

**Network Dynamics – An Historic Perspective. The Case Of The
Leather Industry**

David Ford
Michael Redwood
University of Bath
UK

Abstract

This paper uses historical documents and correspondence to examine the evolution of a single company and the surrounding network over a period of close to a century. The paper highlights the fact that many supposedly “modern” phenomena of networks are equally present in the past. The case study in the paper also provides illustration of the nature of these phenomena, such as network position, networking and the paradoxes that are endemic in networks. Finally, the paper concludes with some lessons that may be drawn from the case for successful management in a network.

Introduction

The operations of business networks and of the companies within them has become better understood during the last decade. Various attempts have been made to describe and analyse networks and company position *at a particular point in time* and to help companies to manage or change their position (Håkansson and Snehota 1995, Ford et al 2003). Although some studies have examined network evolution over time, such as Lundgren (1995) and Andersson (1996), there have been few attempts to examine a network’s evolution over an extended period.

This paper examines the case of a single business and the surrounding network over an extended period of nearly a century, encompassing a number of technological life-cycles. It charts the evolution of the network as a result of various social, economic, technical and political events and the actions of significant actors within it. This evolution is related to current and emerging ideas on the dynamics of business networks, including the ‘Model of Management in Networks’ (Ford et al, 2003). In particular the study

highlights how actors choose to manage problems and risks as they arise.

Changing Times

Håkansson and Snehota (1995) explain that even if a business tries to remain static within its network, the network itself is continuously evolving. Conversely, they observe that when actors choose to make a number of small positional moves, it does not take long before the whole network may look substantially different. Each member of the network can have an impact on the look and form of the network (Anderson et al, 1994). Thus, over a number of decades we can expect to see significant changes in the characteristics of the network and the presence, absence or position of any one company within it.

Naturally we expect companies to try to influence those around them in order to better secure their long-term future. But these attempts at influence need to be based on an explicit recognition of the complex inter-dependencies that exist in networks in order to, “make sense of where we are”, Ford et al (2003).

But making sense of a global network of effectively infinite size and complexity is not easy (Blankenberg 1992, Holmen and Pederson, 2001). Lundgren (1995) suggests that when a company is analyzing its position it must set boundaries for the network it examines which are appropriate to the particular decisions that it is making. This creates a dilemma for any business since significant events may take place in distant parts of the network, or in “another” network, not fully associated with the main or obvious one. Also, threats to the future of a business often come from unexpected locations. For example Christensen (1997) describes how a company can be outflanked by a new technology offering apparently inferior benefits into a separate, although linked, sector of the network.

This suggests that a company needs to examine its networks on a regular basis from many aspects to reduce the danger of missing significant changes. Consequently the choice of network “horizons” is a major decision for management in the drawing of their “network pictures” (Ford et al, 2003). Managers must also be aware that no two actors are likely to have the same pictures or to see the network in the same way. Further, analysis must also take into account the inherent paradoxes of networks (Håkansson and Ford 2002). These refer to the simultaneous enabling and constraining effects of a company’s relationships; the dual causality that means that a company can be examined with equal validity as the author and the outcome of its relationships and the simultaneous managerial imperative to control the network and the potentially destructive effect of that control on the functioning of the network.

Leather in the 19th Century and The Booth Family of Liverpool

A complex network has surrounded the production and use of leather for many centuries. Participants in the network included those who trapped or farmed animals for their hides or furs; local tanners who processed these and who were often forced by cities to cluster together to limit the environmental effects of their noxious trade, or who were ostracised by society because they practiced it. Royalty were also closely involved because of their demand for fur and leather goods for their courts, and for many vital military needs. Townships wanted to acquire the technology of leather for reasons of industry or prestige and specialist traders built wide networks of relationships to buy and sell their wares. Tanners, curriers and chemical suppliers who included bark, alum and dyestuff producers were all involved. Many of these were members of guilds that sought to regulate trade, membership and technology. Every country in the world had and retains some form of tanning and leather industry.

The United States

Population growth and new technologies made big changes to 19th century America. Jefferson returned to the US from Paris with strong personal opinions on the importance of The Enlightenment. These were to play a role in the introduction of the concept of “interchangeable parts” now recognized as a major catalyst in the move to large factories and mass production. Prior to the 19th century the leather industry in the US had been craft-based. Attempts had been made to put some organization into the industry – a law was passed in Virginia requiring every town to have a tannery – but with limited success. There were a few small tanneries around Boston but mostly the leather industry worked as a localized craft and farmers tanned hides and turned them into shoes and other goods on their own farms. Itinerant shoemakers traveled around and helped farmers with a lot of animals make shoes from them. They would also help farmers to trade products in excess of their own needs and a small export trade took place with the southern colonies who preferred to focus land and time on cash crops.

There was an unusual convergence of events. The opening of the west with the trans-Mississippi railroads, the introduction of the telegraph and refrigeration, and the growing needs of the population for clothing and footwear lead to big changes in the location and the structure of the leather industry. (Hoover, 1937). With continued immigration from Europe, urbanization and rapid population growth there developed a high level of entrepreneurship. People were open to new ideas, were inventive, and ready to set up businesses to serve the city populations. Growth in the demand for meat meant the development of the Chicago packing houses, made possible only by these new events and those interested in tanning found a centralized hide and skin supply for the first time. Tanners had to decide on location based on a balance between easy access to hides and the availability

of their primary tanning material – bark – which was running out on the east and pushing them westwards. Centres for shoemaking were established, in particular around Boston, and for gloves in Gloversville in up-State New York. A trend began for young ladies to leave their farms and work in shoe factories in Lynn and Salem on the outskirts of Boston, returning home after a year or two in order to get married and settle down. This is very similar to the pattern seen in Korea and China in the second half of the 20th century.

Part of this process saw the continued development of new machines for the leather industry, and for new chemicals to be used.

- The splitting machine which allowed thick hides to be processed in two separate layers
- The sewing machine
- A large variety of cylinder bladed rotary machines to mimic hand operations for removing flesh, levelling the substance, removing water and softening the leather
- The steam engine, which allowed all of these to be put together and driven by belts
- New vegetable tanning materials
- The ability to produce tanning extracts which were much more easily transported and stored than bark
- Attempts to find new alternate tannages to vegetable ones
- Cutting dyes and knives which allowed standard sized pieces to be cut out for footwear and gloves to be cut out by machine
- Synthetic dyestuffs

The civil war in 1862-5 created an unprecedented demand for leather and catalysed the network. Multi story tannery mills were built with

lines of new machines driven by steam power offering significant levels of mass production never before imagined.

The Booth Family in Liverpool

During the 1800s industry and society in the UK was also changing. In Liverpool the Booth family had decided that their family business in grain was coming to a close, most probably because they like other smaller grain merchants suffered considerably from the depression caused by the long fall in prices after the Napoleonic War. (John, 1959 p 22)

After a number of extended family meetings it was decided to educate the two sons Charles and Alfred in international trading and shipping, using family friends in their tightly knit nonconformist – Unitarian – society.

In 1860 the brothers established a business in New York importing raw material (part processed) from the UK to the US tanning industry. The ties between New York and Liverpool were at that time as close as those with London. Three years later they also set up a separate business with two small steamships they commissioned doing general shipping and mail business between three northern ports in Brazil and Liverpool.

Some authors (Friedman, 2000) view the period from 1860 to the late 1920s as the first era of globalisation, with volumes of trade and capital flows, relative to GNP, and labour flows over borders, relative to population very similar to what we are seeing today. The inaugural British Trade Union Congress in 1868 had a motion complaining of having to deal with “competition from the Asian Colonies”. There was also considerable support of various religious groups including the Quakers, Unitarians and Jews that gave particular business/social

networks strong cohesion from shared values. These groups were widely spread geographically, yet interconnected. They were often restricted in the roles they could play in civic life and consequently focused on trade and business, and in their localities stayed together. There was also considerable intermarriage within the groups. Walking down Renshaw Street from the Chapel on a Sunday morning it was “one of the sights of Liverpool” to see the Booths and other major families with their long line of “carriage-and-pairs”. John tells us “neither the beginning of the Booth Company nor the social work of the Booth family can be fully understood except in its Non-conformist background.”

The Booths built an international business within the two networks of the international trading business and the leather industry. They searched the UK for tanners who wanted to export to the US and used the Liverpool to New York shipping services in which they had experience. They were helped by the trading office in New York of the Liverpool house of Rathbone and Company. They set-up office in the tanning area of New York, which was recognised as the centre of the US business and to reduce the risk in New York they started with a joint venture with an American leather merchant, but when he fell ill after a few years were confident enough to move out on their own. (Timeline App 1)

The Booths made a conscious decision based on the advice of their family connections in Liverpool to sell UK semi processed leather to American tanners, initially some to the shoe makers of Boston and others to the clothing and glove tanners of Gloversville. The leather industry was growing rapidly in the US but was not attracting the attention of the bigger trading houses. They worked hard to build new relationships in both the US and the UK, so that they could both understand the needs of US customers and find solutions from their UK suppliers. Within ten years their high level of activity gave them a

position in the leather industry network with a very large number of contacts. Their network picture would have been both wide and dense.

A potential bad debt offered them the opportunity to make a change in the network position and they became a tannery owner in Gloversville in 1877. This was a major change and would have caused comment throughout the network. Booths used this ownership to encourage new technological developments in the Gloversville tannery, Kent and Stevens, and two fundamentally new tannages were developed there in 1879 (Dongola) and 1884 (Chrome Tanning). The latter was to become the dominant tannage in the world after the 1st World War and remains the primary tannage of 85% of the world's leather to this day. (Thomson, 1985 and Luck, 1986)

The Booth Group used the success of these technologies to expand their network contacts, particularly overseas. They sought out relationships for additional and different raw materials from goat and kid from Brazil, sheep from mainland Europe, and kangaroo from Australia. They also began to export the new leathers they were making in the US to Europe and Russia. Their Brazilian shipping links brought the Booth shipping line into the network and a high proportion of its activity before the end of the 19th century involved moving goatskins from Brazil to Philadelphia for tanning, and finished leather from there to other US ports such as Boston.

The Booths also became bolder in their view of manufacturing and invested in more tanning, buying a tannery in Philadelphia and becoming more involved in the Turney tannery in Nottingham which they eventually bought.

By 1914 Booths had adjusted their network position even further into a leather producing rather than a leather trading organization.

Acquiring raw materials and distributing finished leather had brought them into touch with all parts of the world, but the hides and skins they were bringing to the US were increasingly being used in their own plants rather than being sold to others. They had also added interests in glue, gelatine and felt (all bi-products of the raw hide and skin trade) on both sides of the Atlantic.

During the course of the twentieth century Booths moved from being primarily traders to primarily tanners. This coincided with a new generation of immigration into the US from Eastern Europe and Germany. These immigrants included a number of fur traders who also traded leather and they appear to have built into that part of the network where the Booth relationships had weakened through becoming tanners.

Network Entry

A new business start up rarely arises with a blank sheet. There is nearly always some history, so that an actor can hardly ever be said to “enter” a network completely from the outside. Before deciding on leather the Booth family apprenticed Charles to a Liverpool trading house where they learned about trading and shipping and Alfred took a temporary post in the New York office of the well-known Liverpool merchant house, Rathbone and Company.

In doing this the brothers would have been building up a picture of the various networks with which they were interacting and assessing the actors and the technologies involved. Having revised and extended their “network pictures” they would then be estimating both how easy it would be to move into the network as a new member and what would be involved in the process of “networking”.

Their first moves would have been delicate. As employees and ex-employees they were already actors in the networks and would have had to decide how to manoeuvre into the business areas of others without provoking retaliation. The company documentation indicates a decision to set up in the same business, but in a non-confrontational way. *Their existing network was already both empowering and restricting their new business.*

Many new relationships were established in the business start-up phase. These then became part of a unique organisational structure covering each of the two areas of manufacturing and trading and even more unique when the two were combined. In its first fifty years the company never lost its strong Liverpool roots and “Chapel Culture”. The very large number of relationships which had a similar origin made between actors who held shared beliefs, common backgrounds in terms of education, and of course, religion, had a very strong influence on the evolution of the network and the type of actor-bonds developed.

There is little evidence that the Booths tried to tightly control their network in the early years. Both the establishment in New York and the first trip to Brazil had a significant element of experimentation about them. That is not to say there were not thought out, or that no business plan had been written. John (1959) describes a process very close to an 1860s “Porter” analysis for each business in a clear search for market areas where competition was less likely to be intensive and retaliation from incumbents was unlikely.

Many linkages were made, both formal and informal. The Booths positioned themselves within both the shipping and leather networks in a way that gave them very many contacts, creating the likelihood that they would see many new situations and be faced with innovative options, as turned out to be the case.

The UK material suppliers they chose were mostly young businesses which were keen to export and willing to adapt in order to enter new markets. The overriding impression given from the correspondence is one of avoiding rigidity, and maintaining a flexible approach able to adjust to the conditions as they were uncovered. They moved to Brazil and the USA with specific linkage spots in the network to be filled, but only approximate ideas about with whom they would become attached.

Some business start-ups may involve new technology or an entirely new approach to existing customers and as such may involve an aggressive move when positioning the company in the network. This was not the plan here, although a lot of what happened was innovative. In shipping, Booths had one of the first fleets powered solely by steam, and their approach to the leather industry as manufacturers' commission agent took an old formula into a new international arena at a quite tumultuous moment.

Characteristics of this period of the Booth business appear to have been a high level of preparation, and a very flexible approach. They had planned two businesses in the family meetings over ten years: One a shipping business and the other a trading business working as a commission agent for a manufacturer. We know from the family records that one major aspect of their deliberations was to stay in less competitive areas of the businesses they were entering. So for trading, leather kept them a little below the horizon and when they entered shipping they made their focus on the Amazonian ports rather than the busier routes such as Rio or Buenos Aires. Amongst the family's advisers were Rathbones, who perhaps did not want further competition in their own preferred commodities, and Holts shipping line who again had their own well-established routes and trades. It

would seem quite likely that to get their help the Booths effectively agreed not to become direct competitors.

Technology Change

Booth's came to changing technology in the leather industry by accident. In 1877 they were handed a "hot potato": a chance of losing a great deal of money or backing the inventiveness of a nice but relatively unknown leather technologist.

- Did they really want to become manufacturers?
- How would their customers in the US react?
- How would their suppliers in the UK react?
- Did they have the skills to manage a tannery in upstate New York while still running the rest of a very complex and geographically spread business?

Can we assess the "appropriateness" of the network pictures being used by the Booths while taking the decision to invest and become manufacturers? They were a Liverpool business that had spent fifteen years developing a New York-centric leather activity. They had manoeuvred the company into a significant role in both the US leather industry and in the UK.

Traders in any technologically-intensive industry will have a difficult time at first and this was the case for the Booths. Early on we find Charles writing to his brother vowing never again to buy another cask of pickled pelts (semi processed sheep skins) from Turney of Nottingham. "I was never able to tell whether the skins were right or not and Turney could always shut me up". Nevertheless the relationship with Turney Brothers was to last until 1971.

The correspondence we have indicates that the move to buy the Gloversville tannery involved the company in trying to take a wider

view of their business network and seeing the potential for new technologies. Writing later, Charles Booth was to say “the working up of a new business ... is the life of any concern as ours”, and it can be viewed that while the purchase had a tactical element it had its basis in strategy and the Booth belief that they could exploit successfully any invention which Kent could make.

At no stage did the Booths pretend to be technologists, but they did ensure that in all their businesses they understood the implications of the technology involved. As such they would have been able to make a reasonable assessment of the potential of Kent’s work, and the promise that he could produce better leather in a shorter processing time. A major element of this understanding came from the fact that their natural network horizon, as defined by the area in which they were trading, was very much larger than the individual tanners in the US, or of most of the other Booth competitors. The Gloversville tanners were just that: specialists in the tanning of leather to be made up into gloves in the town of the same name. The shoe centre in Boston could have been in another continent in terms of regular contact. Yet Booths had been selling successfully there from the sixties and opened an office in Boston in 1870. So Booths had the network links that went beyond the local and regional network inhabited by most of the businesses in the town.

Technology Management

Successful technological innovation mostly occurs at the interface between companies, if for no other reason than that it is difficult for a business to exploit an invention in isolation. Consequently the network structure around an invention is key to its successful development. In his study of digital imaging in Sweden, Lundgren (1995) notes that new technologies are often not commercialised until some decades after their first invention. The gap with chrome was

around 40 years. To allow the new ideas to be accepted in the marketplace there has to be a receptive group to accelerate matters. For the next technical development Booths were involved in trying to find a leather which would avoid staining the metal parts of corsets when wet, but they were clearly in close touch with shoemakers' need for lighter weight and water-resistance leathers, just as they would also have seen the problem tanners were finding in accessing supplies of bark for their vegetable processes. They were themselves receptive to the inventor, in the belief that their access to markets for various end-uses would provide at least one set of interested parties. (Alan, 1995 and John, 1959)

Håkansson and Waluszewski (2002) make it clear that the outcome is unpredictable when starting on a technically innovative route where others are involved. It is clear that in their investment in technology Booths were willing to take risks, hoping that their many network connections would allow them to find a viable use for whatever emerged.

The Gloversville tanners themselves tended to only sell their leather to the local glove businesses, and had few connections to the Boston shoe industry. By having a wider network horizon the Booths diminished the risk of investing in new technologies, whether the Dongola or the subsequently more important chrome process. When the chrome process was ready for commercialization, the Booths were able to provide the receptive network, which Lundgren argues, is needed for diffusion to succeed. There was a large group of US and subsequently international footwear producers who were already part of the Booth network.

As well as a receptive base being required for dissemination a lot of diverse actors are needed in the genesis and coalescence stages. While there is some evidence of brave attempts made in Germany and

the UK (Eglinton chemical company) they either came to market with a product too soon or more likely did not find any mini-network that was prepared to encourage them. We do not fully know what went wrong in the development of chromium in Europe. We read arguments of European tanners being too conservative (Procter...et al) and we know that significant groups in Europe (Leeds, Northampton, Pirmasens) worked in very tight local industrial networks with local materials. They were tightly knit together with few outside contacts. It would probably be wrong to say that this was only inertia as the change to chromium was a dramatic one, involving hiring trained chemists, sourcing new chemicals, and being prepared to enter new markets. With the existing processes having been quite profitable for at least the last three decades of the 19th century, setting out on these changes probably appeared unnecessarily risky.

When Schultz had patented his chromium process in 1884, after for years of experimenting in Kent and Stevens, the Booths took no ownership rights and apparently did not feel ready to be involved in its commercialisation. They closely watched as Schultz sold his patents in New York and work started to be done on the technology in Philadelphia. Shortly after commercial production started in that city, Booths were asked to help as they had the best access to raw material supplies and to the final markets in the US and Europe. They knew that they effectively retained access to it through their knowledge of the surrounding network and an appreciation of its potential value.

The chrome tannage technology was quickly embedded in a number of networks. It was important for the chemical industry in the US who had chromium available, and in Europe where chromium compounds were a bi-product of the synthetic dyestuff business. It worked well on small skins, especially goat for which Philadelphia was the US centre of production, but who had to link into New York traders for supplies of skins. The goat tanners had limited links into footwear as

before chromium their product was most used for garments and gloves.

So the new chromium tanned leather required many links for its exploitation. By the time the patents had been sold and the technology improved, the Booths had both a supply network and a customer network ready to take advantage of a commercially proven technology. Booths were in fact the second company to launch the black kid in the chrome-tanned format in Philadelphia, and looking at their volumes and profits their timing was impeccable. Dosi (1982) shows that a single company does not have full control over the evolution and exploitation of a new technology, and this provides a good example. In the years between Schultz obtaining the patents and Booths starting to sell the chrome kid from Philadelphia many adaptations had been made both to the process itself and to the networks which were eventually able to profit from its exploitation. Embeddedness is defined as “the many connections between a single technological development and the surrounding network” (Ford et al 2003) and is important here. It involves aspects of knowledge, control, change and bundling.

From the correspondence we have passing from Liverpool to New York we know that Booths considered knowledge and communication to be vital to business success. They recognised that the leather industry was changing in many ways and they definitely were anxious to be aware of new developments in Europe and the USA. It is less clear that they deliberately set out to be pioneers but the work on the steamships and their uncle’s steam boiler work indicates they did not mind being at the leading edge. It is perhaps not a totally irrelevant aside to note that Kent was also involved in the discovery of the first softening “fatliquors” which started to replace egg yoke, and the Booth associate Joseph Turney Wood made the major discovery that replaced the unpleasant use of dog dung with a pancreatic bate at the

turn of the century. In fifty years the Booths had been in some way involved in all the significant chemical advances in the leather industry.

While they had always shown willing to help develop and exploit technologies, they never tried to control them. Dongola was never patented but became an industry standard for certain leather types and worked profitably for Booths in Gloversville into the 20th century, and subsequently became widely used in other leather applications in the UK in which the Booths were not involved. Similarly when chromium tanning only moved slowly to Europe they encouraged its spread by helping to open new tanneries in different market segments and sent technicians from the US to aid its introduction.

Network Outcomes

The outcomes of networking change the characteristics of a network, but because of the multiplicity of actors and the complexity of their different viewpoints the outcomes are not predictable or controllable. The networking of each actor and their reactions to that of others will depend on their unique network picture. As part of the process of preparing this paper we have tried to deduce what the network pictures for selected actors may have looked, using a mix of published data, correspondence and intuition.

In the mid 1880s the Booth Company comprised:

- a. Export trade of skins to USA from UK, and elsewhere
- b. A small tannery in Gloversville, profitable because of Dongola on kangaroo
- c. A fleet of nine ships
 - i. Trading between Liverpool and Brazil

- ii. Trading skins Brazil to US and coal, flour and softwood from US to Brazil
- d. A London office (to have access to European skins), Liverpool office, Boston office (US shoe trade centre), New York office (US leather centre in the Swamp)

A number of links would be growing at this time which brought the US offices into direct communication with overseas suppliers of hides and skins. An outline of this part of the network is shown in Figure 1 with arrows showing the flow of goods.

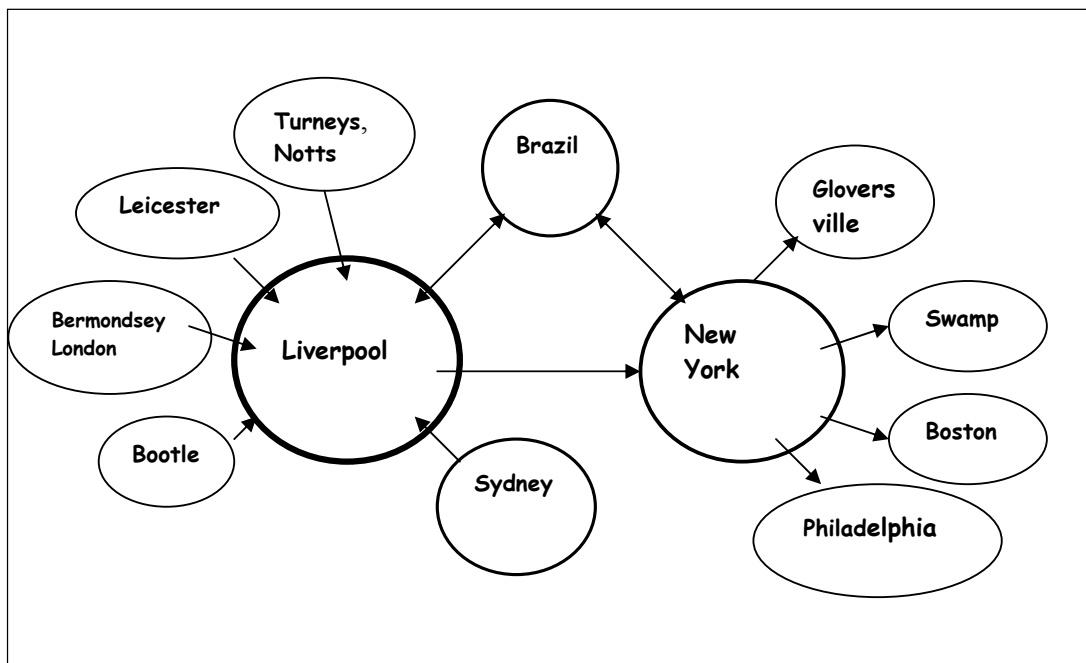


Figure 1: The Booth Co in the mid 1880s

This was after 20 years of business. The outcome for the Booth Company would have been viewed as very satisfactory but they would have been the first to accept that it had developed differently than they had expected, not least with the unplanned change in Gloversville. They had strengthened their links into the light leather industry and not developed strong ties into the heavy bovine sector. However no major relationships had been severed and most had been greatly strengthened.

Consequently the outcome for many other members of the network was also positive and this meant that there was confidence for information and ideas to flow freely. There was quite extensive communication amongst the actors that did not involve Liverpool.

At this time there was a big change in the outcomes of interaction with Kent and Stevens leading to Booth's first move into ownership of manufacturing. Håkansson and Snehota (1995) note that decisions related to ownership are about the balance of control over flexibility. The correspondence shows that Booths took the move seriously and moved a senior manager in to help. Their subsequent readiness to enter into ownership in the UK of a variety of companies becomes very apparent as the years pass.

We make another attempt to show part of the network as seen from the perspective of the Booths in Figure 2, as we move into the 1900s. More relationships had developed around the New York office and between the US members and the raw suppliers and customers.

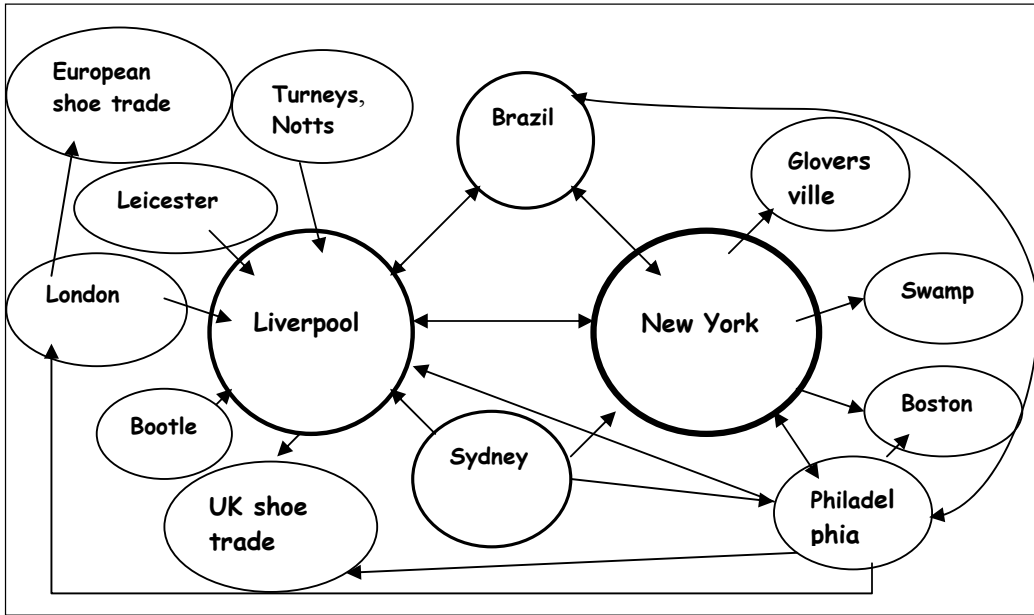


Figure 2: The Booth Co in the early 1900s

Quietly and insistenty Booths had adjusted their position in the network to become tanners as well as traders in the US business. Indeed they had become one of the most significant tanning organisations in the world at that time and perhaps the only one with the associated worldwide knowledge and access to raw materials.

However just as much of what happened was a result of reaction to events elsewhere as it was to working to a defined blueprint. Becoming tanners came about as a response to fraud and the company got involved in chrome via a serendipitous meeting. At the same time the breadth and heaviness of their network picture meant that they had the links to be able to adjust their position in the network to exploit these major events.

The development and introduction of the Dongola process and of chrome tanning had within 20 years changed the orientation of the Booth business. The company was no longer based on the principle of middlemen but rather by 1905 they were tanners with an HQ in Philadelphia, and trading was subsidiary. The US became the centre

of the leather activities and a partner relocated in New York, after many years of leaving matters in the hands of Mr. Kuttner.

The network picture we surmise to be held by the Booth Company was very large. The network picture they had of the business of leather, its trading and its technology was one framed within an international trading and shipping environment. There is an apparent open-mindedness in their approach to business structure which seems to come from those Liverpool associates who gave them advice. This group was willing to share information and give advice even although there was a potential for rivalry, and much of this interest could be viewed as a wish to expand the depth and breadth of their own network pictures. They were certainly very open-minded and appeared interested to view their businesses as a wide network, enthusiastic about the business of networking and trying to avoid too precise positioning or control.

There is certainly a strong link between Booths success from 1853 to 1890 and their use of communication via their contacts and offices around the world. Offices were quickly located where they felt they would be beneficial. Shortly after the company began a Boston office was set up to deal with sales there and when skins were needed from Belgium and France Booths established an office in London where they could meet frequently with the European traders in Mincing Lane.

At the same time a large aspect of working as factors in the leather industry involved the provision of credit to smaller firms on both sides of the Atlantic. Associated with this was the need to be skilled in the movement of money between the US and Europe, at a time of fluctuating exchange rates. The hide and skin markets of the world are notoriously volatile and they had to handle this while buying in Sterling and selling in Dollars. After 1879 a gold standard was

established but by then the Booth Company's unique network structure had given them skills which meant trading for hides and skins in other more far-flung parts of the world would be much easier than for their competitors.

To put it another way, careful management of their network position and of the relationships within the network had significantly increased the barriers to entry for competitors. Booths were clearly defined by their network but continued to adjust their position in it to avoid losing flexibility for further action, according to the second network paradox. They kept themselves continuously in a position that allowed them to be creative in the development of their network position. They also appeared able to do so without creating a negative reaction from their customers so that they were able to work within the network as buyers and sellers at the same time.

The Rest of the Industry

The situation for traditional (non-chrome) US tanners was analysed by Donham (1930) and Dewing (1911) who makes it clear how difficult the first decades of the 20th century were for US tanners with rampant overcapacity and loss of market volumes. Between 1914 and 1926 sole leather volumes declined by 25%, harness leather by 60% and belting leather by 12%. Competition from substitutes fell hardest on the heavy (vegetable) leather industry. This big decline led to overcapacity in an industry already beset by problems of fluctuating raw material prices – “a number of tanners have expressed a preference for poker”.

This was against a background of a 10% increase in the production of shoes in the US and a 20% increase in population. So while tanners like Booths continued to make their mark on the world scene with the

new chrome leather, those who did not have access to newer leather processing methods suffered.

One can also consider the traditional Leeds tanner's network picture between 1890 and 1900 and compare it with that of the Booths. (Church, 1971). The Leeds tanner would use local hides and mostly local chemicals, possibly augmented by some European tanning materials brought up the river Aire by barge. He would be selling into the local trade, and had been doing so successfully and profitably since the 1860s. His business network was defined, stable and successful. His network was his source of profit and security, but as defined in the first network paradox (Håkansson and Ford, 2002), it could become the cage that entraps him.

The Leeds tanner did have choices but would not want to disturb his excellent existing relationships, and based on his restricted horizons either would not see or did not choose to create a different position for himself in the developing networks in which he was involved. Whereas the Leeds tanners had become defined by their network position Booths became empowered by theirs.

CONCLUSIONS

This paper has used historical records to examine the evolution of a single company within a changing network. This case illustrates clearly that networks are not recent inventions, or indeed inventions at all. The case also illustrates that many supposedly modern phenomena such as rapid technological change and intense competition, "globalization", network position, networking and the associated paradoxes are equally valid in examining business. Although not reported here, the case illustrates the role of different aspects of networking in business practice (Ford et al 2003). The case also illustrates the value of trying to deduce the network pictures of

various actors as components in their networking. Finally, the case illustrates some of the apparent ingredients for success for companies operating in complex networks irrespective of their historical location.

In the establishment of their new business five characteristics stand out:

1. The Booths planned well in advance and in doing so created many new relationships which helped them position themselves in the business networks when they actually started to trade in their own right. They had many strong actor bonds capable of further development.
2. They chose to have a network position that was both broad and dense, giving them the capability to observe potential opportunities and threats.
3. They maintained a high level of flexibility in their network relations and accepted and provoked changes readily.
4. They did not try and own the technology they helped create but rather worked to ensure they had the relationships in place to exploit them, be it supply related or customer related.
5. Unlike the vegetable tanners of the US and Leeds in the UK, they didn't have a limited network horizon. Although this may have been quite appropriate for certain decisions, a limited horizon limited their ability to spot important trends and innovations.

REFERENCES

Allan, J, (1995) *Traditional Glazed Kid Manufacture – a Lost Art in the UK*. JSLTC, 79, Sept-Oct 1995, No 5, 135

Andersson, J., Håkansson, H. and Johanson, J. (1994) *Dyadic Business Relationships within a Business Network Context*. Journal of Marketing, Vol 58, p 1-15.

Andersson, Per (1996), *The emergence and change of Pharmacia Biotech 1959-1995. The power of the slow flow and the drama of great events*, doctoral thesis, Stockholm School of Economics, Stockholm

Blankenberg, Desireé (1992) *Kopplade Relationer: Industriella Network*. Licentiate thesis, Uppsala University

Christensen, Clayton M (1997) *The Innovators Dilemma*, Harvard Business School Press, Boston

Church, R.A., (1971) Church, R.A. *The British Leather Industry and Foreign Competition, 1870-1914*. Economic History Review, 2nd ser. 24 (4), pp. 543- 570. 1971

Dewing, Arthur S. (1911) *The United States Leather Company And Its Reorganisation* Quarterly Journal of Economics, Nov 11, Vol. 26 Issue 1, p68, 37p;

Donham, Richard (1930) *Problems of the Tanning Industry*. Harvard Business Review 8(4, July):474-479.

Dosi, G et al (1988) *Technical Change and Economic Theory* Pinter Publishers, London and New York

Ford, D, Gadde, L-E, Håkansson, H, Snehota, I, (2003) *Managing Business Relationships*, 2nd Edition, Wiley and Sons Ltd.

Friedman, Thomas L (2000) *The Lexus and the Olive Tree*, Anchor, New York p xvi

Håkansson, H., Waluszewski, A., (2002) *Managing Technological Development. IKEA, the environment and technology*. Routledge: London, New York

Håkansson, H and Snehota, I (1995) *Developing Relationships in Business Networks*, Routledge. London

Håkansson, H and Ford, D (2002) How should companies interact in business networks, *Journal of Business Research*, Vol 55, pp 133-139

Holmen, E, Pederson, A, (2001) *Knowledge and Ignorance of Connections between Relationships*. IMP Paper, Oslo Conference

Hoover, E.M. (1937) *Location Theory and the Shoe and Leather Industries*, Harvard University Press

John, A.H (1959) *A Liverpool Merchant House, Being the History of Alfred Booth and Company 1863-1958* George Allen and Unwin, London

Luck, W, (1986) *The History of Chrome Tanning Materials*, *Journal of the Society of Leather Technologists and Chemists*, Vol 70, p 99-103

Lundgren, A (1995) *Technological Innovation and Network Evolution*, Routledge, London and New York

Thomson, R.S. (1985) *Chrome Tanning in the 19th Cent*, *JSLTC* **69** No 4, 1985 July Aug

Appendix 1

Time Line for the Booth Group

- 1812-1815 Napoleonic War of 1812. Commodity prices fell and stayed low for a long time
- 1850 Alfred apprenticed to Lamport and Holt, well-known Liverpool merchant house
- 1850s Liverpool merchants began to replace sailing ships with small steam ones
- 1857 Alfred Booth went to New York. Worked for Liverpool merchants Rathbone & Co
- 1859-1862 Bad harvests in UK lead to food imports from US through to 65
- 1860 Elder Mr Booth died
- 1860 Walden (USA) and Alfred Booth (Liverpool, UK) founded company to import light leather from UK to USA, 57 Broad Street, New York
- 1861-1865 US Civil War
- 1863 Walden becomes incapacitated and Walden and Booth dissolved.
- Alfred Booth and Company, Liverpool and Booth and Company, New York established. This New Booth partnership formed, shipping light leather to US. Two products: Sumac tanned sheep from Bermondsey for shoe uppers, and pickled grains and fleshes from Turneys of Trent Bridge, Boots of Leicester, and Johnston at Bootle
- 1863 Issue of confederate loan
- 1863 Open office in Liverpool 5 India Buildings
- 1864 Decided to enter the steamship business. Plan to sail to North Brazil ports, Ceará, Maranhão, and Pará (now called Fortaleza, São Luiz, and Belem): return cargoes would be cotton, sugar

- and coffee. Plus a mail contract if possible. The construction of two steamships, the *Augustine* and the *Jerome* was planned
- 1865 Booth US trade had a good year
 - 1865 Turneys agreed to ship to US on consignment
 - 1865 Contracts placed for first 2 Booth ships, *Augustine* launched
 - 1866 Feb 15th first Augustine voyage to Brazil Voyage lost £3000 but obtained £10,000 annual contract for mail from the Brazilians
 - 1867 Brazil/Paraguay War ends
 - 1867 Alfred Booth married Lydia Butler
 - 1860-1890 US population doubled
 - 1869-1871 Alfred Booth stayed in the US
 - 1870 Franco-Prussian war breaks out
 - 1870 Charles married Mary Macaulay
 - 1870 Office opened in Boston to build on success of Roan business (pickled foreign sheepskins) 141 Purchase Street, Boston. Mr Gaenslen went to be manager
 - 1877 Office opened in London to deal with French and Belgian sheep suppliers Fenchurch Street
 - 1877 Kent and Stevens's tannery in Gloversville hit by Stevens fraud. Booths owed \$70,000. Booths pay off creditors and back John Kent. John Kent is the leather scientist who developed fatliquoring and the Dongola tannage
 - 1879 Problem of unsold stocks of roans leads to opening of showroom in New York, Frankfurt Street
 - 1879 Dongola tannage successful and Booths began buying dried goat and kangaroo skins for it
 - 1879 Liverpool offices moved From 5 India Buildings to 14 Castle Street
 - 1880 Launch of Daisy Kid Ceará goat tanned with Dongola Tannage to make an imitation kid
 - 1880 Augustus Schultz started work with Julius Kuttner in Booth Gloversville on perfecting chrome tanning

- 1881 Booth Steamship Co Ltd formally incorporated, began looking at Brazil-New York Trade
- 1882 Nuneaton Leather Co founded when Booths needed to make something out of the roans
- 1884 Augustus Schultz had two chrome tanning patents issued
- 1886 John Kent died
- 1887 Alfred Booth retired
- 1889 Schultz' two chrome patents passed to Franco-American company Messrs Blumenthal Blumenthal then passed patents to Marcus Beebe and R.Foederer & Co in Philadelphia. Philadelphia tanners began working widely in chrome
- 1890 First serious marketing of chrome tanned leather under the brand name "Surpass" by Booth and Company in a joint venture with J.P.Mathieu of Philadelphia USA. (A small production under the name "Vici" had preceded it)
- 1893 Formation of United States Leather Company, the largest US Company ever formed
- 1894 Booth Gloversville tannery started chrome tanning for goat and kangaroo
- 1896 Daily output at J.P.Mathieu rose to 600-700 dozen skins
- 1898 Daily output at J.P.Mathieu rose to 1000-1200 dozen skins
- 1898 Introduction of enamel process by George S Wolff to copy patent leather. Sold by Booths as "ideal". Wolff Process Leather Company, Summerdale Station, Philadelphia & Reading R.R. "One of the greatest and finest leather factories in the world, especially equipped for producing "Ideal Leather," a non-breakable enamelled leather patented by George S. Wolff, founder and president of the company. The entire output is handled by Booth & Co., N.Y."
- 1899 Warehouse set up for Surpass UK and European sales in 50, St Thomas Street, Bermondsey.
- 1899 Joseph Turney Wood discovers artificial bates

- 1902 Sales office opened in St. Louis (701 Lucas Avenue) to deal with the growing shoe industry, quickly followed by Cincinnati and Rochester
- 1903 Daily output at J.P.Mathieu rose to 1500
- 1904 Booths supported building Wolff Process Leather Company. In Summerdale near Philadelphia
- 1905 Booths move to complete purchase of J.P.Mathieu and change name to Surpass Leather
- 1915 Lusitania sinks in the Atlantic and was likely attacked since carrying arms under the name of Booth sheepskins. Paul Crompton and his family were on board. He was VP of Surpass Leather Company, and a partner in the firm of Alfred Booth and Company and a director of the Booth Steamship Company
- 1920 Booth established UK links to Pavlova Leather a gloving tannery in Abingdon, Wade and Co in Nottingham to chrome tan kid for the boot and shoe industry, and consolidated and interest in glue and gelatine through a holding in B. Cannon and Company. Lincoln.
- 1920 British Leather Manufacturers Research Association Founded
- 1921 Alfred Booth and Company purchases the Pavlova Leather Company of Abingdon, England.
- 1922 Tanners Council of America established in New York
- 1938 Gloversville closed
Strike in Gloversville
- 1942 Gloversville buildings sold
- 1948 Booth purchase Melrose Tannery in Beverley, Yorkshire
- 1950 and 60s Tanneries built in Kenya, Nigeria and New Zealand as Joint venture operations
- 1960/70s control of Kenya and New Zealand lost. Booth Overseas continues buying chemicals and machinery for Nigeria and trading some of the Kenyan sides to the UK.
- 1966 Surpass Leather closed and Booth US HQ moves to Peabody, MASS

- 1978 Wades Nottingham closed
- 1979 Booth Group sold to Garnar Group, renamed Garnar Booth
Turney Bros closed
- 1987 Garnar Booth bought by Pittards plc and renamed Pittard
Garnar.
- 1993 Pavlova Leather in Abingdon is closed, leaving only the
fellmongers in Scotland associated with Booth England as the
manufacturing remainder of the Booth Group
- 1994 Pittards exit US office which is retained by existing management
as Booth and Co Inc
- 1998 Pittards start marketing natural leather not tanned with
chromium, following on after non-chromium tannages being
used extensively in the automobile upholstery business