarie Schimmel Institute for Advanced Study III*, ed. Walker and al-Ghous (Göttingen: V&R unipress, 2021), 381–407.

work claims that the Rumis, who had settled in Cairo following the Ottoman conquest of Egypt in 1517, through breeding with locals, had, by “the second and third generation deteriorated in their looks” and by the fourth and fifth generations were indistinguishable from the native population of Egypt.⁹⁸ Strikingly, this passage recalls another passage from the aforementioned writings of al-Jāḥiẓ, in which the author claimed that once the hybrid camel had been created, further mingling would negatively affect the descendants: “For the conformation of these two species does not get any nobler, more glorious, more pleasing, or more costly. But when you mate the swift [*al-irab*] stallions with the females of the bukht, you get the *nahwaniya* and [*sarsaraniya*] camels. In appearance they are uglier than their two parents and in tightness of conformation [*asran*] more crabbed [*ashadda*].”⁹⁹ Al-Jāḥiẓ’s classic work was almost certainly known to Muṣṭafā ‘Alī; the *Kitāb al-ḥayawān* was regarded as an authoritative example of the use of “digression” (*istiṭrād*), as noted by the Ottoman polymath Katip Çelebi in the seventeenth century.¹⁰⁰ Indeed, similar notions appear elsewhere in Muṣṭafā ‘Alī’s work on Cairo, where the author discussed the effects of intermarriage between enslaved Ethiopian women and the city’s “great and small merchants and shopkeepers.”¹⁰¹ In Ottoman Cyprus in the same period, sharia court records indicated the frequency of marriages between free and enslaved sub-Saharan Africans.¹⁰²

Muṣṭafā ‘Alī’s application of the language used in discussions of animal breeding to a description of the mingling of different peoples was likely a reaction to what many Ottomans of the time believed to be the loss of Rumi dominance. He himself belonged to this group; his grandfather was a Christian, most likely a Bosnian, and a product of mating between Balkan Christians, Turkmen, and Tatars, who arrived in the region following the Ottoman conquests.¹⁰³ Muṣṭafā ‘Alī’s section on Ottoman history in the *Kūnhū’l-ahbār* begins with pages on the science of physiognomy and the mixed breeding of the Ottoman elite. In the early decades of the Ottoman principality (the first half of the fourteenth century), the text explains, varieties (*ecnās*) of people were captured from Byzantium and brought to mingle with the “tribes” (*‘aṣā’ir*) of Ottomans, which came from the regions Transoxiana, Amu Darya, and of the river Syr Darya (present-day Kazakhstan, Turkmenistan, and Uzbekistan); following the victories over Byzantium and the conquest of Rum, there was mixing with Arnavud (Albanians), Abaza (Abkhazes), Çerkez (Circassians), Hirvat (Croatians), Efrenc (the generic term for Christians west of the Balkan Peninsula), and Macar (Hungarians).¹⁰⁴ The *Kūnhū’l-ahbār* dedicates almost two full pages to Şeyh Bedreddin, the prolific

⁹⁸ Muṣṭafā bin Ahmet ‘Alī, *Muṣṭafā ‘Alī’s Description of Cairo of 1599: Text, Transliteration, Translation, Notes*, ed. Andreas Tietze (Vienna: Verlag der Österreichischen Akademie der Wissenschaften, 1975), 40.

⁹⁹ Bulliet, *Cotton, Climate, and Camels*, 110. Translation modified; in his translation, Bulliet translates *al-irab* (swift, agile) as “Arab.”

¹⁰⁰ Jeannie Miller, “Commentary and Text Organization in al-Jāḥiẓ’s *Book of Animals*,” in “Practices of Commentary,” ed. Christina Lechtermann and Markus Stock, special issue, *Zeitsprünge* 24 (2020): 101–32. There are also two Ottoman commentaries from the seventeenth century on al-Jāḥiẓ’s *Kitāb al-ḥayawān* (Book of animals); see Miller.

¹⁰¹ Muṣṭafā bin Ahmet ‘Alī, *Muṣṭafā ‘Alī’s Description of Cairo*, 51.

¹⁰² Ronald C. Jennings, “Black Slaves and Free Blacks in Ottoman Cyprus, 1590–1640,” *Journal of the Economic and Social History of the Orient* 30, no. 3 (1987): 286–302.

¹⁰³ Fleischer, *Bureaucrat and Intellectual*, 15–16.

¹⁰⁴ Gelibolulu Mustafa ‘Alī, *Kūnhū’l-Ahbar*, ed. Ali Çavuşoğlu (Ankara: Türk Tarih Kurumu, 2019), 5.

scholar and mystic who inspired a series of rebellions in 1416 that brought together various segments of Ottoman society, from members of the military class to Muslim and Christian peasants to Jewish artisans.¹⁰⁵ In Egypt, where he studied under the most prominent scholars of his time, Şeyh Bedreddin married an Ethiopian woman.¹⁰⁶ Bedreddin's mother was the daughter of a Byzantine commander and his daughter-in-law was Armenian—all of this exemplifying the diversity that went into the making of the Ottoman elite.

Muştafâ 'Alî himself was born in Gelibolu, a region that had been settled, according to the late fifteenth-century Ottoman historian 'Aşıkpaşazâde, by “dark itinerant Arab families” (*kara göçer Arab hâneleri*) in the time of Sultan Orhan (r. 1323–1362), when the Ottomans crossed the Dardanelles to conquer the Byzantine regions in Thrace.¹⁰⁷ Muştafâ 'Alî was familiar with these two examples of Black Africans taking part in the making of the Ottoman Empire and its elite. Here, he does not designate the Ottoman elite with the term *cins* (variety), but as *zümre*, which a mid-sixteenth-century Arab-Turkish dictionary renders as “moral community” (*cemâ'at*), imbuing them with a universality fitting to the would-be leaders of a universal empire.¹⁰⁸ He ends the section on the mingling of different varieties of peoples with the verses:

With the beauty of the innate [human] nature,
The country of Rum was made complete.
God removed the glory of the sons of *jinn*s
To give to people a home on the surface of the earth.¹⁰⁹

Muştafâ 'Alî's works frequently convey his bitterness at not advancing as far in his career as he had expected.¹¹⁰ In his *Mevâ'idü'n-Nefâis Fî Kāvâ'idü'l-Mecâlis*, Muştafâ 'Alî complains about the “black faces of Nubian descent” penetrating the ranks of colleges and becoming professors.¹¹¹ The work also contains offensive references to Albanians, who in this period were making advances in the Ottoman government.¹¹² Metin Kunt has noted the importance of *cins* solidarity in Ottoman politics in the seventeenth century, when a number of contemporaries belonging to palace and government circles expressed prejudice against Albanians and Bosnians.¹¹³

Muştafâ 'Alî's book *Hâlâtü'l-Kâhire mine'l-Âdâti'z-Zâhire* was dedicated to the “white eunuch” Gazanfer Aga at a time when the office of the chief “black eunuch” was rising to prominence.¹¹⁴ In the 1550s, following the conquests in North Africa and the Portuguese incursions into the Indian Ocean and the Red Sea, the Ottoman

¹⁰⁵ Mustafa Âli, *Künhü'l-Ahbar*, 101–2.

¹⁰⁶ Halîl b. İsmâil b. Şeyh Bedreddin, *Simavna Kadisioglu Şeyh Bedreddin manâkibi*, ed. Abdülbâki Gölpınarlı and İsmet Sungurbey (Istanbul: ETİ yayınevi, 1967), 43.

¹⁰⁷ Inalcık, “Arab' Camel Drivers,” 256.

¹⁰⁸ Mustafa Âli, *Künhü'l-Ahbar*, 5. See also Ahterî Mustafa Efendi, *Ahterî-i Kebir*, ed. Ahmet Kırkılcıç and Yusuf Sancak (Ankara: Türk Dil Kurumu, 2009), 1154.

¹⁰⁹ Mustafa Âli, *Künhü'l-Ahbar*, 5; “sons of *jinn*s” refers to the five children of Iblis mentioned in the Quran as committing evil. Translation by the author.

¹¹⁰ For an extensive treatment of Muştafâ 'Alî's career, see Fleischer, *Bureaucrat and Intellectual*.

¹¹¹ Brookes, *Ottoman Gentleman*, 71.

¹¹² Brookes, *Ottoman Gentleman*, 103; Fleischer, *Bureaucrat and Intellectual*, 258.

¹¹³ Metin İbrahim Kunt, “Ethnic-Regional (*Cins*) Solidarity in the Seventeenth-Century Ottoman Establishment,” *International Journal of Middle East Studies* 5, no. 3 (1974): 238.

¹¹⁴ Bakı Tezcan, *The Second Ottoman Empire: Political and Social Transformation in the Early Modern World* (Cambridge: Cambridge Univ. Press, 2010), 93–108.

Empire began establishing direct rule along the coast of present-day Eritrea, becoming embroiled in the politics of Eastern Africa.¹¹⁵ In the 1570s there was a lively diplomatic exchange and flow of military equipment between Ottoman Istanbul and the northeastern kingdom of Bornu under the rule of Malik Idris, with whom the Ottomans shared a common border in southern Libya.¹¹⁶ When Muṣṭafā ‘Alī was writing his complaint about Black African scholars penetrating Ottoman ranks, the Ottoman Empire was deeply involved in the African political, scholarly, and economic world, which entailed the mobility of scholars, merchants, and slaves. Enslaved Africans in Ottoman Cyprus, who worked as domestic laborers and artisans and were frequently manumitted, were listed in Ottoman sharia court records according to their places of origin (kingdoms, cities).¹¹⁷ In 1612, a decade after Muṣṭafā ‘Alī’s death, Molla ‘Alī, an African Ottoman scholar who was elevated to the position of a law professor in the most prestigious college in the Ottoman state, Süleymaniye, wrote a treatise called *Rāfi ‘ü’l Ğubūṣ fī Fezāili’l-Ĥubūṣ* (Dispelling the darkness on the merits of the Ethiopians) in which he argued that blackness and whiteness were equally present in the essence of Adam.¹¹⁸ This subject clearly deserves longer treatment. Here, I discuss only some of the more significant examples suggesting that the breeding and mobility of animals in the early modern Ottoman Empire operated within a larger epistemological grid that included humans.

CONCLUSION: TECHNOLOGICAL BODIES

The programmatic breeding of animals in the early modern period is most commonly associated with Western Europe and the Atlantic world, or is even studied as a unique feature of European societies—in which there emerged a reordering and reclassifying of the natural world and its peoples, as well as a racist ideology justifying the enslavement of African people. While the early modern Ottoman Empire was not involved in the kind of colonial expansion and transatlantic chattel slavery that provided the sociopolitical context for the emergence of racial classifications, it nevertheless had its own developing notions of heredity and crossbreeding. This offers an important social context for the case study that has been the focus of this article: the establishment of camel-breeding operations around Ottoman Selanik, where one-humped camels were bred with two-humped camels transported from various distant places. In the second half of the sixteenth century, the mobilization of camels, and the improvement of their bodies through breeding, was a central concern of the Ottoman state. More broadly, this article has tried to illuminate the connection between animal mobility

¹¹⁵ Cengiz Orhonlu, *Osmanlı imparatorluğu’nun güney siyaseti Habeş eyaleti* (Istanbul: Edebiyat Fakültesi Matbaası, 1974).

¹¹⁶ Aziz Samih İler, *Şimalî Afrika’da Türkler* (Istanbul: Vakıf Kütüphanesi, 1937), 2:128; B. G. Martin, “Maî Idrîs of Bornu and the Ottoman Turks, 1576–78,” *International Journal of Middle East Studies* 3, no. 4 (1972): 470–90.

¹¹⁷ Jennings, “Black Slaves and Free Blacks,” 286–302.

¹¹⁸ Baki Tezcan, “Dispelling the Darkness: The Politics of ‘Race’ in the Early Seventeenth-Century Ottoman Empire in the Light of the Life and Work of Mullah Ali,” in *Identity and Identity Formation in the Ottoman World: A Volume of Essays in Honor of Norman Itzkowitz*, ed. Baki Tezcan and Karl K. Barbir (Madison: Center for Turkish Studies at the Univ. of Wisconsin, 2007), 91–93; Tezcan, “Dispelling the Darkness of the Halberdier’s Treatise: A Comparative Look at Black Africans in Ottoman Letters in the Early Modern Period,” in *Disliking Others: Loathing, Hostility, and Distrust in Pre-modern Ottoman Lands*, ed. Hakan T. Karateke, H. Erdem Çıpa, and Helga Anetshofer (Boston: Academic Studies Press, 2018), 64.

and Ottoman state making, specifically the creation of provincial treasuries, the establishment of protected lands and forests, and the use of local communities and their knowledge. (Similarly, in his examination of the migrating Mexica people, León García Garagarza demonstrates in this volume that the knowledge and use of the larvae of the alkali fly played an important role in the constitution of political authority among the Aztecs in the fifteenth century.¹¹⁹)

The mobility of crossbreeding practices in the sixteenth-century Ottoman Empire related to a new epistemology in which animals, plants, and even humans were seen as mobile “technological bodies”—subject to human intervention, hybridizing, and transportation across vast spaces. This epistemology was catalyzed by the expanding Ottoman bureaucracy, whose itinerant members wrote works displaying their first-hand observations of various regions. Ottoman scholar-bureaucrats were taking part in a reconfiguration of natural history emphasizing the mobility of plants and animals. Finally, the mobility and breeding of camels took place in a cultural framework in which Ottoman elites were formulating their own history as *Rumis*, a self-understanding in which the notion of hybridity was both crucial and troublesome. Discussions of the mingling of different varieties of people in the second half of the sixteenth century, which drew on a language or terminology similar to that used to describe the breeding of camels, appeared at a time when increased mobility challenged established hierarchies and categories. Far from being a marginal or exceptional case, the camel-breeding operations in Ottoman Selanik are revealed, upon closer inspection, to reflect Ottoman society’s growing interest in moving, modifying, and reclassifying the natures of animals, plants, and human beings.

¹¹⁹ León García Garagarza, “Flesh and Blood of Huitzilopochtli: The Izcahuitli Larva and the Imperial Rise of Mexico-Tenochtitlan,” this volume.