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Transatlantic Transformations: Visualising Change over Time in the Liverpool-New York Trade Network, 1763-1833

In the early modern Atlantic world, trade brought communities and commodities closer together and, as a result, many merchants became linked in expansive networks of exchange. The unstable nature of long-distance trade meant that these networks were continually being transformed. The Liverpool-New York trade network, in particular, underwent many changes between 1763 and 1833. The article aims to demonstrate how the use of network visualisations over three distinct phases (1760-1790; 1790-1815 and 1815-1833) can elucidate these changes and provide a different approach for studying the development of this trading community. These visualisations will serve to illustrate the extent to which this network was dynamic and further our understanding of how merchant networks sustained longevity and coped with risks in the ever-changing Atlantic world.

Liverpool and New York in the Atlantic World

In eighteenth century transatlantic trade, merchants fostered relationships with counterparts in distant locations largely on the basis of reputation and mutual trust.¹ These merchants often possessed ties to several firms abroad, linking them in multi-farious networks of exchange which were sensitive to the unpredictability of oceanic commerce. As trade between ports expanded, links between merchant firms became more numerous and resulting in complex networks of exchange. The use of network visualisations has become an important tool for understanding the functioning of networks in general. Additionally, visualising a network using multiple diagrams offers a new perspective for understanding development and change in trading communities over a distinctive period. This can highlight many factors such as how particular events impacted upon network ties, characteristics of firm longevity or connectedness and the development of transnational economic communities. Therefore, this article aims to demonstrate how analysing change over time in a trade network using network visualisations can be a useful iterative method for revealing important characteristics of trading communities, namely the Liverpool-New York

trade network. In terms of the Anglo-American trade, ports such as Boston, Philadelphia, New York, Bristol, London and Liverpool, were important centres of exchange. Throughout the eighteenth century, many these centres and their respective trading communities experienced increasing and decreasing involvement in Atlantic trade. While some locations, such as London, would always remain important as an economic centre, its role in Atlantic trade changed significantly. With the decline of the chartered companies and trade monopolies in the Atlantic as a result of both internal problems and external opposition, London merchants turned their focus towards the Eastern trades and away from Atlantic trade routes.² As their presence in the Atlantic economy faded, they were replaced by merchants in the outports, such as Bristol, Glasgow and Liverpool.³ Within the Atlantic economy, the growth of the Anglo-American market during the American colonial period created a long-lasting commercial bond between merchants in these British outports and eastern American ports.⁴ However, not all British outports succeeded to the extent of Liverpool in this market. By the nineteenth century, as the industrial hinterland around Liverpool developed, the export of manufactures from this location to American ports increased.⁵ The access to manufactures, as well as the diversity of commodities in which Liverpool merchants dealt, contributed greatly to their dominance in Atlantic trade.

During this period, in American ports, change was also occurring. While Boston had remained the dominant port for the first half of the eighteenth century, by 1755, Philadelphia and New York were surpassing Boston's trading activity. This was, in part, a result of the loss of markets due to mid-century European wars and the dominance of the middle colonies in the grain trades.⁶ Through the trade in grain and other raw goods, Philadelphia and, to a lesser extent, New York, created links to Great Britain. However, by the last quarter of the eighteenth century, the closure of

Philadelphia's port during the American War of Independence and the continuation of trade from New York marked a significant shift. By the 1790s, New York's emerging position as the main entrepôt port between Europe and the southern states left the control of Anglo-American trade in the hands of New York merchants.⁷

As a result of New York merchants' access to numerous raw goods and Liverpool merchants' link to manufacturers as well as credit, the two trading communities forged a long-lasting economic relationship. The longevity of this relationship was made possible by the merchants who created and sustained transatlantic links between the two ports and thus examining the network of merchants investing in the Liverpool-New York trade makes for an excellent case study. Despite the importance of this community to the Anglo-American economic relationship, the merchant networks facilitating trade between Liverpool and New York have never been analysed. Furthermore, while many historians of trade networks have made great contributions to the analysis of complex transnational exchange and communication of other locations such as Bordeaux, most have yet to adopt network visualisations, owing to the newness of this approach and technology within the field of history.⁸ This is unsurprising as programs such as Pajek, Gephi and Visone have only been made available to the public in the last decade or so and since then, have only been utilised by a handful of historians.⁹ That being said, the emerging use of network visualisations in the study of trade networks has worked to illustrate characteristics of network size, shape and composition.

By exploring the dynamic networks of the Liverpool-New York trading community through network visualisations for three distinct phases between 1763 and 1833, this research provides a

more illustrative understanding of how networks functioned in the Atlantic world. While a single network visualisation indicates who was in a given community and how well-connected they were; visualising the same network over several different phases, reveals this information as well as how the community developed over time, how firms were transformed and which firms possessed remarkable longevity. Investigating the changing shape and composition of the Liverpool-New York trade network during the late eighteenth and early nineteenth century offers an important perspective on the development of the Anglo-American commercial relationship in a time of transition.

Developing an Iterative Methodology

In socio-economic literature, network analysis has helped scholars understand group dynamics, cooperation and business culture. An extensive discussion has emerged on how to define networks and explain their function. The definition for a 'network' provided by Laurel Smith-Doerr and Walter W. Powell is as follows: 'Networks are formal exchanges, either in the form of asset pooling or resource provision, between two or more parties that entail on-going interaction in order to derive value from the exchange.'¹⁰ While network theory and visualisations within the field of sociology has been applied for decades, the use of this methodology by historians is comparatively recent.¹¹

Over the last two decades, there has been a growing literature which has applied socio-economic theory of networks to the historical study of social groups and businesses.¹² More specifically, there is emergent research which focuses on the composition and uses of networks in the early

modern Atlantic world. Historians such as Peter Mathias, Natasha Glaisyer and David Hancock have made great strides towards illuminating the interconnectedness of the Atlantic economy.¹³ These historians have examined the ways in which trust factored into the formation and continuation of relationships within a network, to what extent a merchant's reputation affected the number of connections they possessed and if obligation to transact with an associate despite bad business practice affected the functioning of a network. While these studies are important, few have chosen to adopt network visualisations which could be a useful exploratory tool for any of these studies.¹⁴ With the rise of the digital humanities and greater emphasis on interdisciplinarity, the use of network visualisations in historical studies of trade network may be a direction in which many choose to move their research. As Duncan Watts suggests, current research into networks is highly interdisciplinary and allows for a range of approaches.¹⁵ In view of this, John Haggerty and Sheryllyne Haggerty have provided an excellent case for using network visualisations together with qualitative historical data to explain the composition and function of trade networks.¹⁶ This method is useful for elucidating the size of a given network, major players within the network, and the number of connections they possessed. Network visualisations are also an important iterative tool, in that they allow important individuals and relationships to be identified and then followed up through further qualitative research. Without the use of visualisations, certain actors, relationships or features of a network may remain unrecognised.

That being said, network visualisations can be problematic in that they are merely a snapshot of a network. In the eighteenth and nineteenth centuries, trade networks were constantly undergoing transformation and, therefore, it is beneficial to analyse the ways in which they changed over time. As Haggerty argues, 'the fact that actors are always developing new (and losing existing)

ties shows that networks are dynamic'.¹⁷ Mercantile networks expanded when periods of widespread opportunity were present, and experienced constriction due to economic, political and environmental crises. Furthermore, merchant partnerships or firms were frequently formed, re-organised and dissolved. Merchants were repeatedly gaining and losing business correspondents. The period under analysis was one that experienced numerous political and economic changes. Examining the years beginning at the end of the Seven Years' War and ending just before the Panic of 1837 demonstrates how the Liverpool-New York trading community evolved from a small group of loosely tied merchants into a large network of established merchants investing in numerous commodities and industries. Therefore, for this period in particular, analysing change over time through the use of network visualisations offers a clear representation of the changing shape of this transatlantic network which allows for interesting insights into transnational economic development. It also provides an important perspective on events such as wars, embargos, post-war gluts, credit crises and market bubbles which occurred frequently between 1763 and 1833. Further to this, internally the Liverpool-New York trade network was frequently transformed as a result of the growth or decline of firms within and the frequency of intra-firm reorganisation. Therefore, while there is still work to be done with regards to the construction of multiple visualisations of a network, this article will show the potential research benefits of using several network visualisations to examine composition and change within a transatlantic trade network.

To analyse change over time in the Liverpool-New York trade network, three distinct phases will be examined: 1760s-1780s, 1790s-1815, and 1815-1833. These phases were chosen prior to the networks being constructed and it was only after the visualisations were complete that dramatic changes within this network became apparent. The points at which the phases have been

separated represent points of transition within the trading community. The period of re-adjustment in the 1780s following the American War of Independence was particularly difficult for this trading community, while the French Wars of the 1790s provided a new set of obstacles. Conversely, the post-1780s brought New York and Liverpool into a larger re-export trade of southern commodities such as cotton, naval stores and rice. Therefore, it seems logical to separate the first and second phase at 1790. The same can be said for the break between the second and third phase. The Anglo-American War, which ended in 1815, caused severe losses within this and other Anglo-American trading communities and the period that followed was one of unprecedented growth in terms of the volume of commodities traded; therefore, it makes sense to separate the two phases at this point. Each phase contains periods of instability within this trading community and while certain phases experienced more problematic trading conditions than others, long stretches of 'normal trading conditions' were rare in any phase. Furthermore, merchants experienced in long-distance trade were adept at evaluating risk and continuing exchange in spite of these risks.¹⁸ Therefore prolonged instability has not been found to distort any of the visualisations of the Liverpool-New York network, but rather demonstrates which merchants were able to continue commerce despite problematic trading conditions and the extent to which this network recovered following a crisis.

The visualisations of this network have been constructed using a variety of sources and represent links between merchants who exchanged commodities, credit and information. In the network visualisation, each node represents a merchant firm investing in the Liverpool-New York trade (New York firms represented by grey nodes, Liverpool firms represented by black nodes and firm integral to this network but based elsewhere represented by white nodes). Connections made on

the basis of the exchange of goods, credit or information are represented by a single perforated line linking the two. An example of a smaller network visualisation can be seen below.

Figure 1. Example of a Network Visualisation on a smaller scale

The main sources used to construct these visualisations are collections of correspondence which provide detail on who was trading with whom, creditor-debtor relationships and connections relied on for market information. These manuscript collections provide detailed information on merchant reputation, debts and general trading activity and, once the network has been constructed, this additional information offers context for the network composition and functioning. Other sources used are the cargo manifests of the United States Customs Service available through the New York branch of the US National Archives. This source, although less detailed, provides a record of merchant transactions. By obtaining information on the sending and receiving merchants as well as the amount and description of goods traded, one can achieve a more complete view of merchant connections between the two ports.¹⁹ This source has also been used to fill gaps that may emerge due to missing or incomplete correspondence collections. Beyond these, the *London Gazette* and several local newspapers, such as *Williamson's Liverpool Advertiser and Mercantile Chronicle*,

provide evidence for the dissolution, formation and reformation of firms, which is important not only in for the construction of this network but for the analysis of its internal composition. Sources from the eighteenth and nineteenth century are problematic and often their are gaps. That being said, the collation of multiple types of sources has provided as complete a depiction of these networks as possible.

It must be stressed that a network visualisation is an excellent *iterative* tool, one that acts as a base for further analysis of network composition and functioning. The following sections shall use network visualisations to demonstrate characteristics of the composition of the Liverpool-New York trade network in a given phase, how the network was transformed from one stage to the next and what this might indicate about the business culture of this trading community. Importantly, it will show points at which the network visualisation reveals opportunities for further qualitative research that may be hard to recognise through traditional approaches to trade history.

The First Network Phase (1760s-1780s)

At the end of the Seven Years' War, the value of the trade between Liverpool and New York was relatively low in comparison to the Liverpool-West Indies trade or the New York-Ireland trade.²⁰ For example, in 1763, the value of goods imported into England from New York was £53,988 but from Jamaica alone the value of imports to England was £1,159,023.²¹ Despite this low value of the trade, New York and Liverpool merchants exchanged a variety of goods. To Liverpool, New York merchants exported numerous raw materials and foodstuffs such as iron, timber and grain. These good were procured from the direct hinterland which included, New York colony/state, New Jersey and Connecticut. To New York, Liverpool merchants sent coal, salt,

cheese and small but varied amount of manufactures.²² To access these good, merchants in Liverpool and New York possessed multiple trading connections. While the focus of this article are the connections created and sustained between Liverpool and New York merchants, it must be recognised that these merchants possessed numerous connections outside of this network.²³

Below is a visualisation of the first network phase and consists of the firms participating in the Liverpool-New York trade from the 1760 to the 1780s and the connections they possessed during this network phase. The visualisation reveals a number of interesting features of the Liverpool-New York network in this early stage.

Figure 2. The First Phase of the Liverpool-New York Trade Network, 1760s-1780s.

Sources: Liverpool-New York Trade Database (created by author); Truxes, *Letterbook of Greg & Cunningham*; White, *The Beekman Mercantile Papers.*, The networks diagrams have been created using Visone. The grey nodes represent the New York firms and the black nodes represent Liverpool firms (however, some were based in Manchester but utilised Liverpool as their main exporting port).

What is first apparent from this visualisation is the overall size of the trade network and the number of connections (or *relationships*) each firm possessed within this network.²⁴ One can see that during these two decades, thirty-seven firms participated in the Liverpool-New York trade. In relation to the overall size of the merchant communities, the percentage of firms engaging in trade with either Liverpool or New York was very small. Based on a calculation of those listed as 'Merchant' in *Gore's Liverpool Street Directory*, at the end of the 1760s, the firms participating in the trade to New York made up approximately seven per cent of the overall Liverpool merchant community.²⁵ Liverpool merchants were more likely to trade with other significant colonial ports such as Philadelphia and Boston. There was also vested interest in the West Indian and African trades (including the slave trade).²⁶ Similarly, in New York, based on the numbers provided by Cathy Matson, firms trading with Liverpool between 1767 and 1771 comprised approximately six per cent of the overall merchant community.²⁷ It appears, at this time, more merchants in this port were engaged in trade along the coast, with the West Indies, Ireland, London, Bristol and other significant ports in Europe.²⁸

However, more importantly to understanding network functioning through the use of visualisations is analysing the connections between merchants. From this visualisation, one sees that each firm possessed a varied number of connections within this network. Some such as James Beekman in New York and Haliday & Dunbar in Liverpool maintained multiple connections in both ports. Others such as Shaw & Long in New York or Charles Keeling in Liverpool had only one connection within this network. This could indicate a number of possible firm characteristics. The first being that those who possessed numerous connections within this network may have done so because they were well-established firms and thus had access to

numerous goods, credit and information, which made them desirable firms with which to be connected. Conversely, those who had multiple connections in this network may not have held connections beyond this community, indicating they were part of a very dense network cluster and thus limited in their ability to trade elsewhere.²⁹ On the other end of the spectrum, those that held only one or two connections within this network may have been occasional participants who only utilised this trade for specific commodities when necessary. A lack of multiple connections within this network may also indicate that they were simply smaller firms which were not as well connected as their peers. While this level of detail might not be clear from the visualisation alone, the recognition of differences between firms on the basis of number of relationships provides a guide for more specific qualitative research.

What the visualisation does make apparent is the comparative number of firms participating in this trade in each port as well as the number of connections they maintained. While there was minimal difference at this stage, the New York community was slightly larger, which was a common feature of all three network phases. This indicates, perhaps, that the trading community at New York was more accessible to less well-connected merchants. This becomes even more apparent when one takes into consideration the names of Liverpool firms that appear within this network, such as Thomas Hodgson Jun and Thomas Earle. As the secondary literature on Liverpool acknowledges, the Hodgson and Earle families were among some of the wealthiest and most established firms in Liverpool with trading interests in Africa, the West Indies, Mediterranean and America.³⁰ Further to this, despite being less recognised by the historiography, the firms of Rawlinson & Chorley, William Wallace and Haliday & Dunbar were also major players in Atlantic trade.³¹ When compared with New York's trading community, apart from a few notable family names such as Beekman and Buchanan, most were less

established than those at Liverpool. Even the noted presence of the Irish firm Greg & Cunningham in the network visualisation reveals, upon further research, that the representative based in New York was the much younger and inexperienced Waddell Cunningham.³² From the presence of these wealthy firms, one can assess that the Liverpool trading community was relatively closed. On the other hand, many of the New York firms appear to be smaller even though they are connected to some of the most well-known firms in Liverpool which indicates there was more available opportunity for these firms in New York. Further research conducted by historians of New York trade suggests these merchants exercised more economic freedom than they were officially allowed by the Navigation Acts and often engaged in trade with restricted ports and nations. This seemed to be the case particularly in the West Indies where many traded with French, Spanish, Dutch and Danish islands.³³ Therefore, it appears that there was more available opportunity for New York merchants in all trades and thus they may have acted as official links for British merchants into restricted markets.

In terms of the relationships that can be viewed within the network visualisation, one can see the presence of clusters of merchant firms; in particular, the cluster comprising the Beekman and Greg & Cunningham firms. From this, it can be assumed that these firms had close relationships, sharing business contacts and perhaps participating in similar trades. This is verified through primary source material, which indicates that both firms invested heavily in the Irish trades and shared correspondents in Belfast, Liverpool and New York as well as various other ports.³⁴ In this case, despite what could be construed as a dense network cluster, the flexibility and network activity of the firms was not constrained.³⁵ In fact, it appears that this clustering within this network allowed these merchants to share resources and information which benefited their businesses. The great benefits obtained from the members of this particular cluster were obtained

through locational advantages and general firm mobility. The geographic spread of firms such as Greg, Cunningham & Co. suggests access to several markets and resources. This is even further emphasised through primary material which indicates trading activities beyond this network in the Caribbean and continental Europe. The network visualisation also draws awareness to a number of transatlantic familial connections, such as the Beekmans and the Kenyons, as well as the family firms of the Buchanans and Franklins. The presence of family members in both ports suggests that at some stage family members travelled to either Liverpool or New York to establish a base from which they could manage their family's interests. In this case, William Beekman migrated to Liverpool and it appears that James Kenyon migrated to New York as David Kenyon was the first of the Kenyons to join this network in Liverpool.³⁶

While certain features illuminated by this network visualisation can guide more specific qualitative research, this undertaking is not always a possibility. One important feature which can be revealed through visualising a network in this way is the firms who were also well-connected but whose records have been lost over time. For example, Samuel Broome & Co. was clearly an important firm in the Liverpool-New York trade network; however, because qualitative material supporting this is incomplete, the firm's historical importance within this network has been forgotten. In the network visualisation, one can see that the firm of Samuel Broome & Co. was linked to arguably some of the most established firms in Liverpool. His link to Haliday & Dunbar suggests investments in the importation of dry goods, while his other links also suggest that he was likely exporting raw goods as well. Beyond this, he may have had ties to other trades, given the impressive trade portfolios of the merchants with whom he was transacting. While not much more can be said on the firm's activity, by constructing this network

visualisation, this firm can be acknowledged as an integral part of the functioning of this trade as a result of the quality of their connections.³⁷

In addition to specific firm characteristics and relationships, the historical context of this network visualisation must also be taken into account. It should be acknowledged that within the first phase of the Liverpool-New York trade network, several upheavals occurred that directly impacted upon the trade and trade network. While the effect of all political and economic crises occurring during this period will not be addressed here, attention must be given to the American War of Independence.³⁸ Acting as a British naval base during the war, the port of New York remained open to British trade.³⁹ As such, using the network visualisation to gauge involvement in trade during this war offers interesting insights into merchant opportunism and political loyalties. Below is a visualisation which highlights all connections from the first phase that continued to engage in trade between Liverpool and New York during 1775-1784.

Figure 3. The Liverpool-New York Trade Network during the American War of Independence, c. 1775-1784.

Sources: Liverpool-New York Trade Database (created by author); Truxes, *Letterbook of Greg & Cunningham*; White, *The Beekman Mercantile Papers.*, The networks diagrams have been created using Visone. The grey nodes represent the New York firms and the black nodes represent Liverpool firms. Those connections with a solid highlighted line are those that remained active in trade during the American War of Independence.

Two important aspects of this visualisation must be analysed further; first, the firms that no longer appear and second, the firms that remain. Roughly a third of those participating in the overall network for the first phase were not present at this time. From the primary source material it appears that certain merchants such as, Gerrad G. Beekman, Greg & Cunningham, David Kenyon and William Beekman had ended their participation in this trade well before the beginning of the war, indicating that this was not a result of politics but rather retirement or changing trade interests. However, the absence of other merchants such as James Beekman and Haliday & Dunbar was linked to political affiliation. James Beekman, who engaged in trade with William Haliday of Liverpool and Robert & Nathaniel Hyde of Manchester, was sympathetic to the American cause and as a result, he ceased trade with Liverpool and left New York for the duration of the war.⁴⁰ Additionally in 1775, both George Dunbar and Thomas Earle signed a petition in favour of war and ended their affiliation with the Liverpool-New York trade.⁴¹ The reasons behind these decisions are not entirely clear but may relate to the fact that many of these merchants had stronger links to other trades or felt the settling of this conflict would improve British/American interests after the war. One could also speculate, that as their primary contact in New York, Beekman's step back from this trade influenced Haliday & Dunbar's exit as well. For those with few, close-ties in a given network, the exit of one significant actor had repercussions to other ties, especially if the actor was an essential bridge between markets. The loss of important players from networks thus had the potential to change the shape of a network. What can be seen in this instance is an essential dry goods trade relationship which relied on the presence of Beekman in the network. His absence altered the clusters which existed in this network prior to the war and therefore, changed the shape of this network. Although the network

visualisation cannot offer specifics about the reasons behind non-participation in wartime trade, it is a useful tool for directing research into the reasons why some chose to leave the network.

Perhaps the network visualisation is even more important for identifying firms that continued trade during wartime. One can see that a fair number chose to remain, even those such as Hamilton Young who had been originally a member of the Greg-Cunningham-Beekman cluster that no longer existed in this network. What is also apparent is that the links between New York and Liverpool firms lessened considerably. From this one can infer that, while New York fared better than ports such as Boston and Philadelphia, the war did take a significant toll on the size and relationships within this network. The visualisation also indicates that Thomas Hodgson Jun remained the most well-connected to the firms within this network, which is unsurprising owing to his access to ample goods and capital. With further primary research, it becomes apparent that many merchants in both ports favoured peace and on the New York side, the merchants who continued to trade classed themselves as either loyal or neutral.⁴² Those that chose to stay neutral during this war were largely Quakers and from the visualisation, the names of several quaker firms are evident, in particular Bache, Franklin, Benson, Postlethwaite and Kenyon. Many of these merchants benefited from remaining involved in this trade during wartime; for example, Thomas Buchanan had one of the longest careers of any New York merchant. However, it does not appear that participation in this network cemented the bonds of these merchants as most do not appear in the 1790s and those that do, aside from the Kenyons, have different connections within the network. What the network visualisation allows for is a whole picture of who remained in this trade and the connections they sustained during the war. This then allows for further exploration of trade records, newspapers and any other primary sources which highlight the reasons for the continuing trade relationships and the success of these ventures.

By visualising the first phase of the Liverpool-New York trade network, we can come to understand the composition and size of the network as well as the characteristics of the firms within. This visualisation is especially useful for allowing this trading community to be viewed as a whole when often research into eighteenth century trade is hindered by scant primary source material. While full records on each firm may not exist, one can at least understand their connections within this network and through those, infer other aspects about their careers as merchants. The Liverpool-New York network changed dramatically into the second phase; however, the scale of this change within this community only became clear when the network was constructed.

The Second Network Phase (1790-1815)

The longevity of those present in the first phase and their ability to survive into the second phase was not determined by whether or not they participated in wartime commerce. Not all firms which chose continue commerce did so successfully, for example the Rheinlanders who entered the network in 1772 but exited in 1782. Others who chose to leave the trade did not re-enter and upon further investigation it seems that many followed other pursuits, for example James Beekman who became involved in politics.⁴³ Those who survived into the second phase, such as Thomas Buchanan, did so because they maintained links with committed associates and operated flexible businesses which could adapt easily to change.

That being said, the changes which occurred in this network created a new trading environment with a much different composition from the first phase. The transformation and growth of the Liverpool-New York network from the first to second phase was remarkable. During the second phase, both communities experienced increased merchant participation in this trade which can be

seen in figure 4. Due to the timing of this expansion, a visualisation of this network during this period provides an interesting illustration of the post-colonial growth of Anglo-American commerce and the growing importance of the Liverpool-New York trade in this period.

Figure 4. The Second Phase of the Liverpool-New York Trade Network, 1790-1815.

Source: LPNY Trade Database; James and Thomas Wilkins Letterbook, NYHS; Isaac Hicks Papers, NYHS; John Ogden Papers, NYHS; Letterbook of James & William Kenyon, NYHS; Minutes of the American Chamber of Commerce, Liverpool Public Record Office.

From the first to the second phase, only a few firms remained in this trade. In particular the Kenyons in both Liverpool and New York, Thomas Buchanan, Thomas Earle, Nicholas Low and William Wallace, at this stage operating under the firm name of William Wallace & Co.⁴⁴ In historical context this low survival rate from the first to the second phase becomes clearer. The post-war period in New York produced far worse trading conditions than during wartime. These conditions were brought about by the reallocation of loyalist property, the post-war glut brought about by the over-importation of manufactures and an environmental crisis which affected grain exports created hardship for many firms in New York.⁴⁵

However, the visualisation of the second phase demonstrates that in the decades after this conflict, the Anglo-American trade relationship with respect to the Liverpool-New York trade, not only recovered but thrived. The change from one visualisation to the next suggests a number of potential changes to these communities. The first being that, both Liverpool and New York, were desirable locations for merchants to establish their houses. Second, other ports which at one time were heavily involved in transatlantic trade similar to that of New York were in decline. The third reason and one that requires further research to verify is that Liverpool and New York had access to certain resources which were in high demand during these decades. Indeed, after the 1780s Liverpool and New York's position in Anglo-American trade was more prominent and this came as a result of the decline of other important Atlantic ports and the merchants' ability to access a wider variety of goods and capital. For Liverpool, the damage to Bristol's Atlantic commerce during the war as a result of privateering left Liverpool in an advantageous position.⁴⁶ Further to this, Liverpool merchants continued to extend their links to the growing hinterland and therefore, were able to access a variety of goods, which was aided by the construction of a complex canal system.⁴⁷ Importantly the items procured from this hinterland were in high

demand in North America, especially in New York and to a lesser extent Philadelphia.⁴⁸ This rise in importance of this community was articulated by the creation of the American Chamber of Commerce in Liverpool in 1802. Some of this institution's most prominent members were 'major players' within this community in this phase and the next, particularly those who managed to survive the costly Anglo-American War.

As a principal market for manufactures from Liverpool, New York's Atlantic, coastwise and internal trades also increased as merchants there imported and re-exported numerous British goods.⁴⁹ In terms of the coastwise trade, New York's links to ports in the southern United States were strengthening as many firms established more intimate relationships with southern merchant houses, this resulted in increased access to southern commodities such as cotton, naval stores, tobacco and rice.⁵⁰ These commodities were in high demand in the British market, particularly in the expanding North-West industries. Beyond this, as the research of both Silivia Marzagalli and Francois Crouzet demonstrates, new avenues of trade opened officially to American merchants, especially in terms of their role as wartime intermediaries and the development of their trade links to France.⁵¹ Further to this, the work of Matson suggests that many American businesses were established in this era due to a feeling of greater confidence in the United States' new economic independence.⁵² Therefore, New York's trading community provided opportunity for many in a variety of trades and the increased entry of individuals in this trade is expressed through the network visualisation.⁵³ Importantly, the visualisation highlights this dramatic change in the number of participants which may not be evident from the trade figures alone.

The visualisations allows us to see a variety of firms emerge. One can see the very well-connected firms of the Rathbones, Cropper, Benson & Co., John Ogden and Leroy, Bayard &

Co. One can also see that these firms were connected to firms which also possessed a variety of connections. Unsurprisingly, many of these firms survived into the following phase. Others, who had a smaller number of connections but whom were connected to many of these so-called ‘major players’ such as J. Waddington & Co. provide a less clear indication if their success or failure can be determined purely from their place within the network. The same can be said for those with very few links, such as Jeremiah Thompson or Dudley Walsh. Using the visualisation alone does provide some indication of who these individuals were connected to but the nature of their position within the network becomes clearer when used together with the trade database. For example, Dudley Walsh received very few shipments and did not feature later on in the network phase. However, Jeremiah Thompson who was connected to William Rathbone, transacted frequently with the Liverpool firm and eventually became a principle part-owner of the first New York – Liverpool packet line.⁵⁴

From the visualisation of this phase, it is also clear that the nature of firm activity in the Liverpool-New York trade differed between firms in Liverpool and New York. In Liverpool, one notes a number exceedingly well-connected firms, from example the firms of William Rathbone (IV and V), Cropper, Benson & Co. and Martin, Hope & Thornley.⁵⁵ Unsurprisingly, many of the firms which had their beginnings in the second phase increased their influence and position in this trade into the nineteenth century. The larger number of well-connected firms on the Liverpool side in this visualisation suggests that these firms were participating in an extensive export and import business with New York and perhaps in some cases were commission merchants. Importantly, it also suggests that access to this community without experience, wealth and connections was even more difficult than it had been in the previous phase.

Conversely, in New York the visualisation shows a large number of firms with singular links to the Liverpool trading community. While this does suggest that these firms conducted comparatively smaller business with fewer resources, it must be acknowledge that in some instances firms could conduct an extensive trade with only one contact. However, in the case of the second phase of the Liverpool-New York trade network, the former was true. Therefore, in the case of New York at this stage it suggests that there were lower barriers for entry than in Liverpool. This is verified by the trade database, which shows that many firms with fewer contacts were importing small amounts of manufactured items at infrequent rates. For example, in 1802, Daniel Oakey imported only six cases of hats and one case of tea urns from Rathbone, Hughes & Duncan and Tayleur & Co.⁵⁶ Despite the prominence of smaller firms, there were a number of well-connected firms on the New York side to which the visualisation draws attention, specifically the firms of Leroy, Bayard & Co., John Ogden and Jasper Thompson. The importance of these firms becomes even clearer into the third phase which evidences the growth of their position within the Liverpool-New York trade network.

Analysis of this visualisation can be pushed further by isolating specific firms to reveal a number of characteristics about their businesses based on the connections they maintained. An example of a typical Liverpool-New York network relationship was that of Isaac Hicks, Rathbone, Hughes & Duncan and Cropper, Benson & Co. The network cluster of these firms has been isolated in a visualisation below.

Figure 5. Isaac Hicks-Rathbone, Hughes & Duncan-Cropper, Benson & Co. Network

Source: LPNY Trade Database; Isaac Hicks Papers, NYHS

The visualisation shows Hicks as having a number of connections in both New York and Liverpool. From the larger network visualisation, it is apparent that Hicks was linked to some of the most well-connected firms in Liverpool. As with the firm of Jeremiah Thompson, Hick's success in this period stems from the quality of his connections as well as the frequency of which he transacted with these connections which created highly embedded relationships of enduring and continual exchange. On the New York side, all of his connections have fewer contacts than his own firm; therefore Hicks, being the most well-connect of the cluster, acted as a bridge between the New York and Liverpool firms. 'Bridges' were trusted to provide links between two firms; it was this individual's recommendation that formed this link. This gave the associates of the 'bridge' and the 'bridge' himself, access to multiple avenues of commodities, information and opportunity. As Burt argues, an individual or firm which was linked to several different markets or industries had a greater chance of accumulating diverse knowledge which allowed them to better predict market fluctuations and changes in demand.⁵⁷ In such a position, one can assume the size of Hicks' business would have been moderate to large and due to his links to some of the largest Quaker firms in Liverpool would suggest that he himself was also a Quaker.⁵⁸ Other than the possible religious connection, it is difficult to see why these large Liverpool houses were interested in a merchant such as Hicks who, despite possessing connections in New York, did not appear to be substantially well-connected on the New York side. The reason for his ability to access Liverpool firms could stem from the nature of Liverpool firms' connections to New York. If the firm of William Rathbone and his connections to New York are isolated, one can see that, although his connections in New York are numerous, many

appear to be small firms and perhaps as mentioned above, only occasional participants in this trade. This suggests that firms such as Rathbone, Hughes & Duncan as well as others such as Cropper, Benson & Co. were willing to trade with less established firms in New York. This decision may stem from the fact that these Liverpool firms, while more well-connected, were still new to this trade network and thus sought out new trading opportunities with New York firms regardless of size or ability to access resources.⁵⁹

Figure 6. Rathbone's Connections in the Liverpool-New York Trade Network, 1790-1815

Source: LPNY Trade Database

Since Isaac Hicks possessed multiple connections to well-established firms in Liverpool, he can be pinpointed as an important player in this network. With this in mind, research into Hicks may then be pushed further. If one then turns to the primary source material on Hicks, of which there is a good amount, further information about his connections are revealed. For example, Hick possessed connections not only within New York but also Massachusetts and Savannah, in particular to the cotton merchant house of Robert & John Bolton.⁶⁰ Therefore, Hicks' access to

southern commodities meant he was a particularly important bridge to the Liverpool firms who, in the second phase, were beginning to import large amounts of cotton from the southern states. While Hicks may have been in a relatively good position compared to other New York firms, the Liverpool firms were often in a better position than their New York counterparts. This was because they were less vulnerable to risk due to their access to numerous resources and a range of contacts. Therefore if one connection failed, the loss due to outstanding debts or incomplete transactions would not have been substantial. This becomes even more apparent into the third phase after this community experiences yet another war, numerous non-importation act and a brief post-war glut. The network visualisation of the second phase has demonstrated the changes this community underwent in the decades after the American War of Independence as well as the nature of the connections sustained by Liverpool and New York merchants. The following section will demonstrate the extent to which this trade network experienced further change and reorganisation.

The Third Network Phase (1815-1833)

Into the third phase, another reshaping of the network occurred with relation not only to size but the number of relationships to either port each merchant firm possessed. More significant was the concentration of investment in this trade. Firms became larger, wealthier enterprises, willing to risk much greater capital and resources in this trade. A number of these changes to the Liverpool-New York trade network can be inferred from the visualisation below (figure 7).

Figure 7. The Third Phase of the Liverpool-New York Network, 1815-1833

Source: NYLP Trade Database; Colm Brogan and James Finlay, *James Finlay & Company Limited: Manufacturers and East India merchants 1750-1950*, Glasgow: Jackson, 1951; William Barrett, *The Old Merchants of New York City Volume II* (New York: Carleton, 1864); *London Gazette* (1815-1833); Ferguson, Ogden & Day Papers, NYHS; Phelps, Dodge & Co. Records, Manuscripts and Archives Division, New York Public Library; Willink Letterbook, NYHS; Baring Brothers & Co. Letterbook, Baring Archive. Solid black lines in this diagram indicate a transatlantic firm.

First, it is quite clear that the network has decreased in size. The overall number of firms in this phase reduced from 212 to 121 (seventy-seven firms in New York, forty firms in Liverpool, three Manchester firms and one in Leeds, shown in Figure 7 as the white nodes). This suggests that the network itself was damaged by the events of the 1810s and as a result, few firms survived, meaning they were unable to sustain their investment in the trade between Liverpool and New York or were unable to restart their business after the Anglo-American war was over. Indeed, the non-importation acts, embargoes and the eventual Anglo-American war (1812-1815) caused more disruption to trade than any event preceding it. Therefore it was likely that those who did not have the capital or connections to find alternative avenues of trade or who lost vessels to privateers during the war could not survive from the second to third phase.

One of the most significant changes to this network after 1815 was the increased frequency of exchange between Liverpool and New York and the growth of the firms involved. The increase in the concentration of capital and resources is further expressed by the visualisation. If the volume of trade was examined without the use of the network visualisation, it demonstrates that the trade between these two ports increased substantially. For example, in 1805, forty-five vessels entered Liverpool from New York compared with 1827, when 132 vessels entered. Examining the vessels entering New York from Liverpool, the numbers are similar. In 1798, twenty-one vessels entered and in 1827, 168 vessels entered.⁶¹ To put the scale of this trade in the third phase into context, in 1827, forty-seven ships departed from Liverpool for Charleston and only forty-four departed for Philadelphia, once a primary destination for British ships.⁶²

Particular commodity volumes also increased. In 1805 Liverpool merchants imported 7165 bales of cotton and in 1827, this amount rose to 97,661 bales. Other lesser known trades also increased, the number of animal hides imported increased from 3,925 in 1805 to 10,468 in 1827 and 14,936 in 1833. Additionally the trade in dyestuffs, which in the second phase had been almost negligible, by 1818 were re-exported to Liverpool in tonnes via New York from various locations in the West Indies and Central America.⁶³ Using the trade figures alone may suggest that the trading community grew in size. However, by using these figures in combination with the network visualisation, it is apparent that this was not the case. Importantly, this indicates that this greater volume of trade was concentrated in fewer hands. Moreover, this suggests that the merchants involved in this phase of the Liverpool-New York trade network were wealthier, had greater access to resources and by virtue of the large re-export trade, had connections even farther afield.

In terms of firm survival, when compared with the network visualisation seen in Figure 4, the network visualisation in Figure 7 reveals important information regarding firm longevity in either port. Changing trade restrictions and political crises, such as the Embargo Act of 1808 and the Anglo-American War, were particularly damaging for this community. By isolating firms that remained in this trade network through the use of multiple visualisations, one can investigate further the characteristics which aided a firm's survival. This visualisation shows that, in Liverpool, not only did more firms survive than in New York, the total number of firms involved in this network increased. The eminent firms of Cropper, Benson & Co. and the Rathbones remained active throughout this phase and diversified their business portfolios. By the 1830s, although they were no longer the leading importers of cotton, they had investments in several packet lines and the Manchester-Liverpool Railway.⁶⁴ Later into the nineteenth century, the

Rathbones extended their trade links into Asia.⁶⁵ Further to this, this visualisation shows that many merchants reappeared in the third phase as part of reorganised firms or, in certain situations, completely new ones. For example, in Liverpool, Humble, Holland & Hurry, which had dissolved just prior to the end of the Anglo-American war survived only as S.C. Holland. After the similar failure of Morrall & Borland, Cyrus Morrall re-entered the trade as Morrall & Watson.⁶⁶ These firms were able to take this action due to the long-standing and good reputation they held within the Liverpool trading community.

In New York, few firms survived from the second phase to the third; the size of the community was halved. By comparing the visualisations of the second and third phase, one can see that almost none of the firms that possessed singular connections to Liverpool in the second phase reappeared in the third. This comparison of visualisations is useful for articulating the development of New York's position with this trade. The merchants that did survive can be pinpointed, at which point further biographical information can be researched, providing crucial information regarding how firms investing in Atlantic trade survived major crises. For example, many that survived were large firms with extensive capital and connections, such as Leroy, Bayard & Co. and Archibald Gracie. Individuals in these firms were directors of the United States Bank (and later the Bank of America) and were able to maintain their businesses into the 1830s by investing in different industries and maintaining good relationships with merchants in Great Britain and elsewhere.⁶⁷ Pushing the comparison of the second and third visualisation further, it also becomes clear how the relationships of specific merchant firms changed over time. For example, when compared with Rathbone's earlier firms, the third phase firm of Rathbone, Hodgson & Co. and later Rathbone Brothers & Co. appear to have reduced their connections within the Liverpool-New York trade

network.⁶⁸ However, the connections that remain were largely to other well-connected firms, thus this suggests that the firm's maturation into the third phase resulted in an elimination of ties to smaller, less-established firms.

Further to this, some of the new firms that entered this trading community in the third phase can be identified as significant players in other industries. Specifically, the merchant-manufacturers in Liverpool, Leeds and Manchester and merchant-banking firms in Liverpool and New York. These firms included William Lupton & Co. of Leeds, Thomas & William Henry of Manchester, as well as merchant-bankers, Baring Brothers & Co., W. & J. Brown & Co. of Liverpool and Prime, Ward & Sands of New York. What was significant about these firms was that, although they were new to this network, they became relatively well-connected in a short space of time. Therefore, it can be assumed that these firms had prior connections to this network and moved into this community when it became profitable to do so.⁶⁹ Other firms with more longevity in this trade network, such as the Rathbones mentioned above, also diversified their investments into in railway, passenger lines and mining.⁷⁰ For this community in the decades after 1815, many merchants chose to bridge gaps between industries, creating horizontal integration which lowered transaction costs, provided access to numerous resources and very effectively spread risk.

Another feature of the Liverpool-New York trade network which was most visible in this phase, was the rise of transatlantic merchant firms. While not always evident, many transatlantic firms shared elements of their firm name in common and this is how they are identified. These names were typically reordered to reflect the most well-known in a given location. For example, in figure 7, the similarity of the firm names of Phelps & Peck (New York) and Peck & Phelps (Liverpool) signify a transatlantic firm. Typically, the name of the most well-known merchant in a given

location came first in a firm name and therefore, it can be assumed that Phelps was based in New York and Peck in Liverpool. Other examples include, Dennistoun, Mackie & Co., which consisted of a small group of Scottish merchants originally from Glasgow.⁷¹ The firm was known as Mackie, Milne & Co. in New York, William Mackie being the partner based in that port.⁷² Although this is not always the case, it is often safe to assume that name similarities suggest a link. If the link was not a branch house or sister house, it was likely a family member. Thus, the visualisation indicates a change has occurred in the nature of firms within this trade network, one that may have gone unnoticed without a complete representation of the network's structure.

While transatlantic firms existed prior to 1815, the number of large established firms engaging in this practice at this time demonstrates the intimacy between Liverpool and New York merchants and the mobility of the firms within this community. These firms typically sent a representative abroad to establish a branch house or used a merchant in either New York or Liverpool to establish a sister house. This representative may have been a family member, however this research has shown this was not always the case. Neither Peck & Phelps, Crowder, Clough & Co. or the members of the Ferguson, Ogden & Co./Bolton, Ogden & Co. branches were related when they joined together. That being said, those involved in these firms had developed close trusted relationships which possessed many of the same advantages and disadvantages as familial partnerships. Upon further research, it was evident that these firms established their businesses because maintaining multiple branches was beneficial in reducing transaction costs, instilling trust and avoiding vertical integration.⁷³ It also allowed them to build larger local networks and strengthen their connections to international markets.⁷⁴

Analysing the network visualisation illuminates several significant firms which were representative of the changes many firms within this network were undergoing in the third phase. An excellent example of the rise of the merchant-bankers, the inclusion of new well-established firms into the Liverpool-New York network and the transatlantic mobility of singular firms was the firm of W. & J. Brown & Co. of Liverpool, known as Brown Brothers & Co. in New York. From the visualisation, it is evident that the Browns had fewer connections than others in this network, but the connections that they did possess were with some of the most well-connected Liverpool-New York merchant houses in this network. This implies that their business would have likely been quite significant within this network. Using the visualisation as a guide for further research, when the sources on these firms are studied more characteristics are revealed to explain their position within this network.

The firm was first established in Liverpool in 1810 by William Brown, son of Baltimore merchant, Alexander Brown. However, the firm was dissolved during the war and re-established in 1815 as W. & J. Brown & Co. The Browns were not only involved in banking, as commission merchants they also facilitated trade in several commodities such as cotton, turpentine, apples and various manufactures.⁷⁵ As the frequency and volume of trade between Liverpool and New York increased, the Browns recognised the advantages that could be gained through having a representative in New York. As a result, they created a branch of their firm there. William Brown wrote in October 1825 regarding this move:

For some time past we have had it in contemplation to establish a house in New York, with the view of promoting the interest of Messrs. William & James Brown & Co., of Liverpool, and of affording greater facility, and the choice of markets, to our southern friends who are disposed to give them or us their business; for that purpose, our James Brown has

established himself at New York, to conduct a Commission Business, under the firm of Brown Brothers & Co.⁷⁶

This letter shows that the Browns identified the importance of having a branch house in New York. There is no doubt that their move to that location boosted their position within this trading community. By creating greater access to their ‘southern friends’, they were able to strengthen their connections to these houses from New York and increase the frequency of exchanges with southern ports, thus expanding their network. The Browns’ business represents the type of firm that was present in this trade network in the third phase. Expansion of this commercial link required firms to possess the capital and connections to manage a trade of this size.

The network visualisation for the third phase illustrates how this community changed as the economy matured. It shows that while overall size of the network decreased, the number of well-connected firms within this network increased. When compared with the second phase, one can identify the change over time for individual firms and also come to understand how those with singular connections in the second phase, by and large did not survive into the third. It also illuminates the rise of transatlantic firms as a common strategy for protecting business interests and expanding one’s contacts in a given location. The visualisation, while revealing important aspects related to the transformation of this network from one phase to the next, also illuminates firms as potential case studies on the development of multinational enterprise or firm performance in times of crisis.

Conclusion

The network visualisations examined here act as a guide to the Liverpool-New York trading community. Looking at trade figures and manuscripts alone will not provide as comprehensive a perspective as complete visualisations which show all the firms and relationships between firms in one given trade network. As Haggerty and Haggerty have shown, even a single visual representation of a network can illuminate several important features relating to size and connectedness. While there is still much work to be done in regards to this methodology, by using several network visualisations, this research has made an important step forward. By examining one network at particular stages, one can analyse development and change in the trading community by isolating particular firms and further exploring the types of relationships they sustained. The visualisation also becomes an iterative tool which guides further research. When combined with additional quantitative and qualitative data, even more is brought to light regarding firm composition, operation and success.

Analysing the Liverpool-New York trade network over three phases has demonstrated how this trade network changed from a small group of merchants trading in a few commodities procured from the direct hinterland, to a large community of well-established firms which possessed connections to many trades, industries and locations. The use of multiple visualisations allows for a comparison between different phases of the trade network. While a clear difference can be seen between the first and the second phase due to the rising position of Liverpool and New York in the Atlantic economy, the differences between the second and third phase require closer analysis. What the visualisations for the second and third phase show is how this trade network changed from a large community of new merchant houses testing the waters of transatlantic commerce to a more heavily invested community of fewer merchant houses that operated

extensive trades. Additionally, this research also allows for a comparison of specific firms in the Liverpool-New York trade network at different stages of development. For example, in the second phase, while Liverpool firms such as Rathbone, Hughes & Duncan were more established, they willingly traded with small, less-established firms in New York. Adding to this, these visualisations have shown reasons for the disappearance of particular firms; for example, the multitude of New York firms which possessed singular connections to Liverpool and therefore lacked the resources to sustain their trade with that port during turbulent times.

The use of network visualisations inevitably raises more questions than what has been covered here. This only serves to demonstrate the novelty of this methodology for studying trading communities and suggests that there is scope for much further research. The Atlantic world in the eighteenth and nineteenth century was an ever-changing space. Atlantic trade, in particular, was a risky investment and merchant communities were invariably under threat from unstable trading conditions. This meant that trade networks were losing and gaining members regularly.

Constructing large networks using Visone, Pajek or Gephi allows historians to see the relationships connecting whole trading communities in one visualisation. By employing multiple visualisations, the historian can see how these communities were transformed over time and thus, make conclusions about the dynamic nature of trading communities and the merchant firms within them.

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¹ As argued by historians such as Duguid, "Networks and Knowledge," 493-526; Renzulli, Aldrich and Moody, "Family Matters," 423-46; Hancock, *Citizens of the World*, 104-06.

² For more on the decline of the Royal African Company and other English Chartered Companies see, Pettigrew, *Freedom's Debt: The Royal African Company and the Politics of the Atlantic Slave Trade, 1672-1752* and Mancke, "Chartered Enterprises and the Evolution of the British Atlantic World", in *The Creation of the British Atlantic World*, eds. Mancke and Shammas, 237-62.

³ Nash, "The Organization of Trade and Finance", in *The Atlantic Economy*, ed. Coclanis, 95-151.

⁴ Morgan, "Business Networks in the British Export Trade," in *The Early Modern Atlantic Economy*, eds. McCusker and Morgan, 36-64.

⁵ Maw, "Yorkshire and Lancashire Ascendant," 734-68.

⁶ Price, "Economic Function and the Growth of American Port Towns," 123-86.

⁷ As shown in the author's unpublished doctoral thesis, *Bridging the Middle Atlantic: The Liverpool-New York Trading Community, 1763-1833* (University of Nottingham, 2013).

⁸ Applications of network theory by historians of Atlantic trade include, Marzagalli, "Establishing Transatlantic Trade Networks," 811-44 and Lamikiz, *Trade and Trust in the Eighteenth Century Atlantic World*.

⁹ Historians which have employed network visualisations include, Haggerty and Haggerty, "Visual Analytics of an Eighteenth-Century Business Network," 1-25.

¹⁰ Smith-Doerr and Powell, "Networks and Economic Life," *The Handbook of Economic Sociology*, eds. Smesler and Swedberg, 379-402.

¹¹ In the last fifteen years, there has been a notable growth in studies of networks by business historians, see, Popp, "Governance at Points of Corporate Transition: Networks and the Formation of the United Alkali Company, 1890-1895," 315-352; Crumplin, "Opaque Networks," 780-801.

¹² Popp, "Governance at Points of Corporate Transition: Networks and the Formation of the United Alkali Company, 1890-1895," 315-352; Crumplin, "Opaque Networks," 780-801.

¹³ Glaisyer, "Networking: Trade and Exchange," 451-76; Mathias, "Risk," in *Early Modern Atlantic Economy*, ed. McCusker and Morgan, 36-62; Hancock, "The trouble with networks," 467-91.

¹⁴ Apart from Sheryllyne Haggerty in numerous publications as well as the PhD work of Edmond Smith (Cambridge), Tim Davies (Warwick), Abby Schreiber (Ohio) and the author's own research to date.

¹⁵ Watts, "The 'New' Science of Networks," 243-70.

¹⁶ Haggerty and Haggerty, "Visual Analytics of an Eighteenth-Century Business Network," 1-25.

¹⁷ Haggerty, *'Merely for Money'?* 166.

¹⁸ Haggerty, *'Merely for Money'?*, 198;

¹⁹ It should be noted that trade records can be problematic as a result of the occurrence of smuggling and inaccurate reporting from merchants to custom house officers.

²⁰ Bennet, *The Voice of Liverpool Business*; Truxes, *Letterbook of Greg & Cunningham*.

²¹ Whitworth, *State of the Trade in Great Britain*.

²² Details regarding early goods traded between Liverpool and New York provide by the Liverpool-New York Trade Database created by the author.

²³ While unable to address the multiple connections of merchants to ports outside of the Liverpool-New York trading community, future projects intend on providing a fuller depiction of these multi-loci networks.

²⁴ Another direction this research could take is the analysis of the density of relationships by measuring the rate of correspondence or transactions. Although this is difficult to do for every firm due to scant primary-source material, it is something the author will pursue further in future research. Haggerty and Haggerty use the term 'relationships', Haggerty and Haggerty, "Visual Analytics of an Eighteenth-Century Business Network," 1.

²⁵ Based on merchants listed in *Gore's Liverpool Street Directories* for 1767.

²⁶ Haggerty, *'Merely for Money'?*, 27-28.

²⁷ Cathy Matson in Matson, *Merchant and Empire*, 128.

²⁸ Matson, *Merchant and Empire*, 146-47.

²⁹ Haggerty, "I could 'do for the Dickmans': When Family Networks Don't Work", in *Cosmopolitan Networks in Commerce and Society, 1660-1914*, eds. Gestrich and Beerbühl, pp. 317-342; Burt, "The Network Structure of Social Capital", 373-74.

³⁰ Elder, "The Liverpool Slave Trade, Lancaster and Its Environs", in *Liverpool and Transatlantic Slavery*, eds. David Richardson, Suzanne Schwarz and Anthony Tibbles, 118-37; Hyde, *Liverpool and the Mersey*, 31-32.

³¹ Rawlinson & Chorley and William Wallace were vessel-owners and had investments in the Irish, West Indian and American trades. Haliday & Dunbar were dry goods exporters to most of the American Market. Maw, "Yorkshire and Lancashire Ascendant: England's textile Exports to New York and Philadelphia, 1750-1805", 734-68; Bennett, *Voice of Liverpool Business*, 151; Craig and Jarvis, eds., *Liverpool Registry of Merchant Ships* (Manchester: Manchester University Press, 1967), 40 and 79.

³² Truxes, *Letterbook of Greg & Cunningham*, 1-56.

³³ The Navigations Acts were set forth by British Parliament in the last half of the seventeenth century. Their intent was to preserve British trade interests by protecting the trade from European and Colonial competition (especially from the Dutch) and ensuring that all commodities arriving to Europe from a British Colony entered through a British port upon arrival. For the American Colonies, these only truly took effect in 1713 and even then, were not always obeyed. Roderick Floud and Donald McCloskey. *The Economic History of Britain since 1700*, 469; Harrington, *The New York Merchant on the Eve of the Revolution*, 245.

³⁴ Truxes, *Letterbook of Greg & Cunningham*; White, *The Beekman Mercantile Papers*.

³⁵ It has been found that in some cases, clustering within networks can allow for a comparative advantage as the firms involved can exchange important information, 'trade secrets' and share resources. Wilson and Popp, eds. 'Introduction', in *Industrial Clusters and Regional Business Networks in England*. On the other hand, clustering can mimic dense network characteristics which limits the flexibility of firms and constrains their ability to enter new markets or trades or access different information. Granovetter, "Economic Action and Social Structure", 482-91.

³⁶ According to a letter received by Greg & Cunningham regarding Beekman's new venture in Liverpool, Truxes, *Letterbook of Greg & Cunningham*, pp. 151-52.

³⁷ It is also possible that Samuel Broome passed on his business to a family member after the 1780s as a J. Broome appeared in the 1790s; however, this has yet to be verified.

³⁸ The affect of other events on the Liverpool-New York trade network such as, the credit crisis of 1772 are addressed in the author's unpublished doctoral thesis, *Bridging the Middle Atlantic*.

³⁹ Calhoun, "Loyalism and Neutrality", 239.

⁴⁰ He resumed trade with Liverpool in 1784. *The Beekman Mercantile Papers*, 843.

⁴¹ Bennett, *Voice of Liverpool Business*, 161-66; Bradley, *Popular Politics and the American Revolution in England*, 132-35.

⁴² In Liverpool in 1775, John Chorley, Thomas Hodgson Jun and William Wallace signed a petition in favour of peace. Bennett, *Voice of Liverpool Business*, 161-66; Bradley, *Popular Politics and the American Revolution in England*, 132-35. Of the 104 members of New York Chamber of Commerce, fifty-seven were Loyalists and twenty-one were neutral. Stevens, *Colonial Records of the New York Chamber of Commerce*, 44-172.

⁴³ With the exemption of Isaac Low, who fled the city during the war but returned in the 1790s to continue business. His re-entry was likely aided by the fact he was a Quaker and could utilise his ties in that community to re-enter the trade.

⁴⁴ As noted in the first phase wartime commerce visualisation Thomas Earle ended his participation in this trade; however he appears again briefly with his brother exporting manufactured goods to the New York firms, Hawxhurst & Co. and Jn. Rane & Co. The Liverpool-New York trade database created by the author.

⁴⁵ Hunter, "Wheat, War and the American Economy during the Age of Revolution", 505-26; Pauly, "Fighting the Hessian Fly", 485-507; Shepherd and Walton, "Economic Change after the American Revolution", 397-422.

⁴⁶ Conway, *War, State and Society in Mid-Eighteenth-Century Britain*, 89.

⁴⁷ Langton, "Liverpool and Its Hinterland in the Eighteenth Century", in *Commerce, Industry and Transport*, eds. Anderson and Stoney, 1-25.

⁴⁸ Maw, "Yorkshire and Lancashire Ascendant," 741.

⁴⁹ The range of goods available from Liverpool for the American market included luxury items such as silk gloves and gold watches as well as an even greater amount of practical items such as pans, spades, cutlery, rope and other household items. The Liverpool-New York trade database created by the author.

⁵⁰ The New York-Liverpool Trade database created by the author. See also author. *Bridging the Middle Atlantic* for further discussion of the development of the re-export of southern commodities.

⁵¹ Marzagalli, "Establishing Transatlantic Trade Networks," 811-44; Crouzet, "America and the Crisis of the British Imperial Economy," in *Early Modern Atlantic Economy*, ed. McCusker and Morgan, 278-315.

⁵² Matson, "Matthew Carey's Learning Experience", 455-485.

⁵³ For a comparison, in the 1790s, Philadelphia's merchant community was actually shrinking in size. It is possible that some were moving to New York to seize new opportunities. Doerflinger. *A Vigorous Spirit of Enterprise*, p. 140.

⁵⁴

⁵⁵ William Rathbone IV died in 1809, however, his sons William V and Richard continued a similar business, many of Rathbone IV's connections in New York were transferred to his son in the second phase through letters of introduction following his death. W. & R. Rathbone to Isaac Hicks (25 May 1809), HP, NYHS.

⁵⁶ The Liverpool-New York Trade Database, 1802 (created by author).

⁵⁷ Burt, "Structural Holes and Good Ideas", 354.

⁵⁸ Research into network entry and affiliations conducted by the author has found that while religious networks did play a role in initialising contact between merchants, especially in the case of Quakers, their connections in either port were far from exclusively Quaker, *Bridging the Middle Atlantic*.

⁵⁹ It is also important to note the presence of a large Quaker cluster of merchants within Rathbone's New York connections. Some of these firms were very well-connected and others, such as Jasper Thompson, had a very successful career into the nineteenth century.

⁶⁰ Isaac Hicks to Rathbone, Hughes & Duncan (8 Apr 1800), Hicks Papers, New York Historical Society.

⁶¹ The Liverpool-New York trade database created by the author.

⁶² Liverpool Custom Bills of Entry (1827), Liverpool Record Office.

⁶³ 1805 and 1827 have been compared because they were two peak years for the trade in re-exported goods within the Liverpool-New York trading community. Trade volumes supplied by the New York-Liverpool Trade

Database for the years mentioned; information regarding the supply of dyestuffs from the author's unpublished doctoral thesis, *Bridging the Middle Atlantic*.

⁶⁴ Jones, "First Joint Stock Banks in Manchester," 9-21.

⁶⁵ This came as a result of the opening up of free trade to China; Rathbone imported primarily tea from Canton and Shanghai; Martineau, *History of the Peace*, 382.

⁶⁶ Tolley, "The Liverpool Campaign," in *Liverpool and Merseyside*, ed. Harris, 98-146.

⁶⁷ Barrett, *The Old Merchants of New York City*, 62-63.

⁶⁸ The two firms of Rathbone, Hodgson & Co. and Rathbone Brothers & Co. were largely the same. Both included the brothers William and Richard Rathbone and for a time, an associate Adam Hodgson.

⁶⁹ For example, the Browns entered the Liverpool-New York trade in 1825 after years of engaging in other Atlantic trades (Liverpool-Baltimore). Brown, *A Hundred Years of Merchant Banking*, 190. The Barings, having originally been based in London, created a branch in Liverpool in 1832. Correspondence between T. & W. Earle & Co. and Baring Brothers & Co. (1830-32), Baring Brothers Letterbook, Baring Archive.

⁷⁰ Jones, "First Joint Stock Banks in Manchester," 9-21.

⁷¹ Chapman, *Merchant Enterprise in Britain*, 88-91, 96.

⁷² Andrew Milne was based in Charleston, thus creating an even larger network for the firm; Brogan and Finlay, *James Finlay & Company Limited*, 12.

⁷³ Casson, *The Organization of International Business*, 7-10.

⁷⁴ Wilkins, *The Emergence of Multinational Enterprise*, 3.

⁷⁵ NYLP trade database created by the author, 1827 & 1833.

⁷⁶ Brown, *A Hundred Years of Merchant Banking*, 190.
