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Behind gold for pepper: The players and the game of Indo-Mediterranean trade

Jeremy A. Simmons 

University of Maryland, College Park, USA
Email: simmonsj@umd.edu

Abstract

This article offers a fresh approach to the study of ‘Indo-Roman’ trade by defining the ‘players’ of the ‘game’ of Indian Ocean commerce in the early centuries of the Common Era. Numerous specialized personnel hailing from the Mediterranean, Near East, and Indian subcontinent were involved in the movement, processing, and sale of Indian Ocean commodities. Players throughout the ancient world formed principal-agent relationships, corporate structures, and diaspora communities based on shared heritage and profession to facilitate their efforts. These tactics lowered the transaction costs of commerce arising from a combination of factors: the seasonal monsoon winds restricting wind-powered travel; the asymmetry of information for traders operating abroad without a strong support network; and state interventions (e.g. targeted infrastructure projects and tariffs). Certain individuals attained competitive advantages by cooperating with states to regulate the very commerce in which they engaged (e.g. tax-farmers).

Keywords: Indian Ocean; trade; diaspora; institutions; communication

The estuaries of India’s Malabar Coast served as a backdrop for repeated meetings of products and peoples in antiquity, but the exchange of Roman gold coins for Malabar peppercorns was by far the most divisive. Our most detailed textual source regarding ancient trading activities on the Indian Ocean, a first-century ‘handbook’ written in Greek known as the *Periplus of the Erythraean Sea*, mechanically outlines the exchange of Roman coins for black pepper at Malabar ports such as Muziris; yet most contemporary testimonies provide more polarized views.¹ A poet of the Tamil *Canġam* corpus celebrates the arrival of western traders (*yavaṇar*) at Muziris (Muciri), who bring gold and depart with pepper in return.² A world away in Rome, the first-century encyclopedist Pliny the Elder bemoans the loss of Roman capital to the East as a result of the spice trade throughout his *Natural History*, putting forth a questionable deficit figure of 100 million sesterces per annum (with half going to India alone).³ The underlying transaction of specie for spice has

I would like to thank Matthew Cobb for his invitation to contribute, my colleagues at the American Academy in Rome for their invaluable feedback on the project, and Federico De Romanis for sharing his most recent research and interpretations of the Muziris Papyrus with me.

¹*Periplus* §56 (Lionel Casson, *The Periplus Maris Erythraei: Text with Introduction, Translation, and Commentary* (Princeton: Princeton University Press, 1989)); Pascal Arnaud, ‘Le *Periplus Maris Erythraei*: une oeuvre de compilation aux préoccupations géographiques’, *Topoi Supplement*, 11 (2012): 27–61.

²*Akaṇāṇūru* 149.7–11 (A. Dakshinamurthy, tr., *Akaṇāṇūru: The Akam Four Hundred*, 3 vols. (Tiruchirappalli: Bharathidasan University, 1999)).

³Pliny the Elder *Natural History* 6.26.101, 12.41.84 (H. Rackham, ed., *Pliny the Elder: Natural History* (Cambridge, MA: Harvard University Press, 1942–5)); see Matthew A. Cobb, ‘Balancing the Trade: Roman Cargo Shipments to India’, *Oxford Journal of Archaeology* 34, no. 2 (2015): 185–203; Kasper G. Evers, *Worlds Apart Trading Together: The Organisation of Long-distance Trade between Rome and India in Antiquity* (Oxford: Archaeopress, 2017), 68–9.

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long stood as a proxy for a wider web of overland and maritime connections between the Mediterranean world and the Indian subcontinent, which scholarly treatments have traditionally labelled ‘Indo-Roman’ trade.

These vignettes betray a fundamental complexity to the study of long-distance trade in antiquity. The larger story of the exchange of gold for pepper must rely on a confluence of evidence drawing from different traditions of the ancient world. Historically, however, the scholarship on this topic has prioritized agenda over evidence. The earliest work on the trade, conducted primarily by British scholars during the Raj, concluded that Rome ruled the waves in antiquity and established trading posts throughout an economically primitive subcontinent to secure luxuries for imperial consumers—a facsimile of empire articulated as Britain’s own waned.⁴ Post-colonial scholarship, reaching an apex after Indian independence, swung the pendulum toward nationalist interpretations: ancient India now served as the centre of commerce in an Afro-Asian world, with the Romans buckling under their supposed trade deficit.⁵ Despite the new discoveries of archaeological, papyrological, and epigraphic evidence over the last three decades,⁶ and the emergence of the Indian Ocean as an area study in the *longue durée*,⁷ the historical construct of ‘Indo-Roman’ trade for the early first millennium CE has endured, a cleft in perspective which began in antiquity and persists through partisanship. While scholars have attempted to bridge the cultural and scholarly divides plaguing later periods of historical inquiry, only recently have they begun to employ more nuanced theoretical models to better understand the interconnected Indian Ocean in antiquity (a trend discussed further in Matthew Cobb’s introduction to this Special Issue (henceforth SI)).⁸

What goes on behind this curtain of source material and scholarly interpretations? What is the human toll behind a sprinkle of pepper or a gift of gold? The agents of pre-modern commerce operated in the face of several unknown factors when moving gold or pepper across thousands of kilometres.⁹ It was certainly a risky business for both investors and traders: investors bore the financial burden of cargoes lost at sea, while traders onboard could well lose their lives. A rather obvious limitation were the seasonal monsoon winds on which Indian Ocean sailors relied—winds that only enabled ‘contingent movement’ by sail in one direction for months at a time.¹⁰ As a result, foreign traders had to wait for the winds before embarking on their return journeys across the sea. Besides ocean currents, mercantile agents had to navigate the numerous economic and legal institutions throughout the Indian Ocean world, which, when done correctly, could dramatically lower the costs of their commercial activities. Such considerations are of immense importance for determining the strategies that reduced the risks of maritime travel, facilitated long-distance business transactions, and ultimately made this trade possible.

⁴E.g. Eric H. Warmington, *The Commerce between the Roman Empire and India* (Cambridge: Cambridge University Press, 1928); and Mortimer Wheeler, *Rome beyond the Imperial Frontiers* (London: G. Bell and Sons, 1954).

⁵E.g. H. P. Chakraborti, *Trade and Commerce of Ancient India* (Calcutta: Academic Publishers, 1966); M. Chandra, *Trade and Trade Routes in Ancient India* (New Delhi: Abhinav Publications, 1977); Prakash Charan Prasad, *Foreign Trade and Commerce in Ancient India* (New Delhi: Abhinav Publications, 1977); S. P. Kandaswamy, ‘The Kongu and the Roman Coins’, *Journal of the Numismatic Society of India* 46 (1984): 39–44.

⁶Eivind H. Seland, ‘Archaeology of Trade in the Western Indian Ocean, 300 BC–AD 700’, *Journal of Archaeological Research* 22, no. 4 (2014): 367–402.

⁷E.g. Kirti N. Chaudhuri, *Trade and Civilization in the Indian Ocean: An Economic History from the Rise of Islam to 1750* (Cambridge: Cambridge University Press, 1985); Michael Pearson, *The Indian Ocean* (London: Routledge, 2003); Philippe Beaujard, *The Worlds of the Indian Ocean: A Global History*, 2 vols. (Cambridge: Cambridge University Press, 2019).

⁸E.g. Janet Abu-Lughod, *Before European Hegemony: The World System A.D. 1250–1350* (Oxford: Oxford University Press, 1989); Christopher Bayly, *The Birth of the Modern World, 1780–1914* (Malden, MA: Wiley-Blackwell, 2004).

⁹Jeremy A. Simmons, ‘Dire Straits: Safeguarding Trade on the Red Sea and Gulf of Khambhat (ca 1–300 CE)’, in *Networked Spaces: The Spatiality of Networks in the Red Sea and Western Indian Ocean*, ed. C. Durand et al. (Lyon: MOM Éditions, 2022), 227–44.

¹⁰Peter Campbell, ‘Contingent Seas: Seafaring, Contracts and Law’, in *Roman Law and Maritime Commerce*, ed. P. Candy and E. M. Ferrandiz (Edinburgh: University of Edinburgh Press, 2022), 23–40.

The sporadic evidence for ancient Indian Ocean trade—ranging from graffiti and archaeobotanical remains to the normative precepts of legal texts, from Greek and Latin sources to those composed in several Indic languages—becomes quite compatible within a broader comparative model based on the human strategies of commerce. Mercantile agents in pre-industrial economies often faced similar considerations and institutional factors when organizing maritime ventures over such vast distances. They shared the same elemental concern when pursuing profit: how to conduct transoceanic commerce in the most expedient, safe, and cost-effective way possible. A broader approach clarifies our understanding beyond those from either side of the scholarly divide, both of which often seek to define political stakes over an ocean no ancient state controlled. In the oceanic in-between, where the monsoon winds held sway, traders from the eastern Mediterranean, Near East, and Indian subcontinent crossed the sea not to plant the flag, but to pursue opportunity.¹¹

We can think of this model in terms of the ‘players’ and the ‘game’ of oceanic trade, borrowing a metaphor from New Institutional Economics (see below). Distance, topography, technological limitations, state interference, and institutional factors shape the ‘game’ of Indian Ocean commerce with a set of rules governing fair and profitable play. These parameters helped shape the strategies used by ‘players’, our human agents (and, to a limited extent, state actors), who cooperated to maximize their chances of profit, exploited loopholes, or, when opportune, cheated. A model such as this cannot reveal exactly how every trading operation on the Indian Ocean occurred in antiquity; rather, this deductive model allows us to propose with comparatively few sources of evidence a coherent system of practices that ancient merchants likely employed on the Indian Ocean—a system that is resilient enough to incorporate further discoveries without recourse to debates steeped in cultural competition.

This article explores the strategies of those playing the game of Indian Ocean trade in the early centuries of the Common Era. After a brief survey of some of the players involved, the larger institutional factors that governed economic activity in the Mediterranean and Indian subcontinent will be discussed; such factors, particularly those pertaining to organization and financing, informed the way the ‘game’ was played by private commercial agents. States, though players of the game in as much as they sought to acquire revenue from indirect taxes, also shaped the game, whether deliberately or unconsciously, through top-down initiatives. The following section highlights some of the operational strategies that could lower the transaction costs of maritime ventures, namely how the players could play the game well. Such strategies include diaspora communities built around a shared cultural identity, communication and information sharing, physical outposts sustained through food importation, integration into local support networks, and exploitation of state incentives. By articulating the shared rules of the game and its players, this article offers a new approach beyond the confines of the divisive label ‘Indo-Roman’ and argues that it was a broader set of human choices that enabled the viability of long-distance trade between the Mediterranean and Indian Ocean worlds.

The players: ancient Indian Ocean traders

In addressing the primary players of ancient ‘Indo-Mediterranean’ trade, this article focuses on three specific groups: Indian traders in Roman Egypt; Mediterranean traders in India; and the multiethnic community on the island of Socotra. Where illustrative, better-attested communities involved in ancient long-distance commerce, such as those of the Nabateans and Palmyrenes, will also be discussed. The evidence moves rapidly between different geographies, materials, and

¹¹Chaudhuri, *Trade and Civilization*, 14–15; Ranabir Chakravarti, ‘Knowing the Sea: Thalassographies to Thalassology of the Indian Ocean (up to c. 1500 CE)’, in *Knowledge and the Indian Ocean*, ed. S. Keller (Cham: Palgrave Macmillan, 2019), 29–46.



Map 1. Ancient Indian Ocean World (early first millennium CE) [Map: Simmons, AWMC].

languages but, when viewed in total, serves as an useful corpus from which we can better understand ancient oceanic trade (see Map 1).

Until recently, traders from the Indian subcontinent were thought to have had a limited footprint in the Mediterranean world: as Cobb argues in his contribution to this SI, such an understanding must be reworked. While the *Periplus of the Erythraean Sea* and numerous ancient Indian texts describe transoceanic crossings by Indian merchants,¹² corresponding archaeological evidence first came to light through excavations at the Egyptian ports of Berenike and Myos Hormos.¹³ Graffiti evidence found on local pottery at these ports reveal Tamil names, such as Kaṇaṇ, Cātaṇ, and a chieftain Korran (*Korra pūmān*).¹⁴ A more extensive Prakrit graffito from Myos Hormos records the provisions of three traders from the Deccan Plateau in India, Hālaka, Viṇhudata, and Nākadata; the brief document contains each trader's store of perishable goods for consumption while abroad (e.g. meat, oil, and wine).¹⁵ When combined with finds of Indian cooking ware and fineware along the routes through the Eastern Desert as far as Coptos,

¹²E.g. *Periplus* §14; *Baveru Jātaka* 4.339, *Suppāraka Jātaka* 11.463 (Viggo Fausbøll, ed., *The Jātaka, Together with its Commentary, Being Tales of the Anterior Births of Gotama Buddha*, 6 vols. (London: Trübner and Co., 1877–96)); *Milindapañha* 6.21 (Vilhelm Trenckner, ed., *The Milindapañho, Being Dialogues between King Milinda and the Buddhist Sage Nāgasena*, rpt. (Oxford: Pali Text Society, 1997)); *Budhasvāmin Brhatkathāślokaṣaṃgraha* 5.199, 18.277, 18.283, 18.663–8 (Sir James Mallinson, ed., *The Emperor of the Sorcerers by Budhasvāmin*, 2 vols. (New York: New York University Press, 2005)); *Daṇḍin Daśakumāracarita* 1.4 (Moreshtar Kale, ed., *Daśakumāracarita of Daṇḍin: Text with Sanskrit Commentary, Various Readings, a Literal English Translation, Explanatory and Critical Notes, and an Exhaustive Introduction*, 4th ed. rpt. (Delhi: Motilal Banarsidass, 1997)); *Divyāvadāna* 2.135, 2.190 (Joel Tatelman, ed., *The Heavenly Exploits: Buddhist Biographies from the Divyāvadāna*, vol. 1. (New York: New York University, 2005)); *Jātakamāla* 14 (Justin Meiland, ed., *Garland of the Buddha's Past Lives*, vol. 1. (New York: New York University, 2009)).

¹³Steven Sidebotham, *Berenike and the Ancient Maritime Spice Route* (Berkeley: University of California Press, 2011).

¹⁴Iravatham Mahadevan, *Early Tamil Epigraphy: From the Earliest Times to the Sixth Century A.D.* (Cambridge, MA: Harvard University Press, 2003), 43, 49, 56, 61, 93, 146–7, 163–4, 235; Roberta Tomber, *Indo-Roman Trade: From Pots to Pepper* (London: Duckworth, 2008), 75; Sidebotham, *Berenike*, 227, 252.

¹⁵Richard Salomon, 'Epigraphic Remains of Indian Traders in Egypt', *Journal of the American Oriental Society* 111, no. 4 (1991): 731–6.

and fragments of Indian woven mats and baskets discarded at Berenike, these graffiti give the strong impression that Indian traders resided in Egyptian ports at least seasonally.¹⁶

For Mediterranean maritime ventures to India, we have various Greek and Latin textual references, as well as epigraphic attestations from the Syrian city of Palmyra (see below); we also have a single contract and cargo list preserved on the ‘Muziris Papyrus,’ which outlines the financing and transportation of a large cargo acquired at Muziris—the Malabar port celebrated in the *Cañkam* corpus and loathed by Pliny—from the port of Berenike to the city of Alexandria in Roman Egypt.¹⁷ Indic sources mention the trading activities of seafaring ‘westerners’, identified by the Sanskrit and Tamil term *yavana*.¹⁸ Tamil poetic sources describe a large and lavish *yavana* enclave in a select quarter of the Coromandel port of Puhar.¹⁹ Indic texts similarly treat the port of Muziris, which hosts the iconic exchange between gold-bearing *yavanas* and pepper-rich Tamils in the *Cañkam* corpus.²⁰ The recipient of the loan outlined in the Muziris Papyrus, likely the owner of a ship transporting numerous south Asian commodities, would have been one of these *yavanas* forced to remain seasonally at Muziris.²¹ The presence of Roman utilitarian pottery and personal items like gaming pieces in southern ports, including Arikamedu²² and most recently Pattanam²³—a site very tenuously linked with the Muziris of ancient sources—all point to not only the conduct of trade, but also the habitation of these locales by small populations of Mediterranean merchants.

We can also look to several Prakrit dedicatory inscriptions made by *yavanas* at Buddhist sites in the western Deccan region of India.²⁴ The majority of these *yavana* inscriptions, dated to the first or second century, appear at the sites of Karle and Junnar, with many of the foreign dedicators hailing from the nearby town of Dhenukākāṭa.²⁵ While all of the inscriptions are marked with the foreign

¹⁶Himanshu P. Ray, *The Archaeology of Seafaring in Ancient South Asia* (Cambridge: Cambridge University Press, 2003), 206; Tomber, *Indo-Roman Trade*, 76; Sidebotham, *Berenike*, 75, 231.

¹⁷*P. Vindob. G 40822 (P. Vindob. = Papyrus Vindobonensis* (Österreichische Nationalbibliothek, Vienna)) = SB 18.13167 (SB = *Sammelbuch griechischer Urkunden aus Ägypten*); see Hermann Harrauer and Pieter J. Sijpesteijn, ‘Ein neues Dokument zu Roms Indienhandel, P. Vindob. G 40822’, *Anzeiger der Österreichische Akademie der Wissenschaften, Philosophisch-Historische Klasse* 122 (1985): 124–55; Federico De Romanis, ‘Playing Sudoku on the Verso of the “Muziris Papyrus”’: Pepper, Malabathron and Tortoise Shell in the Cargo of the *Hermapollon*’, *Journal of Ancient Indian History* 27 (2012): 75–101; and Federico De Romanis, *The Indo-Roman Pepper Trade and the Muziris Papyrus* (Oxford: Oxford University Press, 2020).

¹⁸For an authoritative catalogue, see Klaus Karttunen, *Yonas and Yavanas in Indian Literature* (Helsinki: Finnish Oriental Society, 2015).

¹⁹*Cilappatikāram* 5.6–12, 6.130–1, 14.67 (Rajagopal Parthasarathy, tr., *The Tale of an Anklet: An Epic of South India* (New York: Columbia University Press, 1993)); *Maduraikkāñci* 359–60 and *Paṭṭinappalai* 214–17 (J. V. Chelliah, tr., *Paṭṭupattu: Ten Tamil Idylls*, rpt. (Thanjavur: Tamil University, 1985)); see Radha Champakalakshmi, *Trade, Ideology and Urbanization: South India 300 BC to 300 AD* (New Delhi: Oxford University Press, 1996), 192; and Martha Ann Selby, ‘Representations of the Foreign in Classical Tamil Literature’, in *Ancient India in its Wider World*, ed. G. Parker and C. Sinopoli (Ann Arbor: University of Michigan Press, 2008), 79–90.

²⁰*Akanāñṅuru* 149.7–11; *Puṛaṇāñṅuru* 56.16–21, 343.1–10 (George Hart and Hank Heifetz, eds., *The Four Hundred Songs of War and Wisdom: An Anthology of Poems from the Classical Tamil, the Puṛaṇāñṅuru* (New York: Columbia University Press, 1999)); see Federico De Romanis, ‘Rome and the Nótia of India: Relations between Rome and Southern India from 30 BC to the Flavian Period’, in *Crossings: Early Mediterranean Contacts with India*, ed. F. De Romanis and A. Tchernia (New Delhi: Manohar, 1997), 94–5, 136–7.

²¹De Romanis, ‘Rome and the Nótia’, 94; and Tomber, *Indo-Roman Trade*, 148.

²²Vimala Begley, ed., *The Ancient Port of Arikamedu: New Excavations and Researches, 1989–1992*, 2 vols. (Pondicherry: École française d’Extrême-Orient, 1996–2004).

²³Roberta Tomber, ‘The Roman Pottery from Pattanam’, in *Imperial Rome, Indian Ocean Regions and Muziris: New Perspectives on Maritime Trade*, ed. K. S. Mathew (New Delhi: Routledge, 2015), 381–94; Evers, *Worlds Apart*, 165.

²⁴B. G. Gokhale, ‘Bharukaccha/Barygaza’, in *India and the Ancient World: History, Trade and Culture Before A.D. 650*, ed. G. Pollet (Leuven: Department Orientalistiek, 1987), 67–80; and Himanshu P. Ray, ‘The Yavana Presence in Ancient India’, *Journal of the Economic and Social History of the Orient* 31, no. 3 (1988): 314–15.

²⁵Inscriptions with the toponym Dhenukākāṭa include: LL 985, 986, 995, 996, 998, 1000, 1001, 1005, 1013, 1014, 1020, 1024, 1032, 1033, 1055, 1087, 1094, 1095, 1096, 1097, 1109, 1119, 1123, 1131 (LL = H. Lüders, *Appendix to Epigraphia Indica and Record of the Archaeological Survey of India, Vol. X: A List of Brahmi Inscriptions from the Earliest Times to about A. D. 400 with the Exception of Those of Asoka* (Calcutta: Superintendent Government Printing, 1912)).

epithet *yavana*, many identify members of larger groups, such as ‘Yavana of the Dhamadhayas’ or ‘of the Chulayakhas’, and, in few cases, offer proper names (e.g. Cita, Irla, and Camda).²⁶ These inscriptions represent larger corporate or familial groups of settled diaspora communities in India and, in addition, mark a way in which foreigners interacted with local support networks, a strategy to which we will return in the following section. Traces of *yavanas* have been found deeper within the subcontinent as well: the *yavana* Nandi made a dedication in the northern city of Mathura at roughly the same time as those at Karle and Junnar; ²⁷ a fragmentary inscription at the Buddhist *stūpa* at Kanaganahalli mentions a certain ‘Makosama’, which some have cautiously linked to the Roman name Maximus;²⁸ a Sanskrit causerie of the fifth century describes the diverse population of the city of Ujjain, among whose denizens numbered *yavanas*;²⁹ and clay sealings ‘of *yavana* women’ (*yavanikanam*) have been recovered from Ujjain and Mathura.³⁰ The presence of Mediterranean traders in the subcontinent was not merely a coastal affair.

Finally, we can address the island of Socotra, or ancient Dioscourides, which lies in the Arabian Sea just off the Horn of Africa. Testimony from the *Periplus of the Erythraean Sea* indicates that there was a mixed population of Arabians, Indians, and even some Greeks on the island,³¹ a description that has been confirmed by the recently published Hoq cave inscriptions.³² The majority of the graffiti in the cave, written in Prakrit, provides names for dozens of commercial actors arriving from western Indian emporia such as Bharukaccha (Barygaza in Greco-Roman sources), modern Bharuch in Gujarat.³³ As Cobb has also noted in this SI, onomastic studies of the inscriptions have revealed a diverse group from throughout the subcontinent, and further testimony left by Arabian, Greek, and Palmyrene visitors confirms the site’s multicultural character.³⁴ Though limited in quantity and scattered over thousands of kilometres, the evidence surveyed here provides glimpses of a myriad of commercial relationships spanning the ocean in the early centuries of the Common Era.

The game: states, institutions, and organization

Behind this scatter of evidence, we can begin to see the economic institutions underlying long-distance ventures, especially if we keep New Institutional Economic theory (and its successful application to ancient economies) in mind.³⁵ Endogenous institutions within given societies (whether formal or informal) and the path dependence they inspire aim in principal to lower transaction costs, or the costs associated with executing business transactions in an informed way. In a world full of unknowns, with capital and life on the line, a human calculus emerges to encourage efficiency while minimizing potential risks for all parties involved. Douglass North, a founding father of this school of economic thinking, sees institutions as providing ‘structure’ and the ‘rules of the game’; in adopting such a way of thinking, this article identifies just how the game

²⁶LL 1154, LL 1156, LL 1182, EI 18.36.1 (EI = *Epigraphia Indica*), EI 18.36.4, EI 18.36.6, ICTWI 4.7 (ICTWI = James Burgess and Bhagwanlal Indraji, *Inscriptions from the Cave-Temples of Western India* (Bombay: Government Central Press, 1881)) = LL 1093 = EI 18.36.7, EI 18.36.10; see Ray, ‘Yavana Presence’, 314–15; Evers, *Worlds Apart*, 158–62.

²⁷B. N. Mukherjee, *Kushāna Studies: New Perspectives* (Kolkata: Firma KLM, 2004), 233; Karttunen, *Yonas and Yavanas*, 211.

²⁸Maiko Nakanishi and Oskar von Hinüber, *Kanaganahalli Inscriptions* (Tokyo: Soka University Press, 2014), 111.

²⁹Śyāmilaka *Pādatāḍīṭaka* 1.64 (Manomohan Ghosh, *Glimpses of Sexual Life in Nanda-Maurya India* (Calcutta: Manisha Granthalaya, 1975)); see Karttunen, *Yonas and Yavanas*, 86.

³⁰Ray, ‘Yavana Presence’, 319.

³¹*Periplus* §30.

³²Ingo Strauch, ed., *Foreign Sailors on Socotra: The Inscriptions and Drawings from the Cave Hoq* (Bremen: Hemen, 2012) (= *I.Socotra*).

³³From Bharukaccha, *I.Socotra* 11.12, 11.17, 11.25, 14.2, 16.19, 17.1; from Hastakavpra, 2.23; from Vidiśa, 17.2.

³⁴Strauch, *Foreign Sailors*, 286–309.

³⁵Douglass North, *Institutions, Institutional Change and Economic Performance* (Cambridge: Cambridge University, 1990); T. Eggertsson, *Economic Behavior and Institutions* (Cambridge: Cambridge University Press, 1990); Douglass North, *Understanding the Process of Economic Change* (Princeton: Princeton University Press, 2005).

of Indo-Mediterranean trade was played, starting first with how the aforementioned actors organized themselves to greatest effect.³⁶

Two forms of private organization can be gleaned from ancient source material throughout the Indian Ocean world, the first being the so-called ‘principal-agent’ relationship. In this form of organization, principals delegated resources for use by subordinate agents, who, being either contractually or socially obligated to the principal, represented his or her financial interests at a distance.³⁷ In the Roman world, principals were often wealthy Roman citizens looking to diversify their portfolios beyond landed wealth, with agents ranging from hired hands to slaves and freedmen who were intimately tied to their (ex)masters through the social conventions of status and systems of oppression.³⁸ Accordingly, we find several freedmen and slaves operating in Egypt on behalf of wealthy Roman families (i.e. principals), such as the Annii, Numidii, and Peticii, in documentary and epigraphic sources of the first century CE.³⁹ Our most detailed example is preserved in the contract on the *recto* of the Muziris Papyrus, wherein an unnamed *paralēptēs*—an official in the tax-collecting apparatus in Egypt, i.e. the principal—forwards capital to an agent, who agrees to arrange the transport of a cargo of goods acquired at the Malabar port of Muziris from Berenike in Egypt, through the Eastern Desert to Coptos, and down the Nile to Alexandria.⁴⁰

We also find such relationships among the background noise of Buddhist *Jātaka* texts, parables regarding the previous lives of the Buddha. In an early example, the Pāli *Khadiraṅgāra Jātaka*, a wealthy investor, or *mahāseṭṭhi*, has loaned eighteen gold crores to third parties through an agent, or *āyuttaka*, who then collects on the debts for his principal.⁴¹ The use of credit instruments to finance long-distance commercial ventures can also be gleaned from similar sources, which mention the use of promissory notes (*inapaṇṇa*) or investors purchasing cargoes arriving from overseas through the pledge of a security.⁴² What we see here is the development of an organizational principle for financing these ventures throughout the Indian Ocean world, namely the forwarding of capital by wealthy principals to merchant agents through some form of credit operation, to be repaid upon the return of the vessel (whether in cash or cargo). It is a surprisingly flexible arrangement, provided that trust had been established between all parties and the capital involved possessed sufficient liquidity; financial tools, including contracts and credit instruments, helped to guarantee these conditions.

Corporate structures of traders proved an additional form of organization throughout the ancient world. Under Roman law, maritime traders could organize under flexible business contracts called *societates* or more formalized corporate bodies known as *collegia*.⁴³ Throughout

³⁶North, *Institutions*, 3–5, 34.

³⁷Eggertsson, *Economic Behavior*, 440–1; Kai Ruffing, ‘The Trade with India and the Problem of Agency in the Economy of the Roman Empire’, in *Egitto dai Faraoni agli Arabi: atti del convegno ‘Egitto: amministrazione, economia, società, cultura dai Faraoni agli Arabi’ (Milano, 7–9 gennaio 2013)*, ed. S. Bussi, (Pisa: F. Serra, 2013), 203.

³⁸Ruffing, ‘Trade with India’, 203.

³⁹Federico De Romanis, *Cassia, cinnamomo, ossidiana: uomini e merci tra Oceano indiano e Mediterraneo* (Rome: ‘L’Erma’ di Bretschneider, 1996), 241–60; André Tchernia, ‘The Dromedary of the Peticii and Trade with the East’, in *Crossings*, 238–49; Evers, *Worlds Apart*, 109–13; cf. Annalisa Marzano, ‘The Personal Infrastructure of Maritime Trade’, in *Roman Law and Maritime Commerce*, 64–5.

⁴⁰Muziris Papyrus *recto* col. ii, ll. 1–8. I am indebted to Federico De Romanis for his reading of the *paralēptēs qua creditor* (now published in De Romanis, *The Indo-Roman Pepper Trade*, 303–9).

⁴¹*Khadiraṅgāra Jātaka* 1.40 (Fausbøll, *The Jātaka*); see Himanshu P. Ray, *Monastery and Guild: Commerce under the Śātavāhanas* (New Delhi: Oxford University Press, 1986), 158.

⁴²E.g. *Cullaka-seṭṭhi Jātaka* 1.4 (Fausbøll, *The Jātaka*); *Khadiraṅgāra Jātaka* 1.40; *Divyāvadhāna* 2.95; *Vasudevahiṇḍi* 145 (J. Jain, tr., *The Vasudevahiṇḍi: An Authentic Jain Version of the Br̥hatakathā* (Ahmedabad: L.D. Institute of Indology, 1977)).

⁴³Dominic Rathbone, ‘The Financing of Maritime Commerce in the Roman Empire, I-II AD’, in *Credito e moneta nel mondo romano: atti degli incontri capresi di storia dell’economia antica (Capri, 12–14 ottobre 2000)*, ed. E. Lo Cascio (Bari: Edipuglia, 2003), 211–15; Wim Broekaert, ‘Partners in Business: Roman Merchants and the Potential Advantages of Being a *Collegiatus*’, *Ancient Society* 41 (2011): 221–56; Wim Broekaert, ‘Joining Forces: Commercial Partnerships or *Societates* in the Early Roman Empire’, *Historia* 61, no. 2 (2012): 221–53; Boudewijn Sirks, ‘Law, Commerce, and Finance in the Roman Empire’, in *Trade, Commerce, and Finance in the Roman Empire*, ed. A. Wilson and A. Bowman (Oxford: Oxford University Press, 2017), 73–4, 92–4; Marzano, ‘The Personal Infrastructure of Maritime Trade’, 60–1.

the eastern Mediterranean, Arabians from the region of Nabataea and the Syrian city of Palmyra used collective caravan structures (*synodiai*), which enabled the safe conveyance of product belonging to multiple individuals under the auspices of a caravan-leader (*synodiarchēs*).⁴⁴ The Indian subcontinent sustained its fair share of corporate groups, granted sanction in Indian legal codes like the *Manusmṛti*, which include the *śreṇī* (*seṇi*), *vaṇig-grāma* (*vāniya-gāma*), and *nigama*.⁴⁵ We have epigraphic testimony for several corporate groups built around certain professions, as well as other dedicatory inscriptions that record individual traders⁴⁶ and their larger corporations: for instance, a so-called ‘organization of sea-traders’ made a dedication at the coastal Buddhist monastery at Kanheri, while a *vāniya-gāma*, literally a ‘merchant village’, from Dhēnukākaṭa dedicated inland at Karle alongside *yavanas*.⁴⁷ Although these structures differ in the exact nature of their composition—and certainly differ from the early modern European corporation—they nonetheless share important structural characteristics and operational imperatives, such as pooling finances and resources, regulating constituent members, and coordinating commercial activities.⁴⁸

Principal-agent relationships and corporate bodies are not mutually exclusive forms of organization—a principal could in theory finance an agent to be involved in a more collective arrangement (e.g. a *societas* contract) or even sponsor the activities of an entire corporation. In the context of Indian Ocean commerce, we might place Marcus Ulpius Yarhai, a second-century investor from Palmyra, into this category; he receives numerous honorary inscriptions from corporate groups of Palmyrene traders returning by ship from India, ventures which he financed.⁴⁹ A funerary relief from the monumental tomb of Julius Aurelius Marona (236 CE), another Palmyrene and Roman citizen, depicts the man with a ship in the background and a camel to his right—symbols of the overland caravans and maritime trade

⁴⁴Eivind H. Seland, ‘Camels, Camel Nomadism and the Practicalities of Palmyrene Caravan Trade’, *ARAM* 27, no. 1/2 (2015): 45–54; Eivind H. Seland, *Ships of the Desert and Ships of the Sea: Palmyra in the World Trade of the First Three Centuries CE* (Wiesbaden: Harrassowitz, 2016), 71–3.

⁴⁵E.g. *Manusmṛti* 8.189 (J. L. Shastri, ed., *Manusmṛti: With the Sanskrit Commentary Manvartha-Muktāvali of Kullūka Bhaṭṭa* (Delhi: Motilal Banarsidass, 1983)), *Yājñavalkya-smṛti* 2.66 (Patrick Olivelle, ed., *A Treatise on Dharma* (Cambridge, MA: Harvard University Press, 2019)), *Nārada-smṛti* 1.9 (Patrick Olivelle, ed., *Dharmasūtra Parallels: Containing the Dharmasūtras of Āpastamba, Gautama, Baudhāyana, and Vasīṣṭha* (Delhi: Motilal Banarsidass, 2005)), *Bṛhaspatīsaṃhitā* 12.10 (Ludwik Sternbach, ed., *A New Abridged Version of the Bṛhaspati-Saṃhitā of the Garuḍapurāna* (Varanasi: All-India Kashiraj Trust, 1966)); see K. K. Thaplyal, *Guilds in Ancient India: A Study of Guild Organization in Northern India and Western Deccan from circa 600 BC to circa 600 AD* (New Delhi: New Age International, 1996); Vikramaditya Khanna, ‘Business Organizations in India prior to the British East India Company’, in *Research Handbook on the History of Corporate and Company Law*, ed. H. Wells (Cheltenham: Edward Elgar, 2018), 33–59.

⁴⁶Dedication by traders (e.g. *vanij*, *seṭṭhi*, *negama*, etc.) and their family members at religious sites in India include: Mathura: *EI* 10.23.13, *LL* 30; Sanchi: *EI* 2.7.1.47 = *LL* 269, *EI* 2.7.1.81 = *LL* 320, *EI* 2.7.1.91 = *LL* 355; Kanheri: *LL* 987, 995, 998, 1000, 1001, 1002, 1024; Kuda: *LL* 1062, 1065, 1066; Nasik: *LL* 1127, 1139; Junnar: *LL* 1172; Ajanta: *LL* 1198; Amaravati: *LL* 1213, 1214, 1229, 1230, 1239, 1278, 1281, 1285, 1292; Nagarjunakonda: *EIAD* 3 (*EIAD* = Arlo Griffiths et al., eds., ‘Early Inscriptions of Āndhradeśa’, *École française d’Extrême-Orient*, (Paris, 2017), <http://hisoma.huma-num.fr/exist/apps/EIAD/index2.html> [accessed 18 June 2023]).

⁴⁷*LL* 1012 and *EI* 18.36.3; cf. *LL* 705.

⁴⁸Ron Harris, ‘The Institutional Dynamics of Early Modern Eurasian Trade: The *Commenda* and the Corporation’, *Journal of Economic Behavior and Organization* 71 (2009): 613–15.

⁴⁹Christiane Deplace and Jacqueline Dentzer-Feydy, eds., *L’agora de Palmyre* (Beirut: Institut français du Proche-Orient, 2005), VI.8–15. For merchants returning from Skythia to honour M. Ulpius Yarhai, see Deplace and Dentzer-Feydy, *L’agora*, VI.9 = *SEG* 46.1798 (*SEG* = *Supplementum Epigraphicum Graecum*) = *LEO* 412 (*LEO* = Filippo Canali De Rossi, *Iscrizioni dello estremo oriente greco* (Bonn: Verlag Dr. Rudolf Habelt, 2004)) = *Inv. Palm.* 10.96 (*Inv. Palm* = *Inventaire des inscriptions de Palmyre*) = *PAT* 1403 (*PAT* = Delbert R. Hillers and Eleonora Cusini, *Palmyrene Aramaic Texts* (Baltimore: Johns Hopkins University, 1996)); for merchants from the Kouchans, see Deplace and Dentzer-Feydy, *L’agora*, VI.14 = *IGRR* 3.1538 (*IGRR* = *Inscriptiones Graecae ad Res Romanas Pertinentes*) = *LEO* 96 = *Inv. Palm.* 10.87–8 = *CIS* 2.3690 (*CIS* = *Corpus Inscriptionum Semiticarum*) = *PAT* 306.

Table 1. Trader Terminology

	Greek	Latin	Indic Languages
Corporate Groups	<i>synodia</i>	<i>societas</i> <i>collegium</i>	<i>śreṇī/seṇī</i> <i>vaṇig-grāma/vaniya-gāma</i> <i>nigama</i>
Corporate Leaders	<i>synodiarchēs</i>	<i>manceps</i>	<i>sārthavāha/sattāvaha</i> <i>śreṣṭhi/(mahā)seṭṭhi</i>
Traders	<i>emporos</i>	<i>negotiator</i> <i>mercator</i>	<i>vaṇij/vāṇijaka</i> <i>naigama/negama</i>
Shipowners and Mariners	<i>nauklēros</i>	<i>navicularius</i>	<i>nāvika</i> <i>niryāmaka/niyyāmka</i>

ventures in which he was involved, likely as a financier.⁵⁰ Still other subjects of funerary reliefs from the desert city, who remain anonymous due to fragmentary inscriptions, are depicted in death with the camel caravans that made them so wealthy in life.⁵¹

Both forms of organization relied on the division of labour between investors, shipowners, and the merchants who carried out actual transactions on the ground. Such specialization arose from the realities of wealth disparity—very few had sufficient credit or an ocean-going vessel at their disposal. Epigraphic material from Egypt, Syria, and India clearly distinguishes different roles within trading ventures through a specialized vocabulary, between investors and corporate leadership (whether of caravans or other corporations), shipowners, and traders (see Table 1). For instance, those leaving Prakrit graffiti at Socotra often differentiate themselves as mariners, *nāvikas*, or individual merchants, *vānikas*.⁵² While some commercial agents were in charge of their own ships and cargoes, such as the female duo Ailia Isidora and Ailia Olympias of Egypt, who present themselves as both ‘ship-owners and merchants of the Red Sea’ (*nauklēroi kai emporoi Erythraikai*), such exceptions tend to be expressed through a doubling of specific terminology.⁵³ Trading associations throughout the Indian Ocean world undoubtedly contained both, though inscriptions usually specify individuated organizations: for example, two Palmyrene groups—one of *emporoi*, another of *nauklēroi*—both of which are attested in Egypt.⁵⁴ Thus, *emporoi* and *nauklēroi* were closely aligned or even conflated with one another, but they nonetheless remained distinct categories in the minds of traders when they chose to identify as such. Still others could participate in commercial activities on the Indian Ocean without explicitly self-identifying, much as Tomas Høisæter has demonstrated in this SI for commercial agents in the Taklamakan.

Regardless of minute differences in organization, these trader-related institutions sought to create viable and sufficient lines of capital for large commercial enterprises and to mitigate an array of associated risks. Such arrangements cut out middlemen, who could misrepresent market conditions to their own advantage over such vast distances; instead, trade was carried out by agents financially or socially obligated to principal investors, or else by representatives

⁵⁰Palmyra Museum A24/1126 and PIY 542 (PIY = Jean-Baptiste Yon, *Inscriptions grecques et latines de la Syrie*, Vol. 17.1, Palmyre (Beirut: Bibliothèque archéologique et historique, 2012)) = PAT 117; see Seland, *Ships of the Desert*, Fig. 16.

⁵¹E.g. Ny Carlsberg Glyptotek IN 2833.

⁵²*I.Socotra* 2.1 and 2.6 (*vani*); 6.1, 10.4, 11.1, 11.12, 14.15 (*nāvika*, *karnadhāra*, *niryāmaka/niryāma*). For a similar division in the context of south Arabia (*nauklērikoi anthrōpoi kai nautikoi*), see *Periplus* §21.

⁵³AE 1930.53 (AE = *L'Année épigraphique*) = SB 5.7539 = SEG 8.703 = SEG 51.2163; see Ruffing, ‘Trade with India’, 209.

⁵⁴E.g. *I.Portes* 39 (*I.Portes* = André Bernand, *Les portes du désert: Recueil des inscriptions grecques d'Antinooupolis, Tentyris, Koptos, Apollonopolis Parva et Apollonopolis Magna* (Paris: Éditions du Centre national de la recherche scientifique, 1984)) = CIS 2.3190 vs. AE 1912.171 = *I.Portes* 103 = SEG 34.1593; see Steven Sidebotham, *Roman Economic Policy in the Erythra Thalassa, 30 B.C. – A.D. 217* (Leiden: Brill, 1986), 95–6; Katia Schörle, ‘Palmyrene Merchant Networks and Economic Integration in Competitive Markets’, in *Sinews of Empire: Networks in the Roman Near East and Beyond*, ed. H. Teigen and E. H. Seland (Oxford: Oxbow, 2017), 152–3; De Romanis, *The Indo-Roman Pepper Trade*, 312–17.

of a partnership or corporate group with shared affiliation and interest in the success of the venture. The game of Indo-Mediterranean trade came with a series of necessary conditions, logical rules, and opportunities meant to help players advance and, more importantly, to protect them as they played.

What about ancient states? Were they players or did they shape the game? There are rare instances in which states ‘played the game’ alongside private commercial agents, such as the presence of Tamil ‘chiefs’ in inscriptions and graffiti, who have been deemed examples of Polanyian ‘administered trade’,⁵⁵ or the involvement of Roman imperial freedmen and slaves in trade along the roads of the Eastern Desert in Egypt.⁵⁶ However, the priority of explicit state involvement in Indian Ocean commerce appears to have been revenue extraction through tariffs. High rates of indirect taxation are to be found on either end of the Arabian Sea, including the Roman *tetarte* tariff of 25%⁵⁷ and the 15–20% recommended in Indian shastric texts.⁵⁸ The potentials for profit were sizeable—if we take the cargo preserved in the Muziris Papyrus as an especially large example, the amount to be collected in tax ranged in the millions of sesterces, a substantial sum in light of Pliny’s deficit concerns. Moreover, states employed their own strategies to achieve their objective. As discussed below, they often contracted the levy of these taxes to private individuals or corporate groups in order to obtain this revenue without the cost or logistical hurdles of collection. This may reflect what Andrew Wilson has described as a ‘game theory’ mentality of states, which attempted to find the largest sum they could tax without completely discouraging trade.⁵⁹

Commerce conducted over such vast distances might be hindered by factors that created an environment of risk to maritime ventures (e.g. piracy)—risk which in turn deterred investment. States could counteract this through regional diplomatic efforts or else by providing an armed presence in high-traffic zones. Ancient sources indicate that this two-pronged strategy happened to a certain extent at a regional level: for instance, the Romans attempted to fortify the Red Sea, particularly in the second century, manning a military outpost in the Farasan Islands,⁶⁰ possibly instituting a ‘Red Sea fleet’,⁶¹ and forging diplomatic ties with several desert tribes bordering the province of Arabia.⁶² Ancient ‘India’ was certainly not a monolithic political entity in antiquity (despite what the first half of ‘Indo-Roman’ implies). Textual and epigraphic sources record conflicts between ancient Indian polities, such as that between Deccani Śātavāhanas and the Western Kṣatrapas of Gujarat,⁶³ these dynasties

⁵⁵Ray, *Monastery and Guild*, 106–7; Evers, *Worlds Apart*, 164–71, 175.

⁵⁶Evers, *Worlds Apart*, 123–4.

⁵⁷*Digest* 39.4.16.7 (Alan Watson, ed., *The Digest of Justinian*, 4 vols. (Philadelphia: University of Pennsylvania Press, 2009)), *Theodosian Code* 4.13.6 (Theodor Mommsen and Paul Meyer, eds., *Theodosiani libri XVI: cum Constitutionibus Sirmondianis et Leges novellae ad Theodosianum pertinentes* (Berlin: Weidmann, 1905)), *Corpus of Civil Law* 4.65 (Theodor Mommsen et al., eds., *Corpus Iuris Civilis*, 3 vols. (Berlin: Weidmann, 1872–95)), cf. Strabo *Geography* 17.798 (Horace Leonard Jones, ed., *Strabo: Geography* (Cambridge, MA: Harvard University Press, 1932)); see Pieter J. Sijpesteijn, *Customs Duties in Graeco-Roman Egypt* (Zutphen: Terra, 1987), 2–5; Nicholas Purcell, ‘The Ancient Mediterranean: The View from the Customs House’, in *Rethinking the Mediterranean*, ed. W. V. Harris (Oxford: Oxford University Press, 2005), 210–11.

⁵⁸E.g. *Arthaśāstra* 2.22.3–8, 2.35.12 (R. P. Kangle, ed., *The Kauṣilya Arthaśāstra*, 3 vols. (Delhi: Motilal Banarsidass, 2010)); *Gautama Dharmasūtra* 10.25–35 and *Baudhāyana Śrautasūtra* 1.10.18 (Olivelle, *Dharmasūtra Parallels*); *Viṣṇusmṛti* 3.25–30 (Julius Jolly, tr., *Institutes of Vishnu* (Oxford: Clarendon Press, 1880)); *Manusmṛti* 7.129–31, 8.398; *Yājñavalkyasmṛti* 2.261.

⁵⁹Andrew Wilson, ‘Red Sea Trade and the State’, in *Across the Ocean: Nine Chapters on Indo-Mediterranean Trade*, ed. F. De Romanis and M. Maiuro (Leiden: Brill, 2015), 23.

⁶⁰Dario Nappo, ‘Roman Policy on the Red Sea in the Second Century CE’, in *Across the Ocean*, 42–56; Michael A. Speidel, ‘Wars, Trade and Treaties: New, Revised, and Neglected Sources for the Political, Diplomatic, and Military Aspects of Imperial Rome’s Relations with the Red Sea Basin and India, from Augustus to Diocletian’, in *Imperial Rome, Indian Ocean Regions and Muziris*, 89–94.

⁶¹Speidel, ‘Wars, Trade and Treaties’, 95.

⁶²G. W. Bowersock, *Roman Arabia* (Cambridge, MA: Harvard University Press, 1983), 96–8.

⁶³*Periplus* §52; *EI* 8.6 = *LL* 965, *EI* 8.8.4 = *LL* 1125, *EI* 8.8.2 = *LL* 1126; see Lionel Casson, ‘Sakas versus Andhras in the *Periplus Maris Erythraei*’, *Journal of the Economic and Social History of the Orient* 26, no. 2 (1983): 164–77.



Figure 1. Naneghat Pass through the western Ghats, Maharashtra, India [Photo: Simmons].

also made regional alliances through marriage in an effort to outflank their rivals.⁶⁴ Infrastructure works—the fortified roads in the Eastern Desert of Egypt⁶⁵ or through the steep passes of the western Ghats (see Figure 1),⁶⁶ warehouses for imported goods,⁶⁷ rest houses and ferry crossings throughout the Deccan (e.g. those sponsored by the Western Kṣatrapa notable Uṣavadāta)⁶⁸—all provided opportunities for the deployment of armed personnel by the state to aid and protect those conducting commerce or, better yet, monitor their activities.

We could view all the initiatives of states, from regional diplomacy and skirmishes to fortification and infrastructure, as creating a monitoring system that ensured the inflow of capital with the least amount of direct involvement possible. Even if states were more concerned with promoting security or benefaction as opposed to commerce, their actions did provide some baseline structure to private commercial transactions. Ancient states afforded stability to economic actors through the promotion of certain economic and legal institutions, such as the enforcement of contracts and loans; the longevity of these institutions inspired confidence in the system and resulted in the formation of fixed procedures, thereby lowering transaction costs.⁶⁹ The construction of ports and roads—literal paths on

⁶⁴Shailendra Bhandare, 'Historical Analysis of the Satavahana Era: A Study of Coins' (PhD diss, University of Mumbai, 1999), 332–65.

⁶⁵Jean-Pierre Brun et al., eds., *The Eastern Desert of Egypt during the Greco-Roman Period: Archaeological Reports* (Paris: Collège de France, 2018); Steven Sidebotham and Jennifer Gates-Foster, eds., *The Archaeological Survey of the Desert Roads between Berenike and the Nile Valley: Expeditions by the University of Michigan and the University of Delaware to the Eastern Desert of Egypt, 1987-2015* (Boston: American Schools of Oriental Research, 2019).

⁶⁶Ray, *Monastery and Guild*, 99; Ray, *Archaeology of Seafaring*, 136; Shinu Abraham, 'Inland Capitals, External Trade: The Socio-political Landscape of Late Iron Age/Early Historic Tamil South India', in *Ancient India in its Wider World*, 52–78; Jason Neelis, *Early Buddhist Transmission and Trade Networks: Mobility and Exchange Within and Beyond the Northwestern Borderlands of South Asia* (Leiden: Brill, 2011), 183–228.

⁶⁷E.g. O. N. Tripathi, *Taxation and Fiscal Administration in Ancient India* (Lucknow, Upper India Publishing House, 1985), 116–17; M. Piranomonte, 'Horrea Piperataria', *Lexicon Topographicum Urbis Romae*, vol. 3 (Rome: Quasar, 1996), 45–6; Rodney Ast and Roger Bagnall, 'The Receivers of Berenike: New Inscriptions from the 2015 Season', *Chiron* 45 (2015): 172–4; cf. Pliny *Natural History* 12.32.59.

⁶⁸*EI* 8.10.10 = *LL* 1131, *EI* 8.10.14 = *LL* 1135.

⁶⁹North, *Understanding Processes*, 50–57.

which traders depended—together with the cessation or eruption of hostilities between states, dictated the direction, speed, and volume of commercial activities, fundamental elements of the game.

Such an assessment comes with ready caveats. For one, no singular political economy or type of ‘state’ was shared throughout the ancient Indian Ocean world. For instance, the Tamil ‘chiefdoms’ of southern India, differing in many respects to the polities further north in the subcontinent, essentially monopolized pepper production and thus had particular motivations in developing ports during moments of intensified external trade.⁷⁰ Moreover, diplomacy between state actors was far more effective on a regional scale. Suggestions of tangible *amicitia* or diplomatic relations spanning the Arabian Sea, with Rome as the primary impetus for rulers in the subcontinent to engage in security operations to protect foreign merchants, seem like thin veils for primitivism tied to labels such as ‘Indo-Roman’.⁷¹ In fact, despite the oft-discussed references to Roman diplomatic encounters with Indians, Scythians, and Bactrians, it is hard to find any tangible policy outcomes of such meetings beyond pageantry. For example, the information about Taprobane (modern Sri Lanka) supposedly communicated to the Romans through a Sinhalese embassy reeks of Greco-Roman ethnographic tropes rather than substantial diplomatic intelligence.⁷² As we will see, mercantile networks often proved more useful for the rapid dissemination of up-to-date information about market conditions.

Moreover, security efforts, infrastructure initiatives, and normative precepts against piracy⁷³ prevalent in states throughout the ancient world could not eliminate all dangers to sailors or facilitate all of the terrestrial logistics. Private transportation and security personnel often filled gaps in the system, whether it be Nikanor’s transportation company operating in first-century Egypt,⁷⁴ or Palmyrene camel caravans of the second and third centuries coordinating goods through Mesopotamia (see Figure 2).⁷⁵ As mentioned above, the borrower in the contract preserved on the Muziris Papyrus promises to arrange transportation for the cargo once it arrived in Egypt, including cameleers to transport goods from the Red Sea coast to the Nile and riverine transport on to Alexandria. Buddhist *Jātakas* repeatedly describe how donkeys and bullock cart services (together with security personnel) could be contracted for journeys from the coastal strip to the interior of peninsular India.⁷⁶ Despite the Roman outpost at Farasan or the anti-piracy fleet along the Konkan (mentioned in the *Periplus*),⁷⁷ multiple textual sources recommend that private trading vessels equip archers just in case.⁷⁸

Thus, states shaped certain aspects of the game, even if unintentionally. They fostered institutional frameworks and path dependencies used by private agents, which, together with climatological and technological limitations, governed the course of safe and expedient

⁷⁰Champakalakshmi, *Trade, Ideology and Urbanization*, 92–202; Rajan Gurukkal, *Social Formations in Early South India* (New Delhi: Oxford University Press, 2012); De Romanis, *The Indo-Roman Pepper Trade*, 84–124. For a similar argument regarding frankincense and southern Arabian polities, see Jérémie Schiettecatte, *D’Adeu à Zafar: villes d’Arabie du sud préislamique* (Paris: De Boccard, 2011), 203–14.

⁷¹E.g. Speidel, ‘Wars, Trade and Treaties’, 117; Anne Kolb and Michael A. Speidel, ‘Perceptions from Beyond: Some Observations on Non-Roman Assessments of the Roman Empire from the Great Eastern Trade Routes’, *Journal of Ancient Civilizations* 30 (2015): 130–1.

⁷²Trevor Murphy, *Pliny the Elder’s Natural History: The Empire in the Encyclopedia* (Oxford: Oxford University Press, 2004), 105–13.

⁷³E.g. Kautilya *Arthaśāstra* 2.28.12; Cicero *On Duties* 3.107 (Walter Miller, ed., *Cicero: On Duties* (Cambridge, MA: Harvard University Press, 1913)).

⁷⁴Alexander Fuks, ‘Notes on the Archive of Nikanor’, *Journal of Juristic Papyrology* 5 (1951): 207–16; Kai Ruffing, ‘Das Nikanor-Archiv und der römische Süd- und Osthandel’, *Münstersche Beiträge zur antiken Handelsgeschichte* 12, no. 2 (1993), 1–26.

⁷⁵Maria Gorea, ‘The Sea and Inland Trade of Palmyra’, in *Foreign Sailors*, 471–5.

⁷⁶E.g. *Vanṇupatha Jātaka* 1.2, *Vedabbha Jātaka* 1.48, *Takka Jātaka* 1.63, *Asaṅkiya Jātaka* 1.76, *Khurappa Jātaka* 3.265, *Jagara Jātaka* 3.414, *Sattigumba Jātaka* 4.503 (Fausbøll, *The Jātakas*); *Periplus* §51; see Ray, *Archaeology of Seafaring*, 201; Neelis, *Early Buddhist Transmission*, 165–6; Evers, *Worlds Apart*, 163.

⁷⁷*Periplus* §52

⁷⁸Pliny *Natural History* 6.26.101; Philostratus *Life of Apollonius* 3.35 (Christopher P. Jones, ed., *Philostratus: Life of Apollonius* (Cambridge, MA: Harvard University Press, 2005)); Daṇḍin *Daśakumāracarita* 2.6.79–95; see De Romanis, ‘Playing Sudoku’, 75–6; Ray, *Archaeology of Seafaring*, 288; Karttunen, *Yonas and Yavanas*, 364.



Figure 2. Terracotta camel carrying transport *amphorae*, 2nd–3rd c. CE, Egypt (Metropolitan Museum of Art 89.2.2093) [Photo: MMA (public domain)].

commerce. However, as much as they provided path dependencies, they left potholes along the way in the form of unmitigated risks and additional transaction costs to be managed by private trading ventures. Of course, traders seeking to avoid taxes and state controls could always try their luck by circumventing watchdogs in the desert or on the seas, thereby eschewing the incidental benefits they offered—a roll of the dice that could spell disaster or yield advantage.⁷⁹

The strategies

With ancient states, institutions, and organizational factors setting the rules of the game, we can now explore possible strategies used by our players to lower the transaction costs of their trading activities. Four targeted questions of the evidence and institutions encountered thus far will help to identify these strategies. In addressing these questions, this section will appeal not only to the evidence for the trading communities outlined above, but also to later medieval source material as comparanda, since they preserve common strategies of pre-modern commerce.

Question 1: *How did agents within a trading venture establish trust with their business partners?* As we have seen, the implicit trust of members within ancient economic institutions, secured through social relationships or legally-binding contracts, minimized risk, thereby lowering transaction costs. However, these bonds were all the stronger when members of these groups shared other aspects of identity, such as ethnicity or creed. These associations encouraged the formation of what theorists call ‘multiplex relationships’—individuals possessing shared heritage, beliefs, and financial motivations are all the more likely to provide one another with support and protection when facing the adversity of an unknown environment.⁸⁰ As Avner Greif has noted for Maghrebi traders of the eleventh century, such groups also allowed for collective supervision and self-regulation, which were necessary factors for maintaining the good standing of the community and, as a result, the success of

⁷⁹Sidebotham, *Roman Economic Policy*, 164–5; Sidebotham, *Berenike*, 165.

⁸⁰Sebough Aslanian, ‘Social Capital, “Trust” and the Role of Networks in Julfan Trade: Informal and Semi-formal Institutions at Work’, *Journal of Global History* 1, no. 3 (2006): 383–402; Broekaert, ‘Partners in Business’, 229–30.

their business ventures.⁸¹ Self-professed multiplex relationships of corporate bodies can be found throughout the ancient world, from the groups of Palmyrene traders and shipowners attested in Egypt, to the Nabatean traders in the Italian port of Puteoli and the *yavanas* of Dhēnukākaṭa.⁸²

These multiplex relationships fostered another division of labour little discussed for the ancient period, namely that between groups of merchants residing in diaspora and seasonal or itinerate shippers.⁸³ While itinerant or seasonal merchants carried out the transoceanic crossings at the appropriate times of year, long-term resident alien communities maintained commercial relationships with their buyers and suppliers in foreign lands, acquired familiarity with local institutions, and could facilitate the resolution of any business conflicts abroad. This kind of arrangement would dramatically lower transaction costs, since the formation of new relationships with local suppliers and community leaders did not have to be reestablished with each new transoceanic crossing, and seasonal traders could deal with trusted entities.⁸⁴ Moreover, such communities could disseminate knowledge of how best to conduct business in new environments and how to navigate local institutions to their commercial advantage.

This procedure has been suggested for many pre-modern trading groups, such as those involved in the Austronesian maritime routes analyzed in Jiun-Yu Liu's contribution to this SI; they also apply to the trading groups surveyed in this article. Katia Schörle has recently argued that Palmyrene caravans could make use of fluvial transport on the Euphrates and organize transfers to seagoing vessels via the site of Spasinou Charax near the Persian Gulf in almost 'vertically integrated' structures, all without having to contract merchants outside the community.⁸⁵ Similar arguments are to be found for *yavanas* in the south of the subcontinent. For instance, communities in Coromandel ports (e.g. Puhar and Arikamedu) and Malabar ones (Muziris) could coordinate the movement of products across or around the tip of the subcontinent.⁸⁶ Scholars including André Tchernia and Kasper Evers have argued that *yavanas* throughout the subcontinent could have served as intermediaries between local suppliers or investors and foreign traders at Indian ports;⁸⁷ Romila Thapar and Federico De Romanis among others call for more nuanced dynamics between extra- and intra-regional exchange systems, especially in south India.⁸⁸ The common prerequisite behind these theoretical arrangements, which all point to some form of deterritorialization (see Cobb's introductory article in this SI), is the multiplex relationship, which lowered transaction costs by reinforcing a sense of trust between business partners of shared heritage situated thousands of kilometres apart.

Question 2: *How did these ventures communicate over such vast distances?* Up-to-date information about market conditions or the progress of a business venture is one of the principal ways of lowering commercial transaction costs, but it was a rare commodity in an age before extensive telecommunication. Group formations, such as the organizations of foreign traders mentioned above, inherently enabled a more efficient means of accumulating knowledge through experience and communicating that information between constituent

⁸¹Avner Greif, 'Reputation and Coalitions in Medieval Trade: Evidence on the Maghribi Traders', *Journal of Economic History* 49, no. 4 (1989): 857–82; cf. Marzano, 'The Personal Infrastructure of Maritime Trade', 67.

⁸²Taco Terpstra, *Trading Communities in the Roman World: A Micro-economic and Institutional Perspective* (Leiden: Brill, 2013), 95–100; Terpstra, 'Nabataean Middlemen', 70.

⁸³Broekaert, 'Joining Forces', 227.

⁸⁴Eivind H. Seland, 'Networks and Social Cohesion in Ancient Indian Ocean Trade: Geography, Ethnicity, Religion', *Journal of Global History* 8, no. 3 (2013): 374.

⁸⁵Schörle, 'Palmyrene Merchant Networks', 147–54.

⁸⁶Casson, *Periplus Maris Erythraei*, 25.

⁸⁷André Tchernia, 'Winds and Coins: From the Supposed Discovery of the Monsoon to the Denarii of Tiberius', in *Crossings*, 258–9; Evers, *Worlds Apart*, 162.

⁸⁸Romila Thapar, 'Black Gold: South Asia and the Roman Maritime Trade', *South Asia* 15, no. 2 (1992): 1–27; De Romanis, *The Indo-Roman Pepper Trade*, 107–24.

members. Beyond face-to-face conversations, institutional knowledge could be disseminated in a few ways. Specialized textual sources, most notably the *Periplus of the Erythraean Sea*, synthesized relevant information, whether it be the best items for trade at specific ports, potential coastal hazards, and areas where piracy was prominent; pilots with intimate knowledge of dangerous waterways were crucial in this regard as well.⁸⁹ Communication between traders and their investors could also occur via letter, as we see in the later Cairo Geniza Archive, a repository of documents including those written by Jewish merchants from the tenth to thirteenth centuries.⁹⁰ Personal letters between inhabitants of Greco-Roman Egypt proved essential for communicating market conditions and circulating products within exchange networks.⁹¹ Unfortunately, not many explicitly ‘mercantile’ letters survive from the early centuries of the Common Era, or else they were written through media that would have ensured their erasure upon completion of the venture (e.g. wax tablets).⁹² In any case, letters could only come and go with the seasonal winds, along with traders themselves.

One way to work around the seasonal limitations of information sharing was to specify exact ports of call and return-by dates. In a Mediterranean context, such an arrangement is preserved in an opinion of the second-century Roman jurist Scaevola, wherein a firm leave-by date for a trading venture from Syria to Italy was included in the wording of a bottomry loan.⁹³ As we saw, the loan preserved in the Muziris Papyrus specifies the exact route that the financed cargo would travel. Such fixed itineraries and deadlines gave investors some protection on their investments; deviation from the agreed-upon dates, when formalized in contracts, resulted in forfeiture in their favour. The reliable schedule of the monsoon winds made fixing deadlines in Indian Ocean commerce a simple affair: e.g. ships could pass through the Bab-el-Mandeb no later than August and could depart from southwestern India between December and January; if all went according to plan, a roundtrip journey between Egypt and western India could be completed within a single calendar year.⁹⁴

We can look to other forms of communication that enabled the dissemination of information more effectively among trader communities. Word of mouth or rumour could often communicate information with a surprising level of accuracy, especially when the veracity of the information was of direct relevance to a financial operation.⁹⁵ Word of mouth channels, particularly those relayed from well-established ‘ports of trade’, would have been pertinent for learning about the situation across the sea during the previous year.⁹⁶ In fact, the second-century Greek geographer Ptolemy notes that his work benefited from the testimony of traders, who relayed updated coordinate points and topographic descriptions of the subcontinent—a way in which the

⁸⁹Chakravarti, ‘Knowing the Sea’, 30.

⁹⁰Shelomo D. Goitein, ‘From the Mediterranean to India: Documents on the Trade to India, South Arabia, and East Africa from the Eleventh and Twelfth Centuries’, *Speculum* 29, no. 2 (1954): 181–97; Shelomo D. Goitein, ‘Portrait of a Medieval India Trader: Three Letters from the Cairo Geniza’, *Bulletin of the School of Oriental and African Studies*, 50, no. 3 (1987): 449–64; Shelomo D. Goitein and Mordechai A. Friedman, *India Traders of the Middle Ages: Documents from the Cairo Geniza (‘India Book’)* (Leiden: Brill, 2008); Elizabeth Lambourn, *Abraham’s Luggage: A Social Life of Things in the Medieval Indian Ocean World* (Cambridge: Cambridge University Press, 2018).

⁹¹Patrick Reinard, *Kommunikation und Ökonomie: Untersuchungen zu den privaten Papyrusbriefen aus dem kaiserzeitlichen Ägypten*, 2 vols. (Rahden: Verlag Marie Leidorf, 2016).

⁹²Taco Terpstra, ‘Communication and Roman Long-distance Trade’, in *Mercury’s Wings: Exploring Modes of Communication in the Ancient World*, ed. R. Talbert and F. Naiden (Oxford: Oxford University Press, 2017), 54–5.

⁹³*Digest* 45.1.122.1; see Terpstra, ‘Communication’, 50–1.

⁹⁴Seland, *Ships of the Desert*, 45–62; Matthew A. Cobb, *Rome and the Indian Ocean Trade from Augustus to the Early Third Century CE* (Leiden: Brill, 2018), 127–48.

⁹⁵Terpstra, ‘Communication’, 55–8.

⁹⁶Reinhold Walburg, *Coins and Tokens from Ancient Ceylon* (Wiesbaden: Reichert, 2008), 293.

first-hand and orally-transmitted experience of a trading network entered into academic compilations of knowledge.⁹⁷

Graffiti could also serve important communicative roles, as recent studies have shown.⁹⁸ Inscriptions at key locations frequented by traders, such as roads in the Eastern Desert of Egypt, the Darb al-Bakrah of northwestern Arabia, or the Hoq cave on Socotra, suggest both imitative and dialogic tendencies of their inscribers.⁹⁹ The repetition of formulae and the conscious reaction to what has already been written reveal that such traders actually read or acknowledged the graffiti of their predecessors, and thus, that these writings were effective forms of communication. This may explain the proliferation of named inscriptions with the phrase ‘has arrived.’ Thirty-four of the Indic inscriptions of Socotra add the participle *prāptaḥ* or *āgataḥ* following the name of the inscriber, marking his ‘arrival’ to the cave;¹⁰⁰ this is similar to the practice of the Nabatean caravanner Nussaigu, who left ‘arrival’ inscriptions at points along the roads of the Sinai Desert.¹⁰¹ These could serve as markers for subsequent traders in the same outfit or record the completion of transactions on-schedule. In the context of the Hoq cave, we should also consider these messages in light of an ‘arrival’ in a religiously charged space—as we shall see, traders could communicate as they practiced their faith.

Such forms of communication required some standard of literacy among these operators, and, in some cases, multilingualism.¹⁰² Stories recorded in Greco-Roman sources attest to traders learning the language of their host country while abroad in order to find success, such as a freedman-agent of Annius Plocamus in Sri Lanka or a shipwrecked Indian in Ptolemaic Egypt.¹⁰³ Rather than dismissing these incidents as apocryphal, we should read them as reflecting a real trader strategy of multilingualism that can be gleaned from surviving instances of bilingual writing by the same individual. Palmyrene traders regularly engaged in bilingualism, as embodied by the sailor Abgar on Socotra, who left both an Aramaic tablet and a Greek graffito in the Hoq cave.¹⁰⁴ A further example is Lysas, another agent of the principal Annius Plocamus, who announces his operations in both Greek and Latin on the road from Berenike to Coptos in Egypt; a certain Gaius Peticus also leaves his name in both languages.¹⁰⁵ Although *yavana* dedications at Buddhist sites were written in Prakrit—and dedicators occasionally assume generic Indic names—references to the harsh *yavana* language in

⁹⁷Ptolemy *Geography* 1.11.7, 1.17.3–5 (J. Lennart Berggren and Alexander Jones, tr., *Ptolemy’s Geography: An Annotated Translation of the Theoretical Chapters* (Princeton: Princeton University Press, 2002)); see Alexander Jones, ‘Ptolemy’s Geography: Mapmaking and the Scientific Enterprise’, in *Ancient Perspectives: Maps and their Place in Mesopotamia, Egypt, Greece, and Rome*, ed. R. Talbert (Chicago: University of Chicago Press, 2012), 125. For the *Periplus* as another compiled text, see Arnaud, ‘Le *Periplus Maris Erythraei*’, 43–8.

⁹⁸E.g. Kai Ruffing, ‘Die Geschäfte des Aurelios Nebuchelos’, *Laverna* 11 (2000): 71–105; J. A. Baird and C. Taylor, eds., *Ancient Graffiti in Context* (New York: Routledge, 2011).

⁹⁹Rebecca Benefiel, ‘Dialogues of Ancient Graffiti in the House of Maius Castricius in Pompeii’, *American Journal of Archaeology* 114, no. 1 (2010): 59–101; Rebecca Benefiel, ‘Dialogues of Graffiti in the House of the Four Styles at Pompeii (Casa Dei Quattro Stili, I. 8.17, 11)’, in *Ancient Graffiti in Context*, 20–48; Rachel Mairs, ‘Egyptian “Inscriptions” and Greek “Graffiti” at El Kanais in the Egyptian Eastern Desert’, in *Ancient Graffiti in Context*, 153–64; Laïla Nehmé, ed., *The Darb al-Bakrah: A Caravan Route in North-West Arabia* (Riyadh: Saudi Commission for Tourism and National Heritage, 2018).

¹⁰⁰*I.Socotra* 2.10, 2.11, 2.15, 2.19, 6.1, 6.5, 6.7, 9.4, 10.1, 11.3, 11.7, 11.10, 11.11, 11.15, 11.16, 11.19, 11.20, 11.21, 11.22, 11.32, 11.34, 11.36, 11.37, 11.40, 11.41, 11.47, 12.4, 13.1, 13.3, 14.16, 14.19, 14.20, 17.3.

¹⁰¹Enno Littman and David Meredith, ‘Nabataean Inscriptions from Egypt’, *Bulletin of the School of Oriental and African Studies* 15, no. 1 (1953), no. 34, 37, 46a (dated 266 CE); Enno Littmann and David Meredith, ‘Nabataean Inscriptions from Egypt–II’, *Bulletin of the School of Oriental and African Studies* 16, no. 2 (1954), no. 75, 77, 78 (perhaps first century CE); Sidebotham, *Berenike*, 154; and Terpstra, ‘Nabataean Middlemen’, 67–8.

¹⁰²Strauch, *Foreign Sailors*, 343; Gérard Fussman, ‘Les inscriptions Kharoṣṭhī de la plaine de Chilas’, in *Rock Inscriptions in the Indus Valley*, ed. K. Jettmar (Mainz: P. von Zabern, 1989), 32–3.

¹⁰³Pliny *Natural History* 6.24.84–85; Strabo *Geography* 2.3.4.

¹⁰⁴*I.Socotra* 4.6, 16.15.

¹⁰⁵David Meredith, ‘Annus Plocamus: Two Inscriptions from the Berenice Road’, *Journal of Roman Studies* 43 (1953): 38–40; David Meredith, ‘The Myos Hormos Road: Inscriptions and Ostraca’, *Chronique d’Égypte* 31, no. 62 (1956): 356–62; De Romanis, *Cassia, cinnamomo, ossidiana*, 247–50.

Indian textual sources imply the potential for the continued use of native tongues while abroad.¹⁰⁶ Members of foreign merchant groups could still use their primary language for internal interactions, but knowledge of additional languages for different domains of usage, code-switching, and even limited literacy facilitated global operations.

Question 3: *How did these traders sustain themselves while abroad?* Built environments supported traders in ways that reinforced their multiplex relationships. We have seen suggestive evidence of specific urban quarters inhabited by foreign traders (e.g. the descriptions of *yavana* traders in Puhar), as well as concentration patterns of foreign utilitarian pottery in ports ranging from Myos Hormos to Arikamedu. There were also larger communities of foreigners, as was the case with the numerous *yavanas* from Dhēnukākata.¹⁰⁷ The lease of Socotra to Arabian and Indian settlers granted by a south Arabian king is recorded in the *Periplus of the Erythraean Sea*, an arrangement that included the king's protection.¹⁰⁸ We can understand these outposts as mutually beneficial, since traders received real estate for their business ventures and political bodies could better monitor their activities.

Additional evidence attests to physical structures for exclusive use by seasonal or diaspora traders. These were used to coordinate trading activities or else served as places of congregation for institutional support. These types of structures for Mediterranean-based foreign traders in Roman Italy include the so-called 'house of the Alexandrians' and the Tyrian trading-stations in Rome and Puteoli.¹⁰⁹ Another example is a communal space for the association of Palmyrene Red Sea shipowners (*nauklēroi*) set up in the Nilotic city of Coptos—one of many established for the benefit of the Palmyrene diaspora throughout the ancient world.¹¹⁰ In the subcontinent, royals sponsored rest houses for itinerant traders alongside other infrastructure initiatives, such as the ferry-landings created by Uṣavadāta mentioned above; yet others appear to have been built on private initiative, such as those described in passing in the fictional *Brhatkathāślokaśaṃgraha*.¹¹¹ Gatherings of traders within these communal structures undoubtedly aided the rapid dissemination of oral information far more efficiently than individual conversations or written communications.¹¹²

Many diaspora communities also had shared religious spaces, which served not only as places to ensure divine sanction for commercial activities and agreements, but also as nodal points for socialization. These include the Nabatean temple of Dushara in Puteoli (of which inscriptional evidence survives)¹¹³ and the so-called 'shrine of the Palmyrenes' excavated at Berenike, which accommodated the worship of the Roman imperial cult, the Palmyrene god Yarhibol, and the Egyptian god Harpokrates;¹¹⁴ in fact, continued excavations at the port have yielded even more tantalizing evidence of foreign religious activity there, including material finds of south Asian character (e.g. images of the Buddha and a Sanskrit dedicatory inscription).¹¹⁵ Although the

¹⁰⁶Romila Thapar, *Cultural Pasts: Essays in Early Indian History* (New Delhi: Oxford University Press, 2000), 538; Karttunen, *Yonas and Yavanas*, 383.

¹⁰⁷D. D. Kosambi, 'Dhenukakata', *Journal of Asiatic Society of Bombay* 30, no. 2 (1955): 59–60; Ray, 'Yavana Presence', 315.

¹⁰⁸*Periplus* §31; see Mikhail Bukharin, 'The Mediterranean World and Socotra', in *Foreign Sailors*, 513–14.

¹⁰⁹E.g. IG 14.830 (IG = *Inscriptiones Graecae*) and CIL 10.1781 (CIL = *Corpus Inscriptionum Latinarum*); see Terpstra, *Trading Communities*, 70–84, 123–72; Terpstra, 'Nabataean Middlemen', 71; Marzano, 'The Personal Infrastructure of Maritime Trade', 58–60.

¹¹⁰AE 1912.171 = *I.Portes* 103 = SEG 34.1593 (= CIS 3.3910?); see Sidebotham, *Roman Economic Policy*, 95–6; Gary Young, *Rome's Eastern Trade: International Commerce and Imperial Policy, 31 BC - AD 305* (New York: Routledge, 2001), 80–1; Jean-Baptiste Yon, *Les notables de Palmyre* (Beirut: Institut français d'archéologie du Proche-Orient, 2002), 46–9; Ruffing, 'Trade with India', 208.

¹¹¹Budhasvāmin *Brhatkathāślokaśaṃgraha* 18.355–7.

¹¹²Terpstra, 'Communication', 58–60.

¹¹³Terpstra, 'Nabataean Middlemen', 63–8.

¹¹⁴Sidebotham, *Berenike*, 64–6, 264–5.

¹¹⁵J. K. Rądkowska and I. Zych, 'Exotic Cults in Roman Berenike? An Investigation into Two Temples in the Harbour *Temenos*', in *Stories of Globalisation: The Red Sea and the Persian Gulf from Late Prehistory to Early Modernity (Selected Papers*

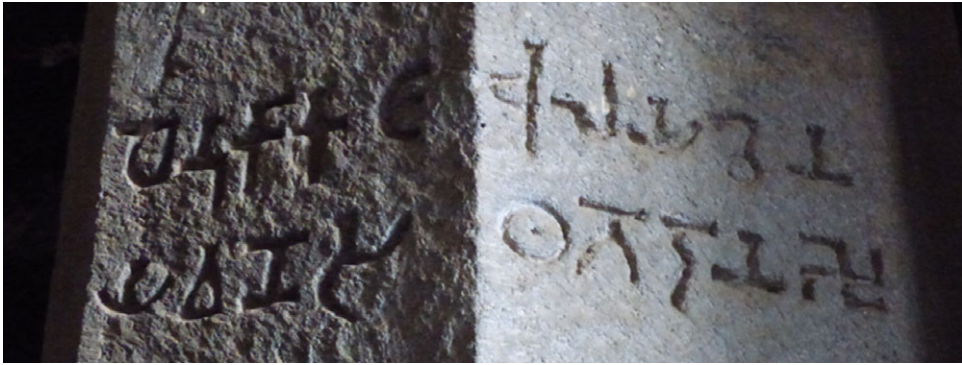


Figure 3. Dedicatory inscription on pillar by ‘Yavana of the Chulakayas’ from Dhenukākāṭa, Karle *caitya* (*EI* 18.36.6) [Photo: Simmons].

notion of a temple to the Roman emperor Augustus in Muziris, as shown on the late antique Peutinger Table, is hotly debated—and suggestions of a Roman military outpost in Malabar¹¹⁶ are based on misinterpretations of this source—its presence nevertheless alludes to a much larger phenomenon throughout the Indian Ocean network.¹¹⁷ As Taco Terpstra has argued, the presence of these safe spaces marked the ‘collective separateness’ of foreign residents from their host community and could serve to reinforce critical multiplex relationships.¹¹⁸

In some cases, such religious spaces fostered a direct dialogue between traders of different backgrounds, as we find on Socotra. The Hoq cave, with its spectacular rock formations, provided what has been called a ‘neutral religious space’ for the multicultural inhabitants; we find the presence of incense burners throughout the cave complex, as well as inscribed religious symbols, ranging from those of broader significance (e.g. tridents) to specifically Buddhist *stūpas* and *dharmacakras*.¹¹⁹ In fact, both the Palmyrene tablet of Abgar and the Greek inscription of a shipowner named Septimius Paniskus refer to the religious nature of their visit to the cave.¹²⁰ More established Buddhist sites in the Indian subcontinent also welcomed dedications from numerous individuals, whether practicing Buddhists or not, including the local *yavana* community there (see Figure 3). In these religious accommodations, which facilitated the development of ‘social world systems’ (as Signe Cohen has discussed in her contribution to this SI), diverse traders could find a shared religious experience—another fold of their multiplex relationships.

If we look back to one of our Indian graffiti from Myos Hormos, three Indian traders list perishable food items they acquired in Egypt; traders needed to obtain foodstuffs from local suppliers while abroad. Further records of the transportation of commodities through the Eastern Desert and customs forms at Berenike reveal that Egyptian grain arrived to the Red Sea ports

of Red Sea Project VII), ed. A. Manzo et al. (Leiden: Brill, 2018), 225–45; Steven Sidebotham et al., ‘Berenike 2019: Report on the Excavations’, *Thetis* 25 (2021): 11–22; and Steven Sidebotham et al., ‘Berenike 2022: Report on the Excavations’, *Thetis* 27 (2023): 20–5.

¹¹⁶E.g. Warmington, *The Commerce*, 58; Ram Sharan Sharma, *India’s Ancient Past* (New Delhi: Oxford University Press, 2005), 214; Anitta Kunnappilly, ‘The Trade of the Port of Muziris in Ancient Times’, *International Journal of Maritime History* 30, no. 3 (2018): 522.

¹¹⁷Kolb and Speidel, ‘Perceptions from Beyond’, 130–1; Nathanael Andrade, *The Journey of Christianity to India in Late Antiquity: Networks and the Movement of Culture* (Cambridge: Cambridge University Press, 2018), 123; Taco Terpstra, ‘The Imperial Cult and the Sacred Bonds of Roman Overseas Commerce’, in *Roman Port Societies: The Evidence of Inscriptions*, ed. P. Arnaud and S. Keay (Cambridge: Cambridge University Press, 2020), 187–93.

¹¹⁸Terpstra, ‘Nabataean Middlemen’, 69.

¹¹⁹Strauch, *Foreign Sailors*, 361–5; Hédi Dridi, ‘The Archaeological Remains in the Cave Hoq’, in *Foreign Sailors*, 223–7.

¹²⁰Strauch, *Foreign Sailors*, 542–3.

between May and June—precisely in time for the outfitting of ships and the massive outflow of traders before July; wine arrived in port between October and January, in time for purchase and consumption by visiting traders much like our Indian trio.¹²¹ However, archaeobotanical evidence from systematic excavation at these Egyptian ports reveals several imported food items from the subcontinent including coconut and rice; these were probably meant for consumption by Indian traders, since little record of these products is to be found in Mediterranean sources.¹²² Such finds often lie in the shadow of more sensational discoveries, such as a large hoard of Malabar peppercorns uncovered at Berenike.¹²³

Seasonal *yavanas* may also have brought provisions with them for their stay in India, as suggested by Spanish *amphorae* found in Arikamedu which once contained Roman fish sauce, a product with little known market in the subcontinent.¹²⁴ The *Periplus of the Erythraean Sea* also mentions the importation of staple commodities across the Indian Ocean to feed mercantile communities. Grain reached Malabar ports like Muziris specifically ‘for those involved with shipping’ (*tois peri to nauklērion*), i.e. for the seasonal *yavana* community.¹²⁵ Similarly, the island of Socotra received both grain and rice from those sailing out of Barygaza and the Malabar Coast due to the shortage of these commodities on the island.¹²⁶ Food imported to the island was meant to supply a community of traders from throughout the Indian Ocean network.

Finally, **Question 4:** *How did traders achieve a strategic advantage over their competitors?* Incentives from the state, whether intentional policies or unintended byproducts of its actions, served as one means for players to achieve an advantageous position.¹²⁷ One such incentive came from the prevalent use of tax-farming by ancient states to collect high tariffs on Indian Ocean products, a phenomenon briefly addressed above.¹²⁸ Much like states setting the rates of tariffs to ensure the optimal stream of revenue, the contracted tax-farmers undoubtedly engaged in a similar ‘game theory’ calculation to determine how much revenue they could pledge to states in a contractual bid (with the promise of keeping any extra sums for themselves) without discouraging commerce in areas of tariff collection.

In the Mediterranean, individuals from Italy, Egypt, and Syria involved in financing the trade could also operate in the collection of indirect taxes on behalf of the Roman Empire; such tax-farmers were often called *arabarchai* or *paralēmtai*.¹²⁹ Annius Plocamus, whom we encountered above as a principal financing agent, and the unnamed *paralēmtēs* of the Muziris Papyrus financed elements of the very trading ventures they were charged to tax.¹³⁰ The sheer wealth gained from this practice could be harnessed by individual families, which both carried out state contracts and made their own

¹²¹Ruffing, ‘Das Nikanor-Archiv’, 17–25; Colin Adams, *Land Transport in Roman Egypt: A Study of Economics and Administration in a Roman Province* (Oxford: Oxford University Press, 2007), 224–5; Evers, *Worlds Apart*, 135.

¹²²René Cappers, *Roman Foodprints at Berenike: Archaeobotanical Evidence of Subsistence and Trade in the Eastern Desert of Egypt* (Los Angeles: UCLA, 2006); Marijke van der Veen, *Consumption, Trade and Innovation: Exploring the Botanical Remains from the Roman and Islamic Ports at Quseir al-Qadim, Egypt* (Frankfurt: Africa Magna, 2011); Marijke van der Veen and Jacob Morales, ‘The Roman and Islamic Spice Trade: New Archaeological Evidence’, *Journal of Ethnopharmacology* 167 (2015): 60.

¹²³Cappers, *Roman Foodprints at Berenike*, 114.

¹²⁴Roberta Tomber, ‘Amphorae from the Red Sea and their Contribution to the Interpretation of Late Roman Trade Beyond the Empire’, in *Transport Amphorae and Trade in the Eastern Mediterranean: Acts of the International Colloquium at the Danish Institute at Athens (September 26–29, 2002)*, ed. J. Eiring and J. Lund (Aarhus: Aarhus University Press, 2004), 398; Elizabeth Will, ‘Mediterranean Amphorae in India’, in *Transport Amphorae and Trade*, 438–9; Tomber, *Indo-Roman Trade*, 150.

¹²⁵*Periplus* §56; Casson, *Periplus Maris Erythraei*, 24; Kai Ruffing, ‘Cultural Encounters Between Rome and the East: the Role of Trade’, in *Case Studies in Transmission*, ed. I. Lindstedt et al. (Münster: Ugarit Verlag, 2014), 148.

¹²⁶*Periplus* §31.

¹²⁷Marzano, ‘The Personal Infrastructure of Maritime Trade’, 68–9.

¹²⁸Otto van Nijf, ‘The Social World of Tax Farmers and their Personnel’, in *The Customs Law of Asia*, ed. M. Cottier et al. (Oxford: Oxford University Press, 2008), 279–311.

¹²⁹De Romanis, *The Indo-Roman Pepper Trade*, 298–320.

¹³⁰Rathbone, ‘Financing Maritime Commerce’, 224–6; De Romanis, *The Indo-Roman Pepper Trade*, 308–17.

commercial investments. For example, Alexander the Arabarch's son, Marcus Julius Alexander, appears in the Nikanor Archive as someone personally involved in trade activity at Berenike between 37 and 44 CE.¹³¹ In these instances of what we might now term 'collusion' or 'ambient corruption', we find agents of commerce not only exploiting the system to their advantage, but also lowering the transaction costs of commerce. Tax-farming principals could easily deduct taxes from profits on maritime investments rather than hunt down renegade traders; moreover, they could use any profits from tax-collection to finance subsequent ventures. All the while, the state received its cut.

We unfortunately do not have contemporary records of individual tax-collectors from the Indian subcontinent. Starting in the mid-first millennium CE, corporate groups throughout the subcontinent become responsible for tariff collection, much as in the Mediterranean world centuries earlier.¹³² However, a tantalizing and overlooked passage in the *Milindapañha*, a first- or second-century Pāli Buddhist dialogue, suggests the practice occurred much earlier. In the course of the text, the Buddhist monk Nāgasena introduces a simile regarding the attainment of *nirvāṇa*: just as a *nāvika*, wealthy through constantly levying tariffs in a seaport (*paṭṭane suṭṭhu katasuñko mahāsamuddam pavisitvā*), will be able to sail across the great sea to destinations including China, southeast Asia, and 'Alexandria' (exactly which one is debated), so too will one who conducted his life according to Buddhist doctrine in former births obtain all the benefits of *nirvāṇa*.¹³³ We find something quite significant in this simile: that an Indian merchant involved in oceanic trade was also involved in the collection of tariffs, much like investors tapped by the Roman state in the Mediterranean world; and, much like their western counterparts, this individual could use the wealth gained through tax-collection to finance future overseas endeavours. Exploitation of incentives, alongside the many other strategies we have explored, is not a practice confined to a single culture, but rather represents another instance of an economic calculus shared by those involved in transoceanic trade.

Final thoughts

A great game was played in the shadow of gold for pepper. Not much could be done by human agents to change the pattern of the monsoon winds and the path dependencies of ancient economies, but our players adapted in innovative ways. Private organization in the form of principal-agent relationships, corporate bodies, diaspora communities, and temporary contracts enabled successful transoceanic movement. Corporate structures or long-term resident alien groups built around multiplex relationships could lower transaction costs by serving as sources of institutional support for seasonal visitors. Trading groups could attain competitive advantages by exploiting the incentives and loopholes of local support networks and top-down state initiatives.

The most sophisticated players, such as Annius Plocamus or the anonymous *nāvika* of the *Milindapañha* we have just seen, could reap with one hand and sow with the other, manipulating the rules of game to their advantage. In other instances, 'micro-strategies', including the communicative ones explored in this article and code-switching used by *yavanas* in India, some of whom take indigenous names much like Nabatean and Palmyrene traders in the Mediterranean world, make the game happen one transaction or community at a time.¹³⁴ However, through a comparative framework, we can find a sense of balance to the trade, in which players from numerous cultural backgrounds formulated common stratagems grounded in shared human

¹³¹M. G. Raschke, 'New Studies in Roman Commerce with the East', in *Aufstieg und Niedergang der römischen Welt II.9.2*, ed. H. Temporini (Berlin: De Gruyter, 1978), 644, 848; Wilson, 'Red Sea Trade', 19; Evers, *Worlds Apart*, 109–13; Cobb, *Rome and the Indian Ocean*, 65.

¹³²E.g. *EI* 6.16C (725 CE), *EI* 14.14 (793 CE); see Champakalakshmi, *Trade, Ideology and Urbanization*, 47–75; Thaplyal, *Guilds in Ancient India*, 124; Evers, *Worlds Apart*, 145.

¹³³*Milindapañha* 6.21. See Wheeler, *Rome beyond*, 131–2.

¹³⁴E.g. the Palmyrene Zabdalas, a.k.a. Aneianas, at Coptos (*AE* 1912.171 = *I.Portes* 103 = *SEG* 34.1593); the Nabataean Tholomaios, a.k.a. Maximus, at Puteoli (*JG* 14 *add. et corrig.* 842a).

experience. Their successes in turn provided a steady supply of commodities to meet consumer demand throughout the Mediterranean and Indian Ocean worlds.

From the approach adopted in this article, it becomes clear that ‘Indo-Roman’ is a misnomer: no one ‘Rome’ traded with one ‘India’; rather, exchange between them involved an intricate patchwork of individuals, trading ventures, and organized communities which become inextricably linked with the products of their trade. The designation ‘Indo-Roman’ is haunted by the spectre of scholarly approaches, whether colonial or nationalist; it unduly conflates polity and geography and excludes actors who regularly participated in the Indian Ocean network. Romans participated, yes, but more specifically Italians, Greeks, Egyptians, Nabateans, Palmyrenes, and many others whose exact ethnic and cultural identity remains beyond our grasp. The subcontinent contributed its fair share of diversity to the trade, as did other regions beyond the scope of this article, such as south Arabia, east Africa, central Asia, and the littoral of the Red Sea and Persian Gulf.¹³⁵ Several player typologies emerge beyond principal investors and their agents, beyond shipowners and merchants—contracted transportation and security personnel, processors and craftsmen, free and enslaved individuals filled in the gaps and mitigated additional risks unmet by institutional solutions.¹³⁶ The eligible players well-exceed the singular class of ‘Alexandrian merchants’, whom Michael Rostovtzeff once regarded as the true governing force of the trade between Rome and regions further east.¹³⁷

As repeatedly argued above, the label ‘Indo-Roman’, an uneven hyphenation between the Roman Empire and an Indian subcontinent controlled by various polities, is by no means innocuous. ‘Indo-Mediterranean’ stands as a more accurate label for the series of trade connections explored in this article; it emphasizes a convergence between the distinct maritime worlds of the Mediterranean and Indian Ocean, rather than a mismatch of political and geographical terminology. The human agents of commerce go beyond terrestrial categories; forcing them under a label such as ‘Indo-Roman’ for heuristic convenience does little good, given how easily such nomenclature has been used to designate ‘winners’ and ‘losers’ on an civilizational level.¹³⁸ Indeed, there are ‘winners’ and ‘loser’ in every game, but players ought to be measured by their success within a globalized, Indo-Mediterranean ‘arena’, not with regard to the Indian or Roman ‘teams’ to which they allegedly belonged. When the stakes of academic agonism disappear, we can better understand the exact role of polity in the game—how individuals associated with ancient states shaped some of the rules and played in a limited capacity.

This model of ‘Indo-Mediterranean’ trade also allows us to consider whether transoceanic links of the early first millennium CE were especially unique. In the *longue durée* of the Mediterranean and Indian Ocean, the game oscillates between moments of concerted engagement and abatement. Trade spanning both waterways occurred before the centuries covered in this article and with similar intensity in subsequent periods of antiquity that do not equate with the ‘Roman’ period; accordingly, the use of ‘Indo-Roman’ as a marker of relative temporality is easily replaced by more targeted date ranges denoting the ebbs and flows of connectivity.¹³⁹ Recent Indian Ocean scholarship has emphasized the early centuries of the Common Era (rather than the conventional

¹³⁵E.g. *I.Socotra* 2.20, 2.25, 2.26?, 2.27, 2.28?, 2.29?, 2.30, 2.31, 2.34, 2.36?, 2.32, 2.33, 3.2?, 3.3, 4.2, 4.3, 4.4, 4.5, 6.3, 6.4, 11.9, 11.26.

¹³⁶Evers, *Worlds Apart*, 50–8, 113–15, 169.

¹³⁷Michael I. Rostovtzeff, *The Social and Economic History of the Roman Empire*, 2nd ed., vol. 1 (Oxford: Clarendon Press, 1957), 155.

¹³⁸Jeremy A. Simmons, ‘Ancient Indian Ocean Trade and the Roman Economy’, in *Reframing the Roman Economy: New Perspectives on Habitual Economic Practices*, ed. D. Van Limbergen et al. (Cham: Palgrave Macmillan, 2022), 372–6.

¹³⁹Peregrine Horden and Nicholas Purcell, *The Corrupting Sea: A Study of Mediterranean History* (Malden, MA: Blackwell, 2000); Cyprian Broodbank, *The Making of the Middle Sea: A History of the Mediterranean from the Beginning to the Emergence of the Classical World* (Oxford: Oxford University Press, 2013); Ray, *Archaeology of Seafaring*, 82–128; Cobb, *Rome and the Indian Ocean*, 1–4, 28–60.

Blackwell, 2000); Cyprian Broodbank, *The Making of the Middle Sea: A History of the Mediterranean from the Beginning to the Emergence of the Classical World* (Oxford: Oxford University Press, 2013); Ray, *Archaeology of Seafaring*, 82–128; Cobb, *Rome and the Indian Ocean*, 1–4, 28–60.

dates of the Roman Empire), a period that Philippe Beaujard has described as heralding the integration of distinct world systems into the first large-scale ‘Afro-Eurasian’ one.¹⁴⁰ However, rather than privileging political economy and commercial revolutions as the main impetuses for connectivity—this might unwittingly lead us to a very ‘Indo-Roman’ conclusion that Roman imperialism or the consumer demand of its empire alone dictated global commerce—this article has provided a much needed reorientation towards the human beings that made this trade possible, in addition to the circulation of goods and ideas.

Framing the evidence in terms of ‘players’ and the ‘game’ allows us to evaluate both quantitative (i.e. the number of players) and qualitative (their strategies) changes in the *longue durée*. Institutions and path dependencies promoted and enforced by several ancient polities, as well as those developed by mercantile agents themselves, provided rules by which to win the game. The more people played the game by these rules, the safer the game became for everyone. External factors (e.g. climatological or demographic shifts) or the degradation of institutions and social relationships, which made the game an enticing prospect, could disrupt the pace of play; but the tempo might accelerate once more with the proliferation of institutions, players, and strategies.¹⁴¹ The expansion of the game to a critical mass of players hitherto unseen in the ancient world best characterizes ancient Indo-Mediterranean trade. While later periods encouraged the use of similar strategies by human agents, the initial centuries of the Common Era represent an early peak of economic intensity on the Indian Ocean. It is a testament to ancient commercial organization that so many of its strategies remain in use over time.

By depoliticizing the trade, this article has argued that traders from differing cultural backgrounds employed similar structures and strategies, a development that stemmed from a calculus of economic behaviour shared by the players of the game. Despite the paucity of data from antiquity when compared to later periods—ancient historians would be thrilled to have detailed documentary sources like the Cairo Geniza Archive or the records of Portuguese pepper-ships in Malabar—the plurality of moving parts points to some form of self-regulating economic activity.¹⁴² These factors should guide us as we continue to refine this model of the trade relations between sub-regions of the wider Afro-Eurasian world. Without recourse to an outdated conception of ‘Indo-Roman’ trade, the many iterations of this game and the changing roster of its players extend from antiquity until the early modern period—perhaps a daunting prospect, but one that promises to enrich global history.

Jeremy A. Simmons is Assistant Professor of History at the University of Maryland, College Park. His research addresses the consumption of commodities traded across the Indian Ocean in antiquity, as well as the human agents who made global connections possible.

¹⁴⁰Beaujard, *The Worlds of the Indian Ocean*, vol. 1, 322–47.

¹⁴¹Harris, ‘The Institutional Dynamics’, 615–20.

¹⁴²Federico De Romanis, ‘Comparative Perspectives on the Pepper Trade’, in *Across the Ocean*, 100–21.