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Understanding the Early Modern English Coastal Trading Community

A case study of network prosopography

Abstract   While a vibrant historiography surrounds early modern English seafaring, the vast majority of work has focused on the mercantile and maritime elite. Indeed, low-level seafarers, whose work significantly contributed to the maritime industry on which the English economy was so dependent, have been largely overlooked. In particular, a lack of insight into the lives and careers of English coastal traders has led to a skewed perspective of maritime logistics and of the socio-economic composition of Tudor society. This omission can be partially credited to a lack of qualitative sources pertaining to the lives and careers of low-level seafarers. Although there is a rich seam of quantitative data available through the national customs, few have looked to these sources to understand the social and economic dynamics of the coastal trading community.

This paper explores the possibility that a combined approach, utilising prosopography and Social Network Analysis, can reveal the ways in which small- and medium-scale merchants and shipmasters forged connections and established lasting businesses in the face of political and economic instability. Acting as a test case for future study, this paper will propose a methodological approach for the examination of a social and economic group that is often overlooked in the broad historiography, but for whom a large body of valuable quantitative data survives. By combining traditional historical methodologies with Social Network Analysis, this paper offers a new perspective on English maritime history.

1.   Introduction*

As many scholars published in this journal have alluded to, the world of Social Network Analysis (SNA) is vast, and the methods and approaches proposed by historians in this field are equally wide-ranging. Indeed, we are gifted today with a body of instructional literature that would have been invaluable to the forward-thinking scholars of even a decade ago. Yet understanding the subtle nuances differentiating the methods utilised by historians who are interested in different time periods, drawn to different geographic locations, and with different research goals in mind, is key to ensuring the continuing success of Historical Network Research (HNR) across a broad range of themes. With that in mind, this paper proposes a methodological framework for examining a social and economic group for whom we lack a large body of qualitative source material, but for whom we have been bestowed a great volume of quantitative data. More specifically, the method of interest here may be termed 'network prosopography' and should be considered an offshoot of traditional network analysis, relying more heavily on the visual elements of network graphs than on the mathematical and statistical outcomes of data analysis.

As noted by Carvajal de la Vega, incorporating traditional historical methodologies alongside SNA is vital to producing valuable Historical Network Research, and quantitative analysis alone cannot give a true sense of the nature of historic communities.[1] Therefore, for the purposes of the project described here, the graphs and figures resulting from network analysis were combined with, and to some extent used to underpin, the prosopographical examination of case study groups highlighted as being of particular importance to the coastal trading community. At the same time, network prosopography may likewise be considered an offshoot of broader prosopographical research, utilising SNA as one strand of analysis used to form a collective biography. These methods have been most frequently utilised by scholars of the ancient world, but other large-scale projects have demonstrated the potential for the application of a combined approach in medieval and early modern contexts.[2] As this case study will show, network vi-

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1   David Carvajal de la Vega, "Merchant Networks in the cities of the Crown of Castile," in *Commercial Networks and European Cities, 1400–1800,* ed. Andrea Caracausi and Christof Jeggle (London: Pickering and Chatto Publishers, 2014), 137–38.

2   For example, see, Yanne Broux, *Double Names and Elite Strategy in Roman Egypt* (Leuven, Belgium: Peeters, 2015); "People of Medieval Scotland, 1093–1314," 2012, accessed 15 June 2018, www.poms.ac.uk; G. R. Ruffini, *Social Networks in Byzantine Egypt* (Cambridge: Cambridge University Press, 2011); „(SNA)P: Standards for Net-

sualisation can go a long way in helping us to delineate the structural nature of commercial societies, to explore the character of commercial partnerships, and to unearth communities who have been lost in the historiographical narrative.

Indeed, while English maritime history benefits from a rich tapestry of existing research, the historiography of the early modern English maritime economy suffers from a significant deficiency, owing to a general tendency among scholars to overlook those who engaged in domestic exchange within English waters. Many skilled researchers have explored the commercial nature of maritime trade during the early modern period at length, identifying key overseas markets and establishing the trajectory of global commercial activity in the years preceding British imperial rule.[3] Likewise, the lives and careers of those that traded overseas have been well established and our understanding of the social, economic, and political role of the mercantile elite has significantly stabilised in recent decades.[4] However, the most comprehensive studies of the coasting trade were undertaken by T. S. Willan in the 1960s and 70s. These were intended as a jumping-off point for future research; a call that was met with little beyond simple acknowledgement that more work should be undertaken.[5] That being said, some regional studies have also included a limited examination of specific coastal merchants, but coastal trading has otherwise been rarely examined in its own right.[6]

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working Ancient Prosopographies," 2014, accessed 6 November 2019, www.snapdrgn.net. It should also be noted that Matthew Hammond has provided an excellent overview of the development of network analysis alongside prosopography, see Matthew Hammond, *Social Network Analysis and the People of Medieval Scotland 1093–1286 (PoMS) Database* (Glasgow: Centre for Scottish and Celtic Studies, 2017), 9–18.

3   Key literature includes; Ralph Davis, *The Rise of the Atlantic Economies* (London: Cornell University Press, 1973); Franz J. Fisher, "Commercial Trends and Policy in Sixteenth-Century England," *The Economic History Review* 10 (1940): 95–117, https://doi.org/10.2307/2590787; George D. Ramsay, *English Overseas Trade During the Centuries of Emergence: Studies in Some Modern Origins of the English Speaking World* (London: Macmillan, 1957).

4   For example, Robert Brenner, "The Social Basis of English Commercial Expansion, 1550–1650," *The Journal of Economic History* 32 (1972): 361–84, http://www.jstor.org/stable/2117192; Robert Brenner, *Merchants and Revolution: Commercial Change, Political Conflict, and London's Overseas Traders, 1550–1653* (London: Verso, 2003); Eleanora M. Carus-Wilson, *Medieval Merchant Venturers: Collected Studies* (London: Taylor & Francis, 1954); Evan T. Jones, *Inside the Illicit Economy: Reconstructing the Smugglers' Trade of Sixteenth Century* (Farnham: Ashgate, 2012); Alwyn Ruddock, "London Capitalists and the Decline of Southampton in the Early Tudor Period," *The Economic History Review* 2 (1949): 137–51, https://doi.org/10.2307/2590103.

5   Thomas S. Willan, *The English Coasting Trade: 1600–1750* (Manchester: The University Press, 1967); Thomas S. Willan, *The Inland Trade: Studies in English Internal Trade in the Sixteenth and Seventeenth Centuries* (Manchester: Manchester University Press, 1976).

6   For examples of regional studies, see Olive Coleman, "Trade and Prosperity in the Fifteenth Century: Some Aspects of the Trade of Southampton," *The Economic History Review* 16 (1963): 9–22, https://doi.org/10.1111/j.1468-0289.1963.tb01714.x; Ralph Davis, *The trade and shipping of Hull, 1500–1700* (Yorkshire: East Yorkshire Local His-

Instead, our understanding of the commercial nature of coastal trading, as well as of the socio-economic and socio-political positions of coastal traders, has largely formed as an offshoot of studies of overseas activity and has been based on either civic sources or on limited samples of customs records. Given that at least two-thirds of English ship-voyages during this period were coastal, this is a surprising lacuna, and one that has significantly distorted our understanding of the early modern maritime economy, causing substantial misconceptions regarding the wider English seafaring community.[7] By dismissing domestic trade as scattered, disorganised, and low-status, we have overlooked a group who were, in actuality, an integral part of the kingdom's commercial, social, and political successes, who approached their trade with sensible business strategies, and whose lives and careers can significantly contribute to our understanding of the early modern lived experience.[8]

This oversight can be attributed in part to a lack of detailed qualitative source material pertaining to those who engaged in coastwise shipping. In particular, those who did not reach the upper echelons of society, but who instead continued relatively low-value trade over an extended period, rarely appear in comprehensive records pertaining to their socio-economic status, local influence, or social ties. Yet individuals of this kind could have a marked impact on the commercial character of the ports in which they operated; they often had strong ties to the towns along their regular shipping routes, and sometimes held significant sway within their local communities. Moreover, while we may lack detailed qualitative information regarding such traders, their extensive engagement in commercial activity has left us with a mass of quantitative data, which, when analysed using innovative digital methods, can reveal much about their economic, social, political, and cultural impact on wider early modern society. This is especially true in terms of the results that are possible through the application of Social Network Analysis, as demonstrated by the abundance of recent scholars who have had

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tory Society, 1964); Susan Flavin and Evan T. Jones, *Bristol's Trade with Ireland and the Continent 1503–1601: The Evidence of the Exchequer Customs Accounts* (Dublin, Ireland: Four Courts Press for the Bristol Record Society, 2009); Michael Hicks, ed., *Southampton and its region – English Inland Trade 1430–1540* (Oxford: Oxford University Press, 2015); Jones, *Inside the Illicit Economy*; Jenny Kermode, *Medieval Merchants: York, Beverley and Hull in the Later Middle Ages* (Guildford: Cambridge University Press, 2002); Alwyn Ruddock, *Italian Merchants and Shipping in Southampton, 1270–1600,* vol. I, Southampton Record Series, (Southampton: University College, 1951); Duncan Taylor, "The Maritime Trade of the Smaller Bristol Channel Ports in the Sixteenth Century" (Doctoral thesis, University of Bristol, 2009). For similar studies outside of England, see Martin Rheinheimer, *Die insel und das Meer: Seefahrt und Gesellschaft auf Amrum 1700–1860* (Stuttgart: Franz Steiner Verlag, 2016).

7   Craig Lambert and Andrew Ayton, "The Mariner in Fourteenth Century England," in *Fourteenth Century England,* ed. Mark Ormrod (Woodbridge: Boydell Press, 2012), 157.

8   Leanna Brinkley, "England's Forgotten Maritime Communities: A study of Elizabethan coastal trading, 1568–1580" (doctoral thesis, University of Southampton, 2020), 289–97.

great success in the implementation of Historical Network Research, especially in the field of maritime history.

The benefits of applying SNA to historical research need not be reiterated to readers of this journal, but it is worth briefly unravelling how SNA has been used to date to understand medieval and early modern commercial communities, and particularly maritime communities. In continental Europe, where the uptake of HNR has been especially fervent, Andrea Caracausi and Christof Jeggle have led the way in demonstrating the power of applying network analysis to the commercial world. Their volume "Commercial Networks and European Cities (1400–1800)" brought together key historians and highlighted the breadth of analyses that are possible when strict definitions of networks are applied. By emphasising the roles of kinship and credit relationships in network formation across varying areas of interest, Caracausi and Jeggle skilfully unpacked the underlying themes that exist throughout networks of differing periods, geographic locations, and cultures. In particular, they recognised the important role of merchant communities in medieval and early modern Europe, noting that:

> Merchant networks generated the flow of material goods, money and other values. They constituted the core of urban economies and markets, influencing governance in the cities. In addition to commercial exchange, these networks established the infrastructure for the dispersion of cultural artefacts and practices as well as for migration between cities.[9]

The works assembled in this volume and beyond suggest that maritime communities across continental Europe have now been investigated in some depth, and numerous scholars have examined the intimate business and personal relationships forged by European merchants, including, for example, those of Florentine bankers, the Armenian diaspora in Venice, local Castilian traders, and the Genoese merchant class.[10] Furthermore, recent work from Eberhard Crailsham exploring the structure of commercial networks in Seville emphasised the importance of understanding the role individual merchants played in networks, rather

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9   Andrea Caracausi and Christof Jeggle, eds., *Commercial Networks and European Cities, 1400–1800,* vol. 32 (London: Pickering and Chatto Publishers, 2014), 2.

10   Carvajal de la Vega, "Merchant Networks"; Evelyn Korsch, "The Scerimans and Cross-Cultural Trade in Gems: The Armenian Diaspora in Venice and its Trading Networks in the First Half of the Eighteenth Century," in *Commercial Networks and European Cities, 1400–1800,* ed. Andrea Caracausi and Christof Jeggle (London: Pickering and Chatto Publishers, 2014), 223–40; Heinrich Lang, "Networks and Merchant Diasporas: Florentine Bankers in Lyon and Antwerp in the Sixteenth Century," in *Commercial Networks and European Cities, 1400–1800,* ed. Andrea Caracausi and Christof Jeggle (London: Pickering and Chatto Publishers, 2014), 107–20; Quentin Van Doosselaere, *Commercial Agreements and Social Dynamics in Medieval Genoa* (New York: Cambridge University Press, 2009).

than just the legal or political frameworks that have been traditionally considered the catalyst for commercial enterprise.[11] Equally, Donald Harreld has shown that interactions between cities, even on a large scale, can be understood through an analysis of networks between individual traders. By looking at relationships between cities through merchants as nodes, Harreld proposed an ambitious approach to understanding large-scale networks from a micro perspective.[12] Likewise, Sheryllynne and John Haggerty have made extensive use of visual tools and graph theory to understand the networks of Atlantic slave traders in the eighteenth century, Henning Hillmann has had much success examining networks of politics and trade across a broad geographic and chronological spectrum, and Erikson, Samila, and Bearman have taken an institutional approach to network analysis to explain the commercial successes of the English East India Company.[13] In particular, Erikson, Samila, and Bearman demonstrate the importance of informal information exchange, challenging the perceived organisational structure of large monopolies, and crediting informal network structures, bolstered by private trade, with enabling Company expansion, rather than centralised administrative processes.[14] Similarly, in viewing merchant networks through the lens of marketing structures, Richard Britnell successfully combined traditional ideas surrounding the medieval and early modern market economy with subtle

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11   Eberhard Crailsheim, *The Spanish Connection: French and Flemish Merchant Networks in Seville (1570–1650)* (Cologne, Germany: Böehlau Verlag GmbH & Cie, 2016); Eberhard Crailsheim, "Seville and Manila: Illegal trade, corruption, and the phenomenon of trust in the Spanish Empire," *International Journal of Maritime History* 29 (2017): 175–81, https://doi.org/10.1177/0843871416679120.

12   Donald Harreld, "Merchants and International Trade Networks in the Sixteenth Century," *XIV International Economic History Congress,* 110 (2006), https://www.academia.edu/6204913/Merchants_and_international_trade_networks_in_the_sixteenth_century.

13   For example, Henning Hillmann, "Mediation in Multiple Networks: Elite Mobilization before the English Civil War," *American Sociological Review* 73:3 (2008): 426–54, http://www.jstor.org/stable/25472536; Henning Hillmann and Brandy L. Aven, "Fragmented Networks and Entrepreneurship in Late Imperial Russia," *American Journal of Sociology* 117:2 (2011): 484–538, https://doi.org/10.1086/661772; Henning Hilmann, *The Corsairs of Saint-Malo: Network Organization of a Merchant Elite Under the Ancien Régime* (New York: Columbia University Press, 2021); John Haggerty and Sheryllynne Haggerty, "Visual Analytics of an Eighteenth-Century Busines Network," *Enterprise and Society* 11 (2010): 1–25, https://www.jstor.org/stable/23701218; John Haggerty and Sheryllynne Haggerty, "The life cycle of a metropolitan business network: Liverpool 1750–1810," *Explorations in Economic History* 48 (2011): 189–206, https://doi.org/10.1016/j.eeh.2010.09.006.

14   Emily Erikson and Peter Bearman, "Malfeasance and the Foundations for Global Trade: The Structure of English Trade in the East Indies, 1601–1833," *American Journal of Sociology* 112 (2006): 195–230, https://doi.org/10.1086/502694; Emily Erikson, *Between Monopoly and Free Trade: The English East India Company, 1600–1757* (Woodstock: Princeton University Press, 2014); Emily Erikson and Sampsa Samila, "Social Networks and Port Traffic in Early Modern Trade," *Social Science History* 39 (2015): 151–173, https://www.jstor.org/stable/90017171.

indicators of network formation.[15] More broadly, the extensive works of Avner Greif, Jessica Goldberg, Henning Hillmann and others have examined in detail the role that various forms of institutions played in the establishment of modern economic systems, and have combined detailed readings of extensive primary material with robust economic theory, opening a gateway to the lives of historic commercial communities across a wide geographic plain.[16] Moreover, recent work on the part of Greif and Hillmann has challenged the traditional reliance on economic, legal, and political institutions, refocusing the discussion towards the role of social institutions in individual and national commercial development.[17]

In combination, these works lay a strong grounding for the analysis of interest in this paper. Borrowing from Caracausi and Jeggle, we will use social networks to observe the structural nature of an important commercial group and to situate those network structures within the commercial activities and commercial practices around which they formed. Likewise, we will utilise the economic arguments put forward by scholars such as Erikson, Samila, Bearman, Britnell, and Greif to contextualise those very specific findings into broader economic theory. Taking the English coastal trading community as a case study, this paper will contribute to a wider conversation regarding the formation, expansion, and collapse of business networks within particular commercial contexts, observing those common threads that appear to have run through the networks forged within highly varied social, political and, economic environments, as well as those that were unique to particular regions or socio-economic groups. At a more intricate level, we will use SNA as a tool to examine the particular commercial strategies utilised by individual traders and maritime subgroups and to explore the impact that personal

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15   Among others, Richard Britnell, *The Commercialisation of English Society, 1000–1500* (Manchester: Manchester University Press, 1996); Richard Britnell, "Urban demand in the English economy, 1300–1600," in *Trade, Urban Hinterlands and Market Integration c.1300–1600,* ed. James A. Galloway (London: Centre for Metropolitan History, 2000).

16   For example, Avner Greif and David D. Laitin, "A Theory of Endogenous Institutional Change," *American Political Science Review* 98:4 (2004): 633–52, https://web.stanford.edu/~avner/Greif_Papers/2004%20A%20Theory%20of%20Endogenous%20Instituitonal%20Change.pdf; Avner Greif, *Institutions and the Path to the Modern Economy: Lessons from Medieval Trade* (Cambridge: Cambridge University Press, 2006); Jessica Goldberg, *Trade and Institutions in the Medieval Mediterranean: The Geniza Merchants and Their Business World* (Cambridge: Cambridge University Press, 2012).

17   Avner Greif and Christopher Kingston, "Institutions: Rules or Equilibria?" in *Political Economy of Institutions, Democracy and Voting,* ed. N. Schofield. and G. Caballero (London: Springer, 2011): 13–43, https://web.stanford.edu/~avner/Greif_Papers/2011%20rules%20or%20eq.pdf; Avner Greif and Murat Iyigun, "Social Organizations, Violence, and Modern Growth," *American Economic Review: Papers & Proceedings* 103:3 (2013): 534–8, https://web.stanford.edu/~avner/Greif_Papers/2013%20AER%20Social%20Organization.pdf; Henning Hillmann, "Economic Institutions and the State: Insights from Economic History," *Annual Review of Sociology* 39:1 (2013): 251–73, https://doi.org/10.1146/annurev-soc-071811-145436.

attitudes towards risk, career progression, wealth accumulation, and commercial collaboration could have on wider economic trends. Together, these approaches will contribute to a body of literature that has, to date, made use of a wide variety of sources and methodological frameworks, but that has largely circumvented historic maritime communities that existed in England before 1600.

It is important to emphasise that, despite this historiographic omission, there is much that can be ascertained about the early modern English maritime community from the sources that survive. It is of great fortune for the maritime historian seeking qualitative information regarding those who are poorly represented in qualitative sources that commercialised communities are particularly well represented in quantitative records. Where there was a custom to collect, the crown tended to be particularly proactive in its record-keeping and, after 1565, English records pertaining to maritime activity were extremely well regulated, being kept in blank books provided directly by the exchequer and being populated with extraordinary regularity, following a pre-defined format and being largely consistent across all ports. Moreover, they were subject to examination by multiple customs officials and, in theory, should have been minimally vulnerable to manipulation for the purposes of smuggling.[18]

The records that were kept after 1565 are immaculate. Thousands of port books have been preserved, containing millions of entries, many of which are legible and undamaged, each containing a wealth of information regarding the voyages undertaken through each of England's head ports, including:

- Details of the ship, including its homeport and tonnage.
- Voyage start, end, and stopping points.
- Details of the shipmaster and merchants carrying cargo on the ship, often including their full name, place of residency, and occupation.
- A detailed description of the cargo carried, including volumes and details of any tax paid or exemption granted.[19]

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18   It should be noted that, despite the best efforts of the crown, smuggling was still a significant problem in the second half of the sixteenth century. However, the methods of smuggling that were most prevalent largely revolved around the manipulation of volumes and types of goods, and details relating to ships, shipmasters and merchants were less commonly falsified. See, Jones, *Inside the Illicit Economy;* George D. Ramsay, "The Smugglers' Trade: A Neglected Aspect of English Commercial Development," *Transactions of the Royal Historical Society* 2 (1952): 131–57, https://doi.org/10.2307/3678787. For broader discussion on the development of the early modern customs system, see Norman S. Gras, *The early English customs system: a documentary study of the institutional and economical history of the customs from the thirteenth to the sixteenth century* (Cambridge: Harvard University Press, 1918), 59–103. https://archive.org/details/earlyenglish cust00grasuoft.

19   Donald Woodward, "Short Guide to Records: 22. PORT BOOKS," *History* 55 (1970): 207–10.

Re-evaluation of this material, including detailed examination of patterns of trade and interpersonal engagement, can provide much evidence relating to the business approaches and socio-economic position of coastal traders, who are otherwise invisible in the historiography and minimally represented in sources of a more qualitative nature. In this way, it is possible to diversify the historiographical narrative and give a voice to a marginalised community of vital commercial and social importance, as this paper will demonstrate.

1.1   Data compilation, data extraction and practical concerns

As many scholars of HNR have well established, any venture into the world of SNA must be preceded by a thorough consideration of the practical concerns associated with the application of such methods. First and foremost, it is important to determine whether the data provided in the source materials available are suitable for analysis using network methods. Various scholars have produced detailed instructional materials that provide a starting point for such an assessment and it is important to consider whether the application of SNA to a specific field is of sufficient benefit to outweigh the time and energy required to carry out the analysis.[20] In the case of this research, the greatest concern was not whether the data available was suitable for the application of SNA, but rather whether there was adequate justification for re-examining a body of source material that had already been studied extensively elsewhere.

In view of the significant historiographical omission noted above, and considering the possible trends that could be identified through the application of SNA, it was concluded that there was clear justification for the application of such analyses. More specifically, it was considered that re-evaluation of the Tudor customs using SNA was likely to significantly improve our understanding of the commercial nature of the early modern coasting trade, to provide a better understanding of the ways in which coastal traders ran their businesses, and to allow for structured analysis of the socio-economic and socio-political position of such indi-

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20   See, for example, Bonnie H. Erickson, "Social Networks and History: A Review Essay," *Historical Methods: A Journal of Quantitative and Interdisciplinary History* 30 (1997): 149–57, https://doi.org/10.1080/01615449709601182; Joanna Innes, „'Networks' in British History," *The East Asian Journal of British History* 5, Special Issue: Anglo-Japanese Conference of Historians 2015, Changing Networks and Power in British History: Politics, Society, Trade (2016): 51–72, https://www.academia.edu/27240701/Networks_in_British_ History; Claire Lemercier, "Formal network methods in history: why and how?," in *Social Networks, Political Institutions, and Rural Societies,* ed. Georg Fertig (Turnhout, Belgium: Brepols, 2015), 281–310; C. Lemercier, C. Zalc, and A. Goldhammer, *Quantitative Methods in the Humanities: An Introduction* (Virginia: University of Virginia Press, 2019), 101–41. For discussion of a more informal nature, see "Historical Network Research: First Steps," 2019, accessed 5 November 2019, www.historicalnetworkresearch.org/resources/ first-steps; "the scottbot irregular," 2019, accessed 5 November 2019, www.scottbot.net/ 2019/09/.

viduals within broader society. It was considered that such findings would have a significant impact on the wider historiography, calling into question a number of key elements of maritime scholarship. For example, by solidifying our understanding of the relationship between overseas and internal trade, by exploring the role that coasting played in the ability for merchants and mariners to obtain wealth and socio-political influence, and by challenging our assumptions surrounding the contemporary allocation of titles such as 'merchant' or 'mariner'.

Once it had been determined that there was sufficient justification for the application of SNA, it was necessary to configure the customs data into a suitable format for analysis. A purpose-built relational database was created, into which around 4,000 ship-voyages, undertaken through the case study ports of Southampton, Bristol, and Hull between 1565 and 1590, were transcribed (containing the details of around 1,500 shipmasters and 2,000 merchants).[21] Shipmasters and merchants were then extracted from the database as nodes, tied by their involvement in the same voyage, and parsed into "Gephi" for analysis and visualisation. This resulted in two types of tie: merchant-merchant ties and merchant-shipmaster ties. Merchant-merchant ties represented commercial relationships through which two or more traders shared a voyage to transport goods, while shipmaster-merchant ties represented commercial relationships between traders and mariners, in which the mariner was paid (albeit through a variety of means) for their services in commanding the vessel.[22] Each node was labelled according to the role played on the voyage (shipmaster or merchant) and by home county (as shown in Figures 1a and 1b).

Although the nature of the ties and attributes that were drawn out were relatively straightforward and (compared to those examined in some scholarship) very clearly defined, the nature and configuration of the customs records raised various methodological concerns that needed to be addressed before analysis could begin. First, in any scholarship that involves the examination of a large body

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21   For more detailed discussion regarding the applications of historical databases, see, Justin Colson, "Web Databases for Late Medieval Social and Economic History: England's Immigrants and the Overland Trade Project," *Reviews in History* 19 (2015), accessed 17 January 2021, http://www.history.ac.uk/reviews/review/1820; Charles Harvey and Jon Press, *Databases in Historical Research: Theory, Methods, and Applications* (London: St. Martin's Press, 1996); Kees Mandemakers and Lisa Dillon, "Best Practices with Large Databases on Historical Populations," *Historical Methods: A Journal of Quantitative and Interdisciplinary History* 37.1 (2004): 34–8 https://doi.org/10.3200/HMTS.37.1.34-38.

22   For discussion regarding the various means through which shipmasters were paid for their services, see Cheryl A. Fury, "The Elizabethan Maritime Community," in *The Social History of English Seamen, 1485–1649*, ed. Cheryl A. Fury (Woodbridge: Boydell Press, 2012), 118–20; Geoffrey V. Scammell, "Manning the English Merchant Service in the Sixteenth Century," *The Mariner's Mirror* 56 (1970): 10–11, https://doi.org/10.1080/0025 3359.1970.10658528; Robin Ward, *The World of the Medieval Shipmaster: Law, Business and the Sea C.1350–c.1450* (Woodbridge: Boydell Press, 2009), 52–66.
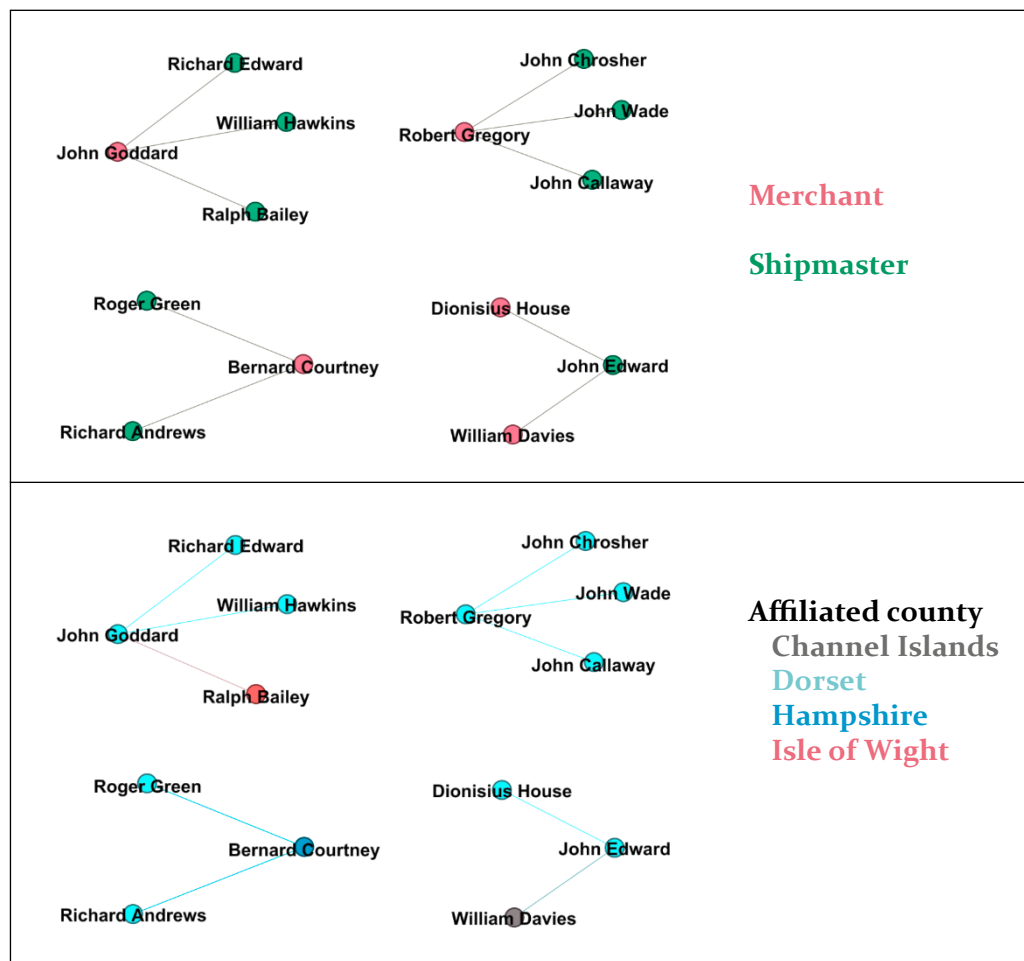
Fig. 1 la and lb: Example graphs demonstrating two forms of node visualisation

of personal data, and especially one derived from pre-modern sources, nominal linkage presents a significant problem. Failure to comply with the fundamental principles of reliable nominal linkage will have severe adverse effects on the network graphs generated. Indeed, the inability to accurately identify references to the same individual within the source material will almost certainly result in the creation of duplicate record IDs, or to the incorrect linkage of names that were actually separate persons.

In this project, investigation covered a sample of only around 3,500 individuals, and so each trader was examined case-by-case in the context of their voyages (examining the ships, cargoes, trade routes, occupations, residences, and other notes made by the customs officials in each entry) to make an informed decision per record. Likewise, additional information gleaned from civic sources and admiralty court records was used to decipher whether two names referred to

the same individual or perhaps to, say, a father and son. However, even with this degree of detailed examination, it was sometimes impossible to distinguish between individuals listed under the same names. Thus, any individual not identified with a high degree of certainty was excluded from the analysis, although this primarily applied to traders who appeared in the port books very infrequently and who formed dyads separately from the core macro-network, which were anyway excluded from examination. In other words, the vast majority of individuals that formed the core networks were positively identified, and it was primarily those that traded only very occasionally through the ports under investigation that were difficult to distinguish. It is important to note that for samples larger than this, it would not be possible to examine individuals on a case-by-case basis and, therefore, broader principles of nominal linkage would need to be applied, such as those described by Bloothooft, Boonstra, Breure and Doorn.[23]

Secondly, the sporadic survival of the port books has the potential to cause significant selection bias. For the 150-month period between Michaelmas 1565 and Easter 1578, the surviving coastal port books for Hull cover around 96 months (a survival rate of around 64%); for Southampton that figure drops to 81 months (54%), and for Bristol to 69 months (46%).[24] The surviving port books are scattered across the full spectrum of the period under investigation. Thus, although the characteristics of the total networks could have been explored further, such inconsistency in the survival of the customs records meant that observations using the full dataset would have been extremely vulnerable to selection bias. To ensure robust analysis, it was therefore deemed necessary to select comparable periods of six or eight months for each case study port. These periods are listed in Table 1. Importantly, these periods cover the same months of the year for each port, in order to account for the seasonal nature of trade and shipping, which resulted in certain goods being transported only during certain times of the year.

There is not space here to discuss in detail the specific seasonal characteristics of all trades across all regions, but to take just one example, the trade in fresh herring, which was a fundamental component of the east-coast economy, was almost exclusively undertaken in the autumn and winter months to account for herring

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23   Gerrit Bloothooft, "Assessment of Systems for Nominal Retrieval and Historical Record Linkage," *Computers and the Humanities* 32.1 (1998): 39–56; Onno Boonstra, Leen Breure, and Peter Doorn, "Past, Present and Future of Historical Information Science," *Historical Social Research/Historische Sozialforschung* 29.2 (2004): 16, 43–49, 53–55. For an example of these methods used in practice, see Zhichun Fu et al., "Automatic Record Linkage of Individuals and Households in Historical Census Data," *International Journal of Humanities and Arts Computing* 8.2 (2014): 204–25.

24   These figures were collected by Dr Craig Lambert at the University of Southampton, see Craig Lambert and Gary Baker, *The Medieval and Tudor Ships Project* (2017), accessed 16 January 2021, www.medievalandtudorships.org.

	Hull	Bristol	Southampton
Period 1	Sept–Apr 1568/69	Apr–Sept 1569	Apr–Sept 1569
Period 2	Sept–Apr 1570/71	Apr–Sept 1570	Apr–Sept 1575
Period 3	Sept–Apr 1571/72	Apr–Sept 1572	Apr–Sept 1576
Period 4	Sept–Apr 1573/74	Apr–Sept 1576	Apr–Sept 1577
Period 5	Sept–Apr 1577/78	Apr–Sept 1580	Apr–Sept 1579

Tab. 1 Periods under investigation for each port

migration patterns.[25] Equally specific seasonal patterns of trade existed across all regions of the country, some determined by the weather, some by the physical characteristics of the port or the region, some by the commodities traded, and some by broader features of the global economy. However, unlike overseas trade that was, in some cases, limited by the weather to the spring and summer months, coastal shipping was undertaken continually throughout the year. As a result, comparison of different months of the year would have generated little useable data, and it was necessary instead to make annual comparisons of the same periods for each port. From this point forward, reference will be made to Periods 1–5 in line with the dates noted below. Deconstruction of the data in this way allowed for analysis of change over time in a way that was minimally susceptible to the influence of extraneous variables (such as missing data).

Thirdly, the degree to which the weighting of ties can be considered a useful measure of the strength of the relationships between nodes depends on the nature of the sources under investigation. For example, in his work on fifteenth-century wills, Justin Colson observed that repeated mention of beneficiaries gave a heightened semblance of importance to such individuals, which was not necessarily representative of a stronger relationship.[26] However, in the case of this research, the repeated overlap of individuals in the port books represented a genuinely useful measure of the strength of the relationships formed. After all, for a merchant and shipmaster to repeat a voyage together must imply that their previous interaction made for a successful collaboration. Therefore, rather than attempting to counteract the weighting of ties, the number of voyages undertaken between a pair was used to measure the strength of their relationship. There are,

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25   Sheila Sweetinburgh, "Fishermen and their families in late medieval and Tudor Kent" in *The Routledge Research Companion to Marine and Maritime Worlds, 1400–1800: Oceans in Global History and Culture,* ed. Claire Jowitt, Craig Lambert and Steve Mentz (London: Routledge, 2020), 202–20.

26   Colson, Justin, "Local Communities in Fifteenth Century London: Craft, Parish and Neighbourhood" (Doctoral thesis, Royal Holloway, University of London, 2011), 56–60.

of course, some problems with this measure since the run of data is only partially complete and it was not possible, therefore, to guarantee that all voyages for all merchant/shipmaster pairs were accounted for. However, by dividing the data specifically into complete runs and directly comparing data year-to-year, some useful measures were obtained.

Fourthly, all ties were input undirected and no distinction was drawn between shipmaster-merchant ties and merchant-merchant ties. Arguably, some shipmaster-merchant ties could have been directed, since shipmasters were sometimes hired for single voyages in the form of a clear employer-employee relationship. However, most relationships were more complex and visualising them as directed ties would have given a false impression of the way in which merchants and shipmasters interacted.[27] Furthermore, the varying ways in which shipmasters and merchants formed business ties also meant that, in some cases, the shipmaster would have been hired by the shipowner and provided to the merchant (or merchants) as part of a charter party (or other legal arrangement). In these cases, it is possible that the merchant(s) would have had no part in the decision to utilise a specific shipmaster, and the shipmaster may not have necessarily known in advance which merchant's (or merchants') goods were on board. However, as argued by Andrews and others, in many cases the shipowner was also either one of the merchants carrying goods on board or the shipmaster commanding the vessel, especially in the case of vessels under around fifty tons, which made up the majority of the ships used in coastal commerce.[28] Moreover, a review of various Hampshire ship surveys suggests that some 20–40% of ships were owned (or at least part-owned) by the shipmaster, and this figure would very likely be higher were we able to isolate vessels that were exclusively engaged in coastal shipping.[29]

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27   Fury, Lambert, Ward and others have provided detailed assessments of the career paths and business approaches taken by seafarers, see Cheryl A. Fury, "Training and Education in the Elizabethan Maritime Community, 1585–1603," *The Mariner's Mirror* 85 (1999): 117–39, https://doi.org/10.1080/00253359.1999.10656737; Fury, "Elizabethan Maritime Community."; Craig Lambert, "Tudor Shipmasters and Maritime Communities, 1550–1600," in *The Routledge Research Companion to Marine and Maritime Worlds, 1400–1800: Oceans in Global History and Culture,* ed. Claire Jowitt, Craig Lambert, and Steve Mentz (London: Routledge, 2020), 323–48; Ward, *World of the Medieval Shipmaster.*

28   Kowleski and others have found that there was a clear divide between ownership of vessels above and below 50 tons, with shipmasters being much more likely to own vessels below that threshold, see Kenneth R. Andrews, "The Elizabethan Seaman," *The Mariner's Mirror* 68 (1982): 257, https://doi.org/https://doi.org/10.1080/00253359.1982.10655 868; Maryanne Kowaleski, "The Shipmaster as Entrepreneur in Medieval England," in *Commercial Activity, Markets and Entrepreneurs in the Middle Ages: Essays in Honour of Richard Britnell,* ed. Ben Dodds and Christian D. Liddy (Woodbridge: Boydell Press, 2011), 165–70.

29   The National Archives of the United Kingdom, Kew (TNA) SP12/38, SP15/22.

Additionally, the signatures present in the Southampton port books suggest that most merchants engaging in coastal commercial activity were aboard the vessel themselves, rather than hiring agents or utilising servants to undertake those voyages on their behalf.[30] As such, they will have had direct interaction with the shipmaster during both the voyage preparations and the voyage itself. Like-wise, in the ports of Southampton and Bristol, there is much evidence that merchants and shipmasters usually occupied the same physical space within the town and were part of the same community, suggesting that most merchants would have been aware of most shipmasters and *vice versa.*[31] As merchants inevitably had some say over the shipmasters they utilised and many shipmasters could be selective in the merchants they worked for, repeat interactions between ship-masters and merchants were usually reflective of a positive prior experience, even in cases in which the shipmaster was hired by the shipowner rather than the mer-chant(s) on board.

Finally, as the research undertaken here pertained to only three case study ports – Southampton, Bristol and Hull – we were clearly limited to seeing the ties of merchants and shipmasters relating to their voyages through those ports. Some of the individuals identified most likely carried out some degree of their business elsewhere, visible in port book data that is beyond the scope of this paper. How-ever, since this research was primarily interested in the networks, communities and business activities surrounding the three case study ports, this did not limit the results to a significant degree. Therefore, dyads (or single pairs) of individ-uals that represented only a single voyage across the full dataset were removed. This served to limit investigations to only those who traded frequently through the port and who built up networks surrounding that particular commercial ac-tivity.[32]

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30   Of the 782 visible signatures, at least 235 can be positively identified as belonging to the merchant himself, while only 38 were clearly the mark of a servant, apprentice or agent. The remaining 509 were either merchants' marks that could not be clearly tied to a spe-cific merchant or were illegible. TNA E190/814/5, E190/814/6, E190/814/7, E190/814/11, E190/814/12, E190/815/1, E190/815/2, E190/815/8.

31   Brinkley, "Elizabethan coastal trading," 230–33, 45–54.

32   To give a sense of the degree to which individuals operated across diverse ports towns, it is worth noting that, of the 267 Southampton merchants identified in the port books, only one appeared in Bristol across the full dataset and none appeared in Hull. Like-wise, of the 496 Bristol merchants identified, only one appeared in Southampton across the full dataset and only 2 in Hull. TNA E190/1128/12, 13, 14, E190/1129/1, 18, 20, 22, E190/1130/2, E190/814/5, 6, 7, 11, 12, E190/815/1, 2, 8, E190/305/1, 11, 12, E190/306/1, 4, 16, 17, E190/307/2, 3, 9, 16.

1.2   Methods of network prosopography

Having addressed the above practical concerns, it was then possible to begin formulating a robust network approach that was both methodologically sound and practically useful to the broader study. In order to achieve this goal, each network exposed in the graphs that were generated was reviewed in isolation, in the context of the other networks formed in that period, and in relation to the networks of the preceding and subsequent periods. Moreover, the graphs showing the nodes as shipmaster/merchant were reviewed both separately and alongside those showing home counties, in order to establish whether specific forms of commercial interaction correlated with traders from particular regions. This allowed for a broad overview of the trends in network formation surrounding each port, highlighting the degree to which propinquity played a role in each town and allowing for a broad overview of the methods of commercial interaction across an extended period. In addition, having already undertaken a great deal of prosopographical analysis of the individuals trading through each port, it was possible to begin to tie the networks of particularly prolific traders to their socio-economic, socio-political, and familial positions. As such, trends and themes pertaining to the networks that formed around the coastal trade of each port were quickly isolated and case study groups that were of particular interest within the wider study were rapidly highlighted.

From this initial starting point, analysis was separated into three Research Streams, reflecting the overarching goals of the project. The best means of explaining these methods is through a number of exemplary case studies. Therefore, the remainder of this paper will be dedicated to drawing out the methods of data analysis that were utilised within the context of particular findings, each of which stemmed from the following Research Streams:

Research Stream 1: The commercial nature of coastal trading
Aim: To establish the commercial nature of coastal trading activity in Bristol, Southampton, and Hull in the late sixteenth century.

Research Stream 2: The commercial strategies and business networks of coastal traders
Aim: To understand how coastal traders and shipmasters ran their businesses. In particular, how they forged and maintained business networks.

Research Stream 3: The socio-economic and socio-political position of coastal traders
Aim: To assess the socio-political and socio-economic position of individuals that engaged in coastal trading, and to challenge our established notions of what it meant to be a merchant during the Tudor period.

While Research Stream 2 was the most closely associated with the SNA that was undertaken, each Stream benefitted from and was beneficial to our understanding of the networks through which coastal trading was undertaken. In fact, it is impossible to separate the commercial nature of coasting activity, or the socio-economic and socio-political positions of the individuals who plied that trade, from their business networks. Therefore, the application of SNA represented not just a research stream in and of itself but was also a major factor in the wider research goals of the project. The sections that follow will not provide all of the findings resulting from each research stream, but will instead provide just a few examples of findings that demonstrate the potential opportunities presented by the application of SNA to this particular maritime community.

1.3   Research Stream 1: The commercial nature of coastal trading

Turning first to the broad commercial nature of coastal trading, the key factor in the successful application of SNA for the purposes of this stream was the need to contextualise any findings within a robust quantitative analysis of corresponding economic data. In other words, the broad trends evident in the network graphs generated could not be understood without first understanding the commercial character of the ports around which they revolved. For example, among some communities, the network graphs revealed a deep-set division of commercial activity along the lines of socio-economic factors (such as wealth or occupation) and the structural nature of particular commercial networks correlated strongly with engagement in specific trade routes. Yet these trends on their own revealed little about the commercial character of the Tudor marine until they were placed within wider knowledge of the kingdom-wide, regional, and local commercial situation. This was evident in the case of Hull, for example, where the specific commercial character of the port led to a clear division within the mercantile community between the very wealthy, elite mercantile class who monopolised Hull's trade with London, and lower-wealth and lower-influence merchants, who dominated the frequent but comparatively low-value trade in Newcastle coal.

Such a divide was immediately apparent in the network graphs for the region but did not reveal much about the reality of the commercial situation without corroboration from economic data.[33] Yet when the structures of the networks surrounding the port were placed in the context of the region's commercial character, it was evident that the practical nature of the trade undertaken between Hull and London and between Hull and Newcastle had a direct bearing on the

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33   Brinkley, "Elizabethan coastal trading," 191–209.

socio-economic character of the mercantile networks through which it was carried out. More specifically, while trade with London revolved around high-value goods that required substantial financial investment and a highly reliable professional shipmaster, but relatively small vessels, the trade in Newcastle coal revolved around the transportation of a low-value commodity in large volumes, requiring little risk-limitation but large, specialist ships. As a result, the London trade attracted the wealthiest and most well-established members of the mercantile elite in Hull, who had the financial security to invest in high-value shipments, the commercial contacts in the capital to integrate into the London trading circles, and who represented the core of the merchant community in Hull. Conversely, the trade in Newcastle coal attracted those of lower socioeconomic status, who lacked the financial privilege to fund high-value trade with London, but who operated within their own commercial group that was defined and limited by their ability to access only low-value commercial activity.

Thus, it became clear that the practical character of these two strands of coasting activity had a marked impact on the degree of integration between traders operating in the port. In other words, the network graphs highlighted the degree to which economic factors impacted the local trading community, and the economic data explained the division in such a way that rendered the findings beneficial to the wider historiography. In combination, these two approaches allowed for the formulation of a clear image of the commercial nature of coastal trading in the port of Hull, and one that revealed a deep-set division between elite merchants and lesser merchants operating in the port. While we could have guessed at such a division without SNA, and case studies of particular merchants would have likely revealed specific examples of a commercial divide, the generation of network graphs served to demonstrate the extent of the gulf and confirm that the economic character of the region had a community-wide impact on those trading in the area.

Furthermore, similar conclusions can be drawn from trends pertaining to the degree to which traders from different regions formed business partnerships (described here as 'cross-county integration'). While shippers from different regions did sometimes interact, partnerships between residents of the same hometown were more common and evaluation of the network graphs revealed much about the factors that impacted cross-county integration. For example, as shown in Figure 2, levels of overall trade had a very different impact on cross-county integration in Southampton than in Bristol, such that the correlation between trade and integration was much more marked in the former than in the latter. If we examine this difference in the context of the broader histories of the ports, we see that both towns were important entrepôts, but that the social basis for their commercial position was substantially different.

While Bristol had a centuries-long history of commercial domination by a small group of powerful local merchants, Southampton's overseas trade had long
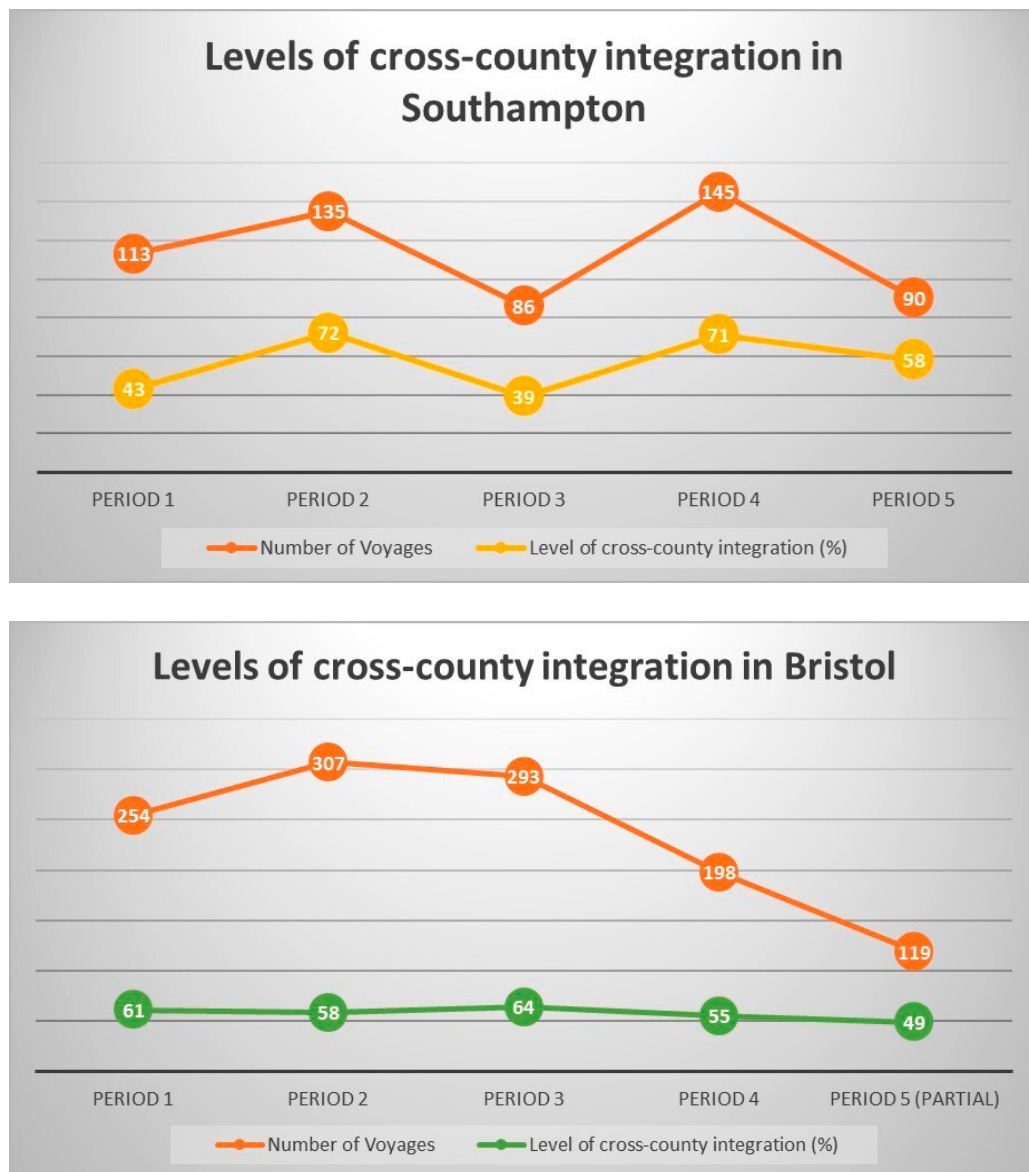
Fig. 2 Graphs showing the correlation between levels of trade and levels of cross-county integration. (Level of cross-county integration was calculated by determining the percentage of nodes that had an individual from outside their own affiliated county within their first order zone.)

been controlled by foreign traders.[34] As such, Bristol merchants were primarily concerned with overseas trade and largely left domestic exchange in the hands of River Severn and Welsh traders, whereas in Southampton, a number of elite merchants from the port itself were deeply immersed in coastal commerce. Therefore, the biggest shift in cross-county integration in Southampton came from the influx of traders from other regions during periods of increased activity, whereas in Bristol the sporadic involvement of Bristol's mercantile elite caused the greatest shift. Since Bristol merchants had the networking power to draw in local traders, their presence on the coast had the effect of splitting up previously diverse networks, forming networks that were dominated by Bristolians, thereby reducing cross-county integration.

Moreover, we can take this a step further and evaluate the differences between particular groups that traded within specific port towns. For example, a similar analysis of particular subgroups within the town of Southampton shows that levels of overall trade through the port had a significant impact on levels of integration between Southampton and Sussex traders, whereas levels of integration between Southampton and Channel Island traders remained steady throughout the approximately ten-year period under investigation. This difference can again be attributed to the specific character of the trade between Southampton and those two regions. Whereas trade between Southampton and Sussex was highly sought after, being dominated by the supply of iron and ordnance sourced from the Sussex Weald, trade between Southampton and the Channel Islands relied on the provision of low-value essential products (such as beer and firewood) to the Islands and was therefore of less significance to outside traders.[35] As a result, Channel Island trade was consistently dominated by islanders, whereas trade with Sussex made an appealing commercial activity for those seeking to operate within the region during periods of economic growth.

Such trends have a marked impact on our understanding of early modern commercial communities and have significant implications for historians of the sixteenth century beyond the maritime world. Not only can we use levels of cross-county integration to understand the personal business activities of individual

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34   See, among others, Eleanora M. Carus-Wilson, "The Merchant Adventurers of Bristol in the Fifteenth Century," *Transactions of the Royal Historical Society* 11 (1928): 61–82, https://doi.org/10.2307/3678539; Eleanora M. Carus-Wilson, "The Overseas Trade of Bristol," in *Studies in English Trade in the 15th Century,* ed. Eileen E. Power and Michael M. Postan (London: Routledge, 1933), 183–247; Coleman, "Trade and Prosperity," 9–22; Jones, *Inside the Illicit Economy;* Leanna T. Parker, "Southampton's sixteenth-century illicit trade: An examination of the 1565 Port Survey," *International Journal of Maritime History* 27 (2015): 268–84, https://doi.org/10.1177/0843871415578392; Ruddock, *Italian Merchants,* I, 268.

35   Brinkley, "Elizabethan coastal trading," 52–55, 61–65.

shipmasters and merchants, but we can use that measure to gain a broader insight into the commercial nature of port towns and of port communities, impacting our broader understanding of early modern society. Without visualisation of the port book data in the form of network graphs, such trends would be very difficult to identify or to quantify, and we could only guess at the impact that the broader commercial history of these towns had on the communities that operated within them. There is not space here to examine the various other examples that could be highlighted in support of this suggestion, but it is evident from these two examples alone that a combination of SNA and economic analysis can offer a powerful insight into otherwise invisible trading communities. In turn, improving our understanding of how such communities operated serves to extend our comprehension of the broader commercial nature of English maritime trading, substantially strengthening the historiography and counterbalancing an oversight in the existing scholarship.

1.4   Research Stream 2: The commercial strategies and business networks of coastal traders

Similar principles also apply to the application of SNA to commercial strategies and trade networks. For example, in isolation, the various forms of shipmaster-merchant interaction that were evident in the network graphs generated mean very little, but when corroborated with historic evidence they represent key commercial strategies for the establishment of particular forms of maritime career. For simplicity, these forms of interaction were categorised into three types, which are displayed in Figure 3 and can be described as follows:

> Type 1
> Individual shipmasters who catered for numerous unconnected merchants (i.e. one green node surrounded by various pink nodes).

> Type 2
> Individual merchants who employed the services of numerous unconnected shipmasters (i.e. one pink node surrounded by various green nodes).

> Type 3
> Larger networks containing numerous shipmasters and merchants.

Type 1 and 2 networks did not usually involve the formation of long-lasting business partnerships and, instead, short-term network ties were formed on the basis of a single voyage. However, Type 3 networks were larger and more complex, and usually involved various forms of interaction, often revolving around the most integrated members of the port's maritime community. In addition, networks that formed a star or a kite shape represented voyages on which merchants shared hull space.
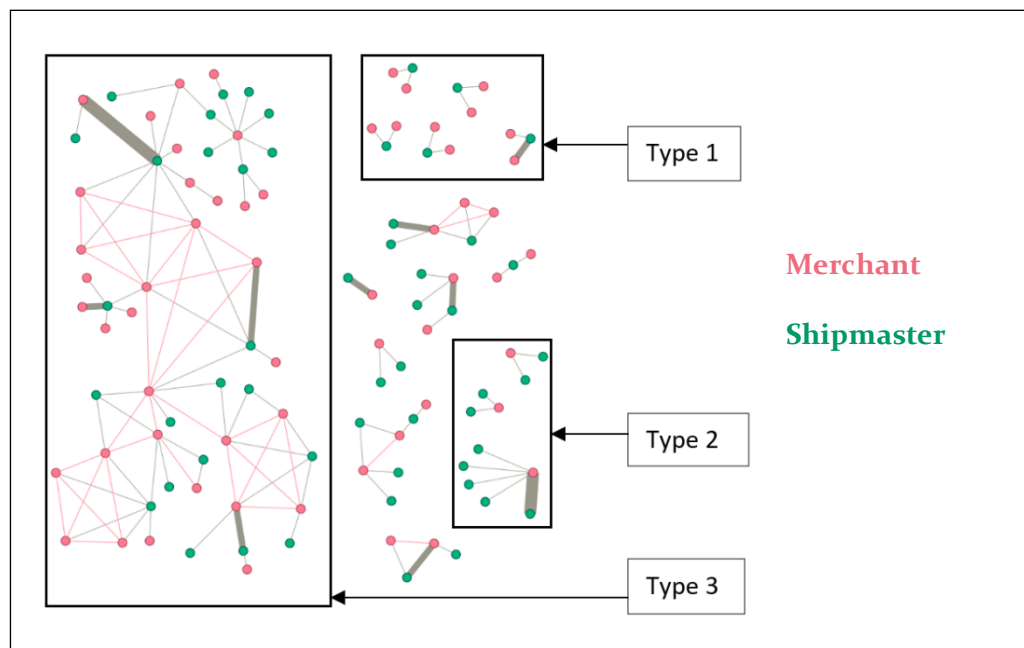
Fig. 3 Common forms of interaction present in coastal trading networks

These forms of engagement were not present in every graph and were by no means representative of every possible form of interaction between shipmasters and merchants, but they were particularly common network structures and serve as a useful reference for analysis of particular commercial trends or case study groups. For example, if we turn back to Hull, where we saw above there was a clear commercial divide between those engaged in the lucrative London trade and those involved in the lower-value trade in Newcastle coal, we see a well-defined split in the structure of the network graphs surrounding those trades. While coal traders tended to act in the dual-capacity of shipmaster and merchant, and thus formed very limited commercial networks, London traders represented the key members of the mercantile elite in Hull and thus formed large and well-connected Type 3 networks. Moreover, when we examine the lives and careers of primary characters in the large London networks, we see that they were wealthy, politically-inclined, and key nodes in the socio-economic character of the port. As a result, they were well placed to forge network ties with individuals from across the region and attracted shipmasters keen to find a place among the mercantile elite, much like the Bristol elite discussed above.

Importantly, this division also applied to other forms of coastal activity through Hull. In particular, individuals from outside of Hull who engaged in *ad hoc* trade through the port tended to operate within Type 2 networks, hiring shipmasters on a voyage-by-voyage basis for specific shipments. As voyages of this kind did not represent a permanent presence in the port but were rather reactionary ship-
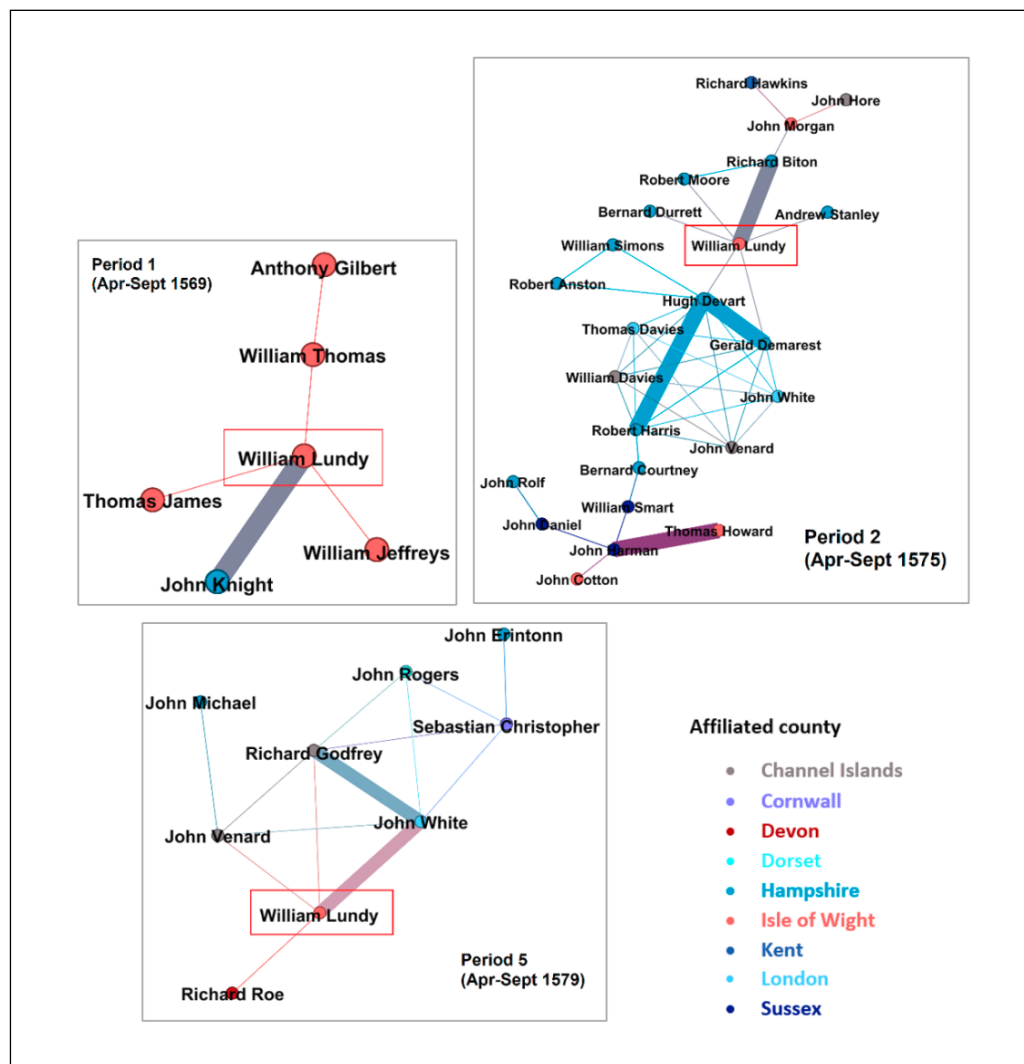
Fig. 4 Select network graphs showing network ties of shipmaster William Lundy.

ments in response to particular demands, few shipmasters specialised on those routes, and thus commercial relationships were formed on the basis of a single trip, rather than an established partnership. Again, the visual representation of the data in the form of network graphs highlighted the structural trends in the commercial relationships that were formed, but until a strong understanding of the commercial nature of the region within which they formed was established, these offered limited historical value.

This was also true in terms of trends pertaining to specific individuals or social groups. For example, the ego-networks of particular individuals helped to qual-

ify an implied commercial shift or personal career development. For instance, the case of shipmaster William Lundy can be used to exemplify the impact that purchasing a vessel could have on the ability of shipmasters to expand their businesses. As shown in Figure 4, Lundy was an Isle of Wight shipper who began the period under investigation with limited reach, but who managed to extend his network extensively over the 1570s, such that by 1579 he was able to collaborate with prestigious London merchant John White.[36]

Lundy was an active member of the maritime community in Southampton and he likely had a strong reputation as a desirable hire. However, the data also suggests that Lundy was a shipowner and that, between Periods 1 and 2, he upgraded from the 10-ton *Mary* to the larger 16-ton *Hare,* both of Newport.[37] This change in vessel correlated with the extension of Lundy's network beyond Isle of Wight traders and suggests that his desirability as a mariner was accelerated by his access to an appropriate ship. This example alone is insufficient to suggest a broader trend but, in conjunction with other case studies demonstrating similar themes, there is much basis to suggest that ownership of a vessel could increase the networking power of local mariners.[38]

Building on the findings of Stream 1, which focused on the broad character of particular regional and local commercial enterprise, Stream 2 focused in more detail on the individual business strategies adopted by merchants and mariners in their quest to establish lucrative maritime businesses. The findings of Stream 2 were contextualised by the findings of Stream 1, providing explanations for the operational approaches utilised by particular seafarers within their specific commercial activities. In this way, a combined methodological approach again enabled for detailed examination of a generally overlooked subgroup, such that the findings contributed to our broader understanding of the early modern merchant marine. Importantly, we can use similar techniques to identify other key events in the lives of traders that impacted the formation of the networks in which they operated, as well as to establish the correlation between particular socio-economic and socio-political themes and network formation.

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36   Brinkley, "Elizabethan coastal trading," 149.
37   While ship ownership is difficult to determine using the port book data alone, various scholars have demonstrated that coastal shipmasters were especially likely to own the vessels they utilised, particularly when those vessels measured under 50 tons. Thus, exclusivity in ship usage over several years is a good indication that an individual either owned or had an interest in that ship. Throughout the 1560s, all of Lundy's voyages with numerous merchants were carried out on the *Mary;* then, throughout the 70s, he mastered only the *Hare.* See, Andrews, "Elizabethan Seaman," 257; Brinkley, "Elizabethan coastal trading," 31–32; Kowaleski, "The Shipmaster as Entrepreneur in Medieval England," 165–82.
38   Brinkley, "Elizabethan coastal trading," 144–45, 95, 99–200.

1.5   Research Stream 3: The socio-economic and socio-political position of coastal traders

Indeed, we can find numerous examples of particular socio-economic and socio-political changes impacting the networks through which coastal trading was undertaken. For instance, in Southampton, Channel Island mariner Peter Janverin ended the 1560s well integrated with a community of Channel Island seafarers who engaged in frequent trade through the port of Southampton, as shown in Figure 5. On closer inspection of local civic records, it is clear that Janverin was well placed to forge successful business ties with a broad range of seafarers in the region, being a merchant of significant standing on the island of Jersey and marrying into a Southampton innkeeping family in 1566, thereafter acting as landlord to a high-status Southampton inn.[39]

However, Janverin's inclination to operate as a shipmaster within Channel Island networks only endured for a limited period and the longer he acted in the capacity of landlord, the more integrated he became into the Southampton community, taking up minor political offices and forging network ties with Southampton merchants for his overseas activity.[40] From the perspective of Janverin's personal career progression, the transition from local domestic exchange within Channel Island networks to long-distance overseas trade among Southampton merchants represented significant professional growth. However, from the perspective of the coastal trading networks under examination here, Janverin's departure had a significant knock-on impact on those who continued to trade between the mainland and the Islands. In fact, Janverin appeared so infrequently in the Southampton coastal port books after 1569 that he was excluded from the subsequent network graphs. As a result, the islanders that remained formed smaller networks and began to engage in a limited capacity with some Southampton traders, as shown in Figure 6. Such trends were very common in the world of coastal enterprise, with many shipmasters and merchants only sporadically engaging in domestic trading activity. A large body of individuals embraced and abandoned the industry with regularity, often resulting from personal social and economic changes. This meant that personal circumstances and individual decision making could have a significant impact on the broader trading activities of the port community, and even more so in the case of domestic trade than in overseas activity, where the threshold for participation was low and where individuals with other career paths would occasionally partake as an aside to their routine trade.

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39   Cheryl Butler, "Peter Janverin (1559–1596)" in *The Southampton Tudor Project: From Records to Revels,* accessed 2 November 2020, http://www.tudorrevels.co.uk/records.php.
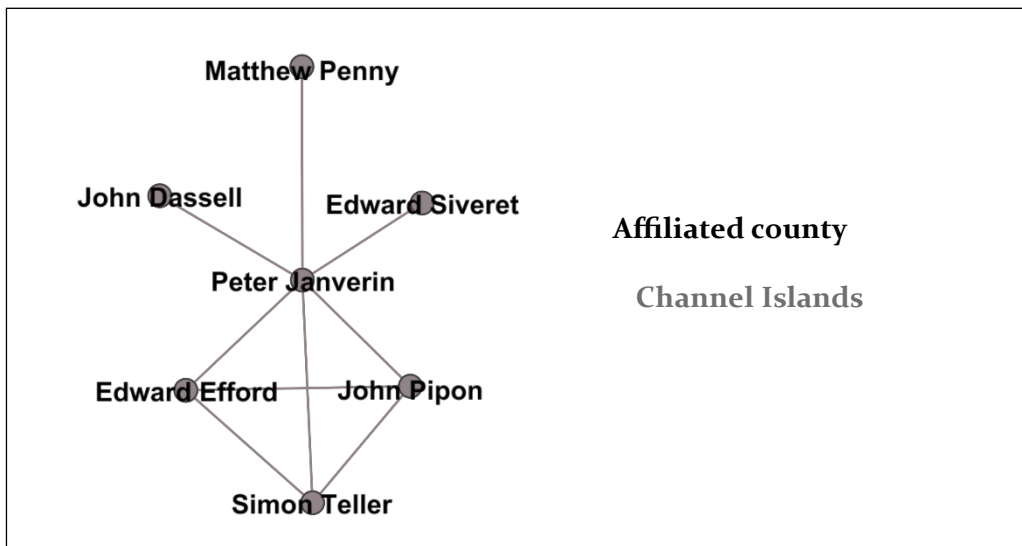40   Butler, "Janverin".

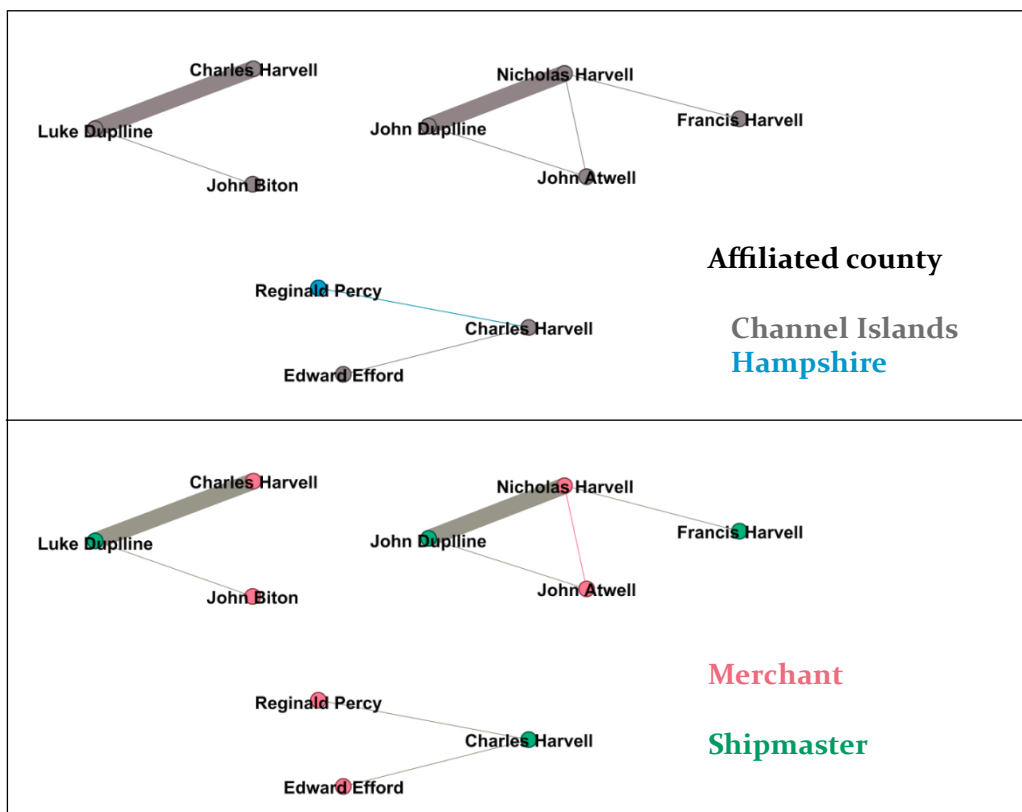**Fig. 5** Networks graph showing network ties of shipmaster Peter Janverin in Apr–Sept 1569

Fig. 6 Networks involving members of the Duplline and Harvell families of Alderney (Apr–Sept 1577)

Furthermore, aside from the commercial trajectory of particular coastal networks, the familial ties and residencies of coastal traders often impacted their fundamental structure. For example, Figure 6 shows several networks that included members of the Duplline and Harvell families of the Channel Island of Alderney, which suggest that Harvell merchants had a standing partnership with Duplline mariners, whom they favoured as their shipmasters.[41] The forging of strong ties between merchants and their chosen shipmasters was a fairly common form of engagement among career coastal traders (although it was less common among those who dabbled in coasting only occasionally). However, this case stands out since the structure of the network and the form of shipmaster-merchant engagement was a common thread throughout the familial unit, rather than being an individual business strategy. This suggests that these family groups were operating as established commercial units, sharing business contacts and operational approaches and, as a result, operating in similarly structured commercial networks.

Moreover, such similarities also ran through other family groups operating on the English coast. For example, in the case of the Courtney family of Hampshire, merchants Bernard and William Courtney both engaged with other Hampshire shippers for the majority of their coastal activity but formed specific 'Sussex-branches' of their business networks in order to facilitate trade into Sussex, as shown in Figure 7. This example again suggests that, in some cases, the means through which individuals engaged in coasting was consistent among family units. This is an important finding within the field of maritime history, as it aligns the business approaches of coastal traders with those of large-scale overseas merchants, indicating that seafarers operating in domestic waters approached their craft with sensible business strategies that were uniform across commercial units.

Likewise, similar analysis of the port books in Bristol suggests that traders who appeared in the same networks very often resided within the same areas of the port. This is evident in Figure 8 and suggests that propinquity played some role in the formation of network ties. Like in the case of the family units above, individuals who resided in the same parts of the town seem to have shared business contacts and formed intimate networks operating on the same trade routes and participating in the same commercial activity. This supports the findings of other early modern historians, who have found that individuals engaged in the same commercial activity or craft tended to gravitate to the same parts of the towns in

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41   There is limited substantiating evidence that the Harvells and Dupllines listed here were members of the same families. However, given that they haled from the small island of Alderney, occupied the same trade routes, carried the same commodities, utilised the same vessels, and engaged with the same shippers, it is highly likely that they were. TNA E190/1128/12 f.15v, E190/1128/13 f.21r, E190/814/7 f.3v, E190/814/12 f.8r, 9v, E190/815/1 f.1r, 2r, 3v–5r, E190/815/2 f.4r–6v, 8r, E190/815/8 f.4r–5v.

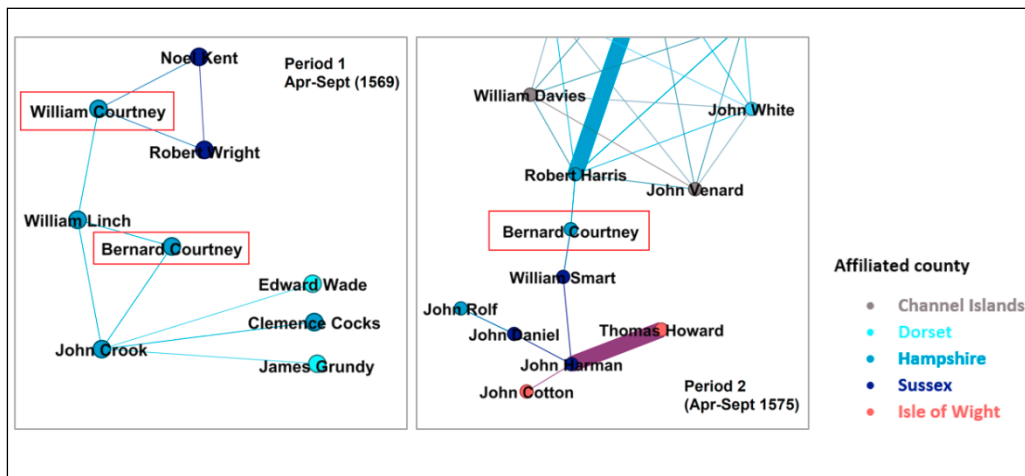**Fig. 7** Select network graphs showing the network ties of William and Bernard Courtney
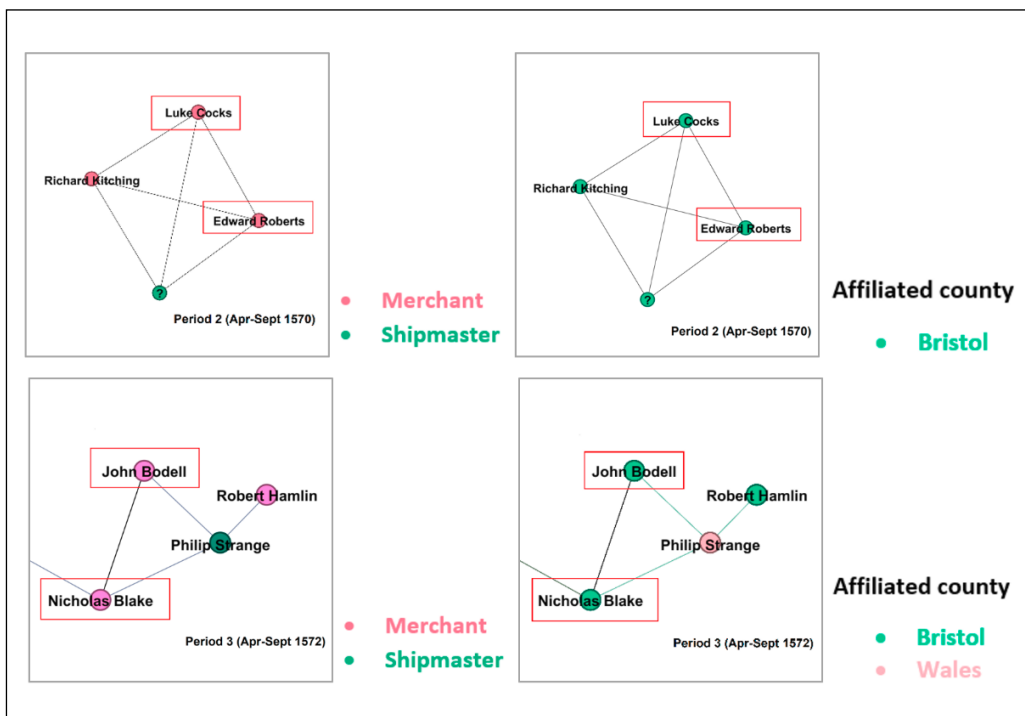

Fig. 8 Select network graphs showing multi-merchant voyages undertaken through the port of Bristol (John Bodell and Nicholas Blake both resided in the ward of Mary le Port, and Luke Cocks and Edward Roberts both lived in Redcliff Ward). (TNA E179/115/373 mem. 2, 3., E179/115/386 mem.6)

which they resided.[42] Such patterns are easily discernible within a large dataset through the application of SNA in collaboration with prosopography and can add much to our understanding of early modern society.

In combination, these brief examples serve to demonstrate that utilising SNA alongside detailed examination of customs records and local civic sources can allow us to form a broad understanding of the types of interactions that facilitated coastal commercial activity in early modern ports. Like each of Streams 1 and 2, the application of a combined methodological approach allowed such findings to be easily identified, to be quantified by numerical data, and to be qualified by a prosopographical examination of case study communities, adding valuable findings to the existing body of historiography and exposing the lives and careers of a poorly represented commercial group.

1.6 Conclusions

The methodological approach described in this paper can be characterised as network prosopography. It utilises SNA as one of several strands of analysis to reveal the collective commercial, social, and economic character of a little-known but hugely important early modern community. While the early modern customs records have been extensively studied, and many historians have guessed at the nature of coastal commercial enterprise, re-examination of the port books within the specific context of coastal trading has allowed for investigation of a group that is largely ignored or disregarded in the historiography and that is difficult to access using the qualitative sources that survive. Examination of the customs records using SNA has enabled the exploration of both broad overarching trends and trends specific to particular individuals or social groups, such that our wider understanding of the Tudor marine is generally improved. This method has allowed for the formation of wide-reaching conclusions regarding the social composition of the coastal workforce, of the operational means through which coasting was undertaken, and of the broader impact of coastal commercial activity on Elizabethan society. Many of these trends only become apparent through the visualisation of data in network graphs and this dual-approach allows for quantification of historic trends alongside more traditional prosopographical evaluation.

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42   For example, see Fury, "Elizabethan Maritime Community," 117–39; Lambert, "Tudor Shipmasters," 315–41; David Sacks, *The widening gate: Bristol and the Atlantic economy, 1450–1700,* vol. 15 (California, USA: University of California Press, 1991), 147–53.

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