



## The life cycle of a metropolitan business network: Liverpool 1750–1810

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### ABSTRACT

Recently historians have complicated their understanding of networks. In particular, they have started to assess the role of networks in civic and formal arenas. This paper posits a quantitative methodology for a more nuanced and sophisticated analysis of mercantile networks within this environment. It uses visual analytics of Liverpool's business networks comprising political, trade, social and cultural institutions to assess their role in the changing social and economic climate during the period 1750–1810. This paper demonstrates the dynamic role of networks in the shaping of a metropolitan economy and the interplay between the two. In addition, it posits that, as is the case for regional clusters, there is a life cycle of networks. In this way, we are able to see how the networks sustained, nurtured and transformed social and economic activity during this period.

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### Introduction

Historians have become increasingly interested in networks as a tool for historical analysis. Many of these interpretations present a benign view of business networks based on the perceived ability of familial, ethnic and religious networks to reduce moral hazard. More recently, however, historians have complicated their conceptions of networks and have started to look at more formal and civic arenas especially within an urban environment. This research into metropolitan business networks challenges the positivist view of networks. For example, research on guilds and trade associations, using quantitative data similar to that used in this study, has often found them to be reactionary and inward looking to an extent that retarded economic progress. At the same time, many commercial towns remained successful and were able to adapt to new economic opportunities. This suggests a complicated picture of metropolitan business networks.

This paper pushes forward this more nuanced and sophisticated analysis of networks and represents the first serious attempt to measure them to assess change over time.<sup>1</sup> It visualises Liverpool's metropolitan business networks comprising political, trade, social and cultural institutions during the period 1750–1810 and then measures the relationships between these individuals and groups. In doing so, it avoids the issue of source (or ego) centrality often found in network analysis based on qualitative data to provide a wider picture of relationship interplay and its role in economic activity. This is achieved by applying social network analysis and visual analytics to historical data to facilitate analysis of the network relationships. The relationships presented here number over 210,000 amongst 1700 actors, which could not be presented using traditional representational methods. Using different metrics of efficiency based on an actor's or a group's relative position within the network, we demonstrate how the networks changed over time. Moreover, visual analytics, especially when analysing large data sets, is exploratory in nature and therefore may raise questions, rather than answer them *per se*.

This paper posits that Liverpool's institutional networks during the period 1750–1810 analysed here, coalesced towards bonding rather than bridging networks. This occurred as Liverpool's economy matured, especially with regard to the Atlantic

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<sup>1</sup> Carlos et al. (2008) have tried to measure relationships, but not over time. However, they have conflated frequency with relationships.

trade, and the slave trade in particular. However, this study also argues that networks are dynamic, fluctuate over time and have a life cycle. We therefore find that various networks were in operation at the same time. This means that, as with regional clusters, some will eventually wither, but this facilitates the emergence of new and more dynamic networks in turn.

This paper first outlines the major themes in the related literature on networks and places our contribution in context. It then outlines the methodology and the eighteenth-century Liverpool case study. This is followed by a discussion on the rise and fall of a section of Liverpool's Metropolitan Business Networks. Finally, we draw our conclusions.

## Networks in history

Historians have been using networks as an analytical tool for some time. This is a worthwhile exercise because contemporaries also realised the value of networks, even if they called their contacts 'friends' or 'correspondents' (Hancock, 2005). In particular, business networks are intended to produce various outcomes such as the rapid transfer and synthesis of knowledge or understanding, the conferment of status and legitimacy, lower information and transaction costs, and the ability to adapt to environmental changes (Podolny and Page, 1998). Historians often accept that such networks always performed these positive functions and were easily constructed and maintained (Davidoff and Hall, 1987; Prior and Kirby, 1993; Walvin, 1997; Hamilton, 2005). This may be because much stress has been placed on the 'implicit contract of family' (Ben-Porath, 1980) and ethnic and religious ties, assuming that they reduced moral hazard (Mathias, 2000). It is true that such ties provided reputational mechanisms and specific cultural market information, but ethnic ties could also be inward looking and provide extra obligations (Greif, 1989; Mentz, 2004; Rauch, 2001; Haggerty, 2006). Furthermore, whilst Quakers were perceived to have a highly moralistic business culture, they, like Jews, also faced ostracism (Doerflinger, 1987; Tolles, 1963; Trivellato, 2009). Indeed, Rauch (2001) has argued that the importance of ethnic networks has been exaggerated due to their observability rather than their importance.

If family, ethnic and religious ties are insufficient to explain business networks, we need to look to more civic ways of networking. Hancock (1996) has shown how merchants came together in order to share skills and capital and has demonstrated that many networks included people who had never met, especially useful considering the distances covered by trade in this period. Clearly then, strong and weak ties worked together in a dynamic way in order for businessmen to conduct their trade. Furthermore, merchants usually belonged to a number of networks at any one time, depending on their fluctuating business interests, and their power or importance within each varied. For example, a merchant might use the tavern or drinking clubs to foster trust relationships for credit, acquire the latest gossip at the coffee house and 'change', but might further career and political interests via a trade association and the town council. Such 'Metropolitan Business Networks' are the 'intangible infrastructure of a region'; consisting wholly or partly of business people, they are significant because their members meet face-to-face, regularly, and are usually efficient because these members are busy men (Casson, 2003). Often articulated as institutions such as guilds or trade associations in the eighteenth century, these more formalised networks frequently provided a social context for a rational business activity. Interestingly these more institutionalised networks existed as a separate entity, with members coming and going and power relationships shifting over time. This should have allowed them to be flexible and to adapt quickly to a changing environment. Working together on the same issues to defend certain aspects of trade also promoted trust and solidarity and many people became attached to the micro social order of the institutions themselves, as well as to their fellow members (Baldassari and Diani, 2007; Lawler et al., 2008). This is not to say that such institutions were without their problems. They often became victims of their own success and protected vested interests. For example, Ogilvie (2004) argues that guilds in German proto-industry inhibited progress and produced friction rather than promoted economic development, and Rosenband (1999) found much the same in his analysis of the early industrial revolution. Crumplin (2007) has also shown that dense metropolitan networks can easily become opaque, which allows cliques to get out of control. Business networks, therefore, are not always efficient.

However, the fact that Liverpool, and indeed many other British metropolitan areas were so successful in this period, suggests that business networks mostly fulfilled their purpose. For example, Pearson and Richardson (2001) argue that Liverpool's permeable networks grew through in-migration in this period, meaning that the trading community was receptive and open, and Greefs (2008) found the same for Antwerp. In this way, international trade was promoted by alleviating problems of contract enforcement and asymmetrical information, and by providing information about new trading opportunities. However, it is also clear that individuals were members of various institutions which linked with various networks, and that all of these were active at the same time. Therefore, whilst one network might have been successful, another one may have been in decline, and still others on the rise at the same time. Therefore, institutionalised networks, like those of individuals, were constantly changing and reforming, as power relationships within them adjusted accordingly. This suggests that, as Swann (1998) found for regional clusters, networks have a life cycle. It is with this dynamism, power relationships and life cycle of such problematic metropolitan business networks that this article is concerned.

Whilst historians and, indeed, social scientists have recently complicated their understandings of networks, they have yet to *measure* these networks to quantify their dynamics as an aid to analysing actors' or groups' influence in, and reactions to, the wider economic environment. This paper therefore uses visual analytics and graph theory to analyse Liverpool mercantile networks in 1750–1810. Importantly this methodology allows us to visualise and measure the relationships for vast data sets (such as the c. 210,000 analysed here), not possible under 'traditional' representative methods such as graphs or tables.

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