Half a century of development: Mapping the evolution of a business network

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Abstract

While Darwinian theory has been applied in industrial network analysis to understand how business firms find and select each other, how business relationships survive, and how stability in buyer–seller relationships can be sustained, a recent review shows that there is a paucity of empirical investigations accounting for the whole set of core principles of 'General Darwinism' (GD) (Johansson & Kask, 2013). Accordingly, there is a need to extend the research efforts to all core parts of GD for a more complete analysis of business networks.

GD is about explaining adaptive fit, the accumulation of complex designs over time, and the development of variety from a common origin. Most prior research on industrial networks adopting GD is hampered by a one-sided focus on explaining adaptive fit. The result is partial understanding and limited knowledge of the applicability of GD in industrial networks. It also circumscribes the possibility to further develop the theoretical interfaces between network theories and GD. According to Brennan (2006) IMP research could benefit from incorporating elements from "[…] an evolutionary process into dynamics of change within inter-firm relationships and networks." (p. 829). Furthermore, GD requires auxiliary theory to be useful as a conceptual framing and IMP thinking can provide this.

We address the prior theoretical unbalance by drawing on the whole paradigm of (GD) to investigate a case of a production and distribution-network of sporting goods in Sweden. The purpose is to explain the evolution of the network by analysing a longitudinal case over a period of 50 years. We contribute with an analysis of the development of a business network based on the whole set of core principles of GD, extending our knowledge of evolution in networks. It also provides an empirically based application of GD to a specific problem, contributing to the development of auxiliary frameworks to GD, responding to the critique of GD as being largely void of empirical studies.

Keywords: Network Evolution, General Darwinism, Sporting Goods, Specialization, Encapsulation, Requisite variety

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1. Introduction

The rising interest for dynamics, open system views and evolution in management and business studies has created a need for theories with explanatory power to offer new insights into longitudinal change and evolutionary processes.

While Darwinian theory has been applied in industrial network analysis to understand how business firms find and select each other (Wilkinson, Young, & Freytag, 2005), how business relationships survive (Eyuboglu & Buja, 2007), and how stability in buyer–seller relationships can be sustained (Palmer, 2000), a recent review in *Industrial Marketing Management (IMM)* shows that there is a paucity of empirical investigations accounting for the whole set of core principles of 'General Darwinism' (GD) (Johansson & Kask, 2013). Accordingly, there is a need to extend the research efforts to all core parts of GD for a more complete analysis of business networks.

GD is about explaining adaptive fit, the accumulation of complex designs over time, and the development of variety from a common origin (e.g., Stoelhorst, 2008; Johansson & Kask, 2013). Most prior research on industrial networks adopting GD is hampered by a one-sided focus on explaining adaptive fit. The result is a partial understanding and limited knowledge of the applicability of GD in industrial networks. It also circumscribes the possibility to further develop the theoretical interfaces between network theories and GD (Johansson & Kask, 2013). According to Brennan (2006) IMP research could benefit from incorporating elements from "[…] an evolutionary process into dynamics of change within inter-firm relationships and networks." (p. 829). Furthermore, GD requires auxiliary theory to be useful as a conceptual framing (Johansson & Kask, 2013) and IMP thinking provides some potentially fruitful ideas for this.

In an attempt to rectify the prior theoretical unbalance, this paper draws on the whole Darwinian explanatory paradigm, what we have called 'General Darwinism' (GD) above to investigate a case of a producer, distributor, and retailer network of sporting goods in Sweden. The research issue that we address is how we can explain and understand the development of the network over a longer period of time by focusing on the developments of complex new designs and the emergence of variety.

The purpose is to explain the dynamics of this network by analysing a longitudinal case over a period of 50 years. By so doing we shall identify, describe and model variety and accumulation of complex designs in the case and use that to explain how and why the network developed the way it did.

Thus, this paper contributes with an analysis of the development of an industrial network based on the two least known elements that forms the foundations for GD, extending our knowledge and understanding of such issues in networks. It also provides an empirically based application of GD to a specific problem, thereby contributing to the development of analytical frameworks of GD and reacting to the critique of GD as being largely empty of empirical studies (Breslin, 2011)

This paper is organized as follows. In the next section a brief outline of the theoretical points of departures is outlined providing the common ground for the combined IMP and GD approach. After that comes a section discussing the methodological approach of this paper, followed by the case, and thereafter comes the analysis of the case in light of GD pillars and the industrial network theory. Last, we outline a discussion of how the GD paradigm and the IMP might inform our understanding of industrial network dynamics.

2. The theoretical point of departure: Combining IMP Network thinking and Generalized Darwinism (GD) to explain changes in a network

The core benefit of Generalized Darwinism (GD) is its explanatory power drawn from the mode of explanation of Charles Darwin (Darwin, 1859) which has been abstracted from its biological home and generalized to an explanatory logic that rests upon some grounding context-neutral fundamental pillars. GD is according to recent reviews particularly suited for explaining adaptive fit, the accumulation of complex (new) designs in the course of time, and the development of variety from a common origin (Stoelhorst, 2008; Johansson & Kask, 2013). In its abstracted form detached from biology we label this general mode of explanation based on selection, retention and variation in the tradition of Charles Darwin and his successors 'Generalized Darwinism' (GD). The fundamental pillars of this paradigm are the identification of some context-neutral principles that are not theory themselves but require further domain-specific auxiliary conceptualizations (Hodgson, 2002). This is a core issue of GD: It needs to be complemented with domain specific theory and empirics.

2.1. Complementing GD with systems theory and domain specific theory

The benefit with GD according to its advocates in the social sciences is that it can help us answering for example questions such as "how is the composition of actors in a business system (network) transmuted over time?" and "how does characters privileged in selection transmit to the next system setup?" etc. The scope of the GD approach is about explaining the cumulative adaptive system-subsystem matching in course of time (Dennett, 1995; Mayr, 2001; Stoelhorst, 2008; Johansson & Kask, 2013).

As is indicated above, GD is related to systems theory and complexity science in its general view of the socio-economic-technical matrix in which human agency and structure exist as exhibiting systemic properties in which complexity emerge. Hence, its affinity to systems- and complexity theory cannot be ignored, but it can be downplayed. In this paper, we rather acknowledge this affinity to systems theory as a core feature of GD and combine it with IMP network thinking as suggested by some IMP research (Prenkert, 2015; Wilkinson, 2006, 2008) in an attempt to respond to Brennan (2006, p. 837) urging IMP researchers to reach out and explicate the usefulness of IMP thinking for other fields in social science in an ambition of cross-fertilization.

The usefulness of IMP thinking to GD is that it can function as a domain specific theoretical framing (Johansson & Kask, 2013). This is of importance since there is a general lack of mid-range theories in GD in the socio-economic domain and very few empirical accounts of its applicability (Breslin, 2011). The GD framework therefore must be filled with auxiliary domain specific theory and empiric in order to become relevant and useful as an explanatory device. We contend that IMP network thinking provides such a domain specific theory and we provide an empirical case to show how GD and IMP thinking can be fruitfully combined into a coherent explanatory logic of evolution in networks.

2.2. The domain specific theory: Change and dynamics in networks

Change and dynamics in networks has been discussed primarily based on either dynamic in terms of new or old relationships coming into existence or disappearing in a network, or in terms of changing existing network relations. The distinction is whether dynamics is studied by looking at changes in already existing network relations or by looking at the creation and dissolution of new and old

network relations. It could be likened to Walter Buckley's discussion of morphostatic and morphogenetic change in socio-technical systems (Buckley, 1967), pointing to the affinity with systems theory thinking.

IMP research discusses how these two principal types of change are associated (Halinen, Salmi, & Havila, 1999) and propose that change could be confined in a relationship as the relationship functions as a buffer to the surrounding network absorbing the dynamic or when this buffering capacity is lacking or not possible to mobilize, the dynamic is spread in the network. Such confined or spread dynamic is important to understand when dealing with change in networks. Institutional change has been identified as of importance in this circumstance (Holmen, Pedersen, & Torvatn, 1999; Salmi, 1995).

Another stream of research focuses on the changing positions of actors in the network as core to understanding network dynamics (Anderson, Havila, Andersen, & Halinen, 1998; Havila, 1996; Hertz, 1996). Here actors are seen as drifting in networks and the role of intermediaries and actors' specific positions and their attempts to change positions are recognized. In this stream, change in networks are seen as the interplay between individual actor's ambitions and attempts to change its positions and the impact from the network structure on these ambitions and attempts (Bocconcelli & Håkansson, 2005) conceptualized as a network paradox (Håkansson & Ford, 2002).

In this paper we follow the suggestion of Aastrup (2000) that investigating change in networks requires an overall ontology and explanatory framework that acknowledges the specific interplay between agency and structure. More specifically we acknowledge the critical realist notion of agency as injected into structure and thereafter interacting in a complex dynamic. We contend that this creates *interactional fields* (Buttriss & Wilkinson, 2014) in which GD can provide some advice on mechanisms of change and where IMP thinking provides domain specific theoretical guidance.

3. Methodological approach

This study rests on a longitudinal case study of a specific industrial sector of ski manufacturing and sporting goods retailing in Sweden. While not undisputed, case studies are common research tools to investigate industrial networks (Halinen & Törnroos, 2005), especially if one wants to cover contextual situations and dynamics, which can be hard to capture using alternative methodologies (Morgan & Smircich, 1980). Case studies have also been recognized as apposite tools in studies drawing on critical realist ontology such as this one (Easton, 1998, 2010).

3.1. The case study design of this research

While case study research is challenging in its own regard (Eisenhardt & Graebner, 2007; Stake, 2003), we use it here for its opportunities as a tool to theorize and to build theory (Eisenhardt, 1989) in an attempt to combine a sound empirical story with relevant conceptual constructs. Case studies have been shown important in capturing processes in longitudinal studies (Aaboen, Dubois, & Lind, 2012), and while we have only one case, its longitudinal character (Wall & Williams 1970) spanning across 50 years give it a multiple case character.

3.2. Data collection and analysis

Multiple sources of data were used to create the case upon which this paper draws. Secondary data comes from media archive searches, biographies, industrial statistics, industrial magazines and sector organizations, etc. (see appendix A). Secondary data were complemented with 9 semi-structured interviews (listed in appendix A). These were carried out face-to-face with industrial veterans (long time retailers and manufacturer's Swedish representatives) and other knowledgeable about the sporting goods industry and ski manufacturing/distribution. The interviews lasted from 1 to 2 hours each and were recorded and transcribed. All together these data constitutes the database from which we have constructed the case.

As the case spans 50 years we decided to begin analyzing the data by separating it into three periods in order to make some sense of the multitude of empirical material. These three periods each resulted in the depicting of three network-maps picturing the structure and content of the network at these three points in time. These three networks can almost be considered as three separate cases or sub-cases, and we use them to analyze the major changes during the period (Poole & Van de Ven, 2004; Van de Ven & Poole, 1995, 2005). In this sense our case study is explorative and empirically grounded based on the data being organized into three periods and depicted as three networks each representing the significant features of its time, respectively. As such, the IMP network theory functioned to bind the data together in a systematic and coherent way (Miles & Huberman, 1994) and thus to case the data (Ragin, 1992), whereas the GD principles aided us in the analytical work in that it directed us to look for manifestations of *variety* and *accumulation of complex designs* in the case.

4. The case: A century of accumulation of design complexity and variety[2]

This presentation is organized in chronological order and accentuates the main producers, intermediaries and retailers in the industrial network of ski manufacturing and sporting goods retailing in Sweden. It covers a timeline of more than a century but focuses on the three network setups of the 1950s, the 1980s, and 2010s. But before we discuss the three periods and its networks, we give a brief historical background to the sector.

4.1. A brief history of the first ski factories to the WWII era

Before, during and in the first decade after WWII, the Swedish sporting goods industry in general, and the ski industry in particular, were domestic and small-scale. Ski manufacturing was artisanal to a large degree, although the transition from handicraft ski makers to (semi-) industrialized ski factories took place in the start of the late 19th century.

Skis have been made and used for more than thousand years in the North of Europe and in Russia. In the pre-industrialized era, skis were hand-made from the local hardwoods in home workshops. It was not until the late 19th century that the first more industrialized ski factories occurred. The first factory for industrial serial production of skis was located in Rustad near Lillehammer, Norway. It opened in 1872 and was followed by many more. Around the year 1900 there were at least some fifty such ski factories throughout Scandinavia. Also in continental Europe and in North America ski factories emerged in the late 1800s. For example, in Switzerland there were at least three ski factories in 1896; and in the US, serial production of skis has been documented in Wisconsin, in Minnesota and in

[2] This section is based on the secondary data sources listed in appendix A, complemented with industry sector magazines, trade papers and newspaper articles as well as with interview data. Data on the Swedish retailing comes primarily from interview data (see appendix A).

Maine before the turn of the century. North America, especially Minnesota and Maine, had many ski factories in the early 20th century.

For the period before WWI it is not easy to make a clear distinction between ski factories and the other woodworkers and local craftsmen that also produced skis. The factories were often quite small and ski making at that time were labor intensive and even the machine-assisted production required a lot of manual work. Therefore, the exact number of ski factories might differ from source to source, but we have in this study tried to use the same distinction as Gotaas (2007) based on size and scope of the business. For most ski factories in the pre-WWI era, ski manufacturing was seasonal and had to be supplemented with other wood products such as furniture in the off-season periods. Gradually in the 1900-1930 period, ski manufacturing was professionalized, and the ski factories took over the market from the local craftsmen. Although, the transition from homemade to factory-made skis took some time. Even after WWII homemade skis was still common, and not all competitive skiers switched immediately to factory-made skis. Indeed, as late as in the World Championships in 1934, one of the Norwegian favorites participated on homemade skis (Gotaas, 2007).

It is believed that the number of ski factories increased during the inter-war period and reached a peak both in Scandinavia and in mountainous countries in Central Europe in the late 1930s. In 1939 there were about 80 ski factories in Norway, and about 50 in Sweden, and also many dozens of them in Finland and in the Alps. Especially Switzerland had an extensive domestic ski manufacturing in the late 1930s, amounting to about 50 independent factories. In North America we have found evidence of at least 30 factories active in the late 1930s. Our estimation is that there were somewhere in the range of 300+ factories producing skis for commercial purposes by 1939 in the western world. Additionally, also in Japan, the number of ski manufacturers grew steadily. The Japanese began ski manufacturing no later than 1912. In the communist countries manufacturing were organized differently. While ski manufacturing in the west often was done in small factories employing between 5 and 50 people, the USSR applied its five-year plans also in this area. For example, in Karelia a ski factory were built in 1931 that already in its first years employed about 500 workers, and a second plant were located in Kirov producing skis both for civilians and military purposes.

Before WWII when Sweden and Norway had many ski factories spread over the Scandinavian Peninsula very few factories had nation-wide distribution and different factories or brands dominated in different regions. Also within the same country various brands held local oligopoly-like statuses. Markets were clearly geographically demarcated at that time, and retailers in Trondheim had makes of other brands than the retailers in Oslo and Bergen.

Starting already in the 1890, sourcing of suitable sawn wood early became an international business. For competitive racing skis, lightweight but tough wood such as Hickory were needed, and the ski factories in northern Europe had to import that from the US, which had the only abundant supply of hickory. During the 1930s, this import increased sharply. In 1927, Hickory for 20 000 pair of skis were imported to Norway from the US (preferably from the warm and sunny southeast states; Louisiana hickory were assumed the very best), and ten years later the amount of wood was equivalent to 75 000 pair of skis.

Before WWII it was common at least in Scandinavia that the ski factories also had an adjacent store right next to the workshop. That allowed them to interact and sell directly to the end-users, which often were from the neighborhood. Having a store in the building allowed the factory to cut the middlemen costs and also to get instant feedback from customers; and for the people living near a factory, factory stores allowed them to buy second grade and surplus production cheaply.

4.2. A ski industry network of the 1950s

Smallness and geographical myopia was also the general trademarks of manufacturing in the first half of the 20th century and still were so to a large extend in the 1950s, but ski manufacturing in Scandinavia took different turns in Sweden and Norway after WWII. In common, most Scandinavian ski factories stopped making Alpine skis after the war when global Alpine ski production experienced at technological shift from wooden skis to metal and plastics in the 1950s and 1960s; leaving that market to the central Europeans, especially the Austrians, and the Swiss as well as the company *Rossignol* of France.

In Sweden there was a severe decline in the number of ski factories between the 1930s to the 1950s. While there were in the range of 50 ski factories before the war, less than 15 were still in business in 1953, and in 1960 less than 10. Nevertheless, the total production in 1939 was 315 000 pairs of skis and rose throughout the 1950s to 342 000 in 1960 before peaking around 1970-71 at over 500 000 despite the fact that Sweden by then only had three large manufacturers left. The corresponding Norway numbers are different. They continued longer to run small-scale, but the total production in Norway was considerably smaller than Sweden's: about 100 000 in 1950, 173 000 in 1956, and did not exceeded 200 000 until 1961 when still at least 28 sizeable factories contributed. In the mid-1950s, *AB Tobo Bruk* in Sweden claimed to have the largest ski factory in the world (2000 sq. m.), while local joineries that produced less than 1 000 pair annually as a side product to furniture still existed in both Sweden and Norway.

In terms of markets and market coverage manufacturing of skis were national up to the 1950s and even later. For example, in Sweden only 2-5% of the total production was exported in the 1950s; and less than 1% of all skis sold were imported. Another indicator of the national myopia (and perhaps of national vanity) is that all national team members of Sweden and Norway used domestic ski brands.

Also the two Scandinavian retail markets for sporting goods in the late 1950s was characterized by national myopia, myriads of store's served local needs based on smallness. In Sweden, no single player dominated the retailing set and no organized store chains existed, although store design variation was limited. The total number of manufacturers and retailers of sporting goods in Sweden around 1960 are unknown. However, it is known that Adidas in the 1960s delivered goods to around 20 different retailers in a limited residential area of some 5 000 inhabitants. Assuming that this per capita store ratio was somewhat representative for the whole country, Sweden in the 1960s would have had between 18 000 and 27 000 retailers of sporting goods including bike stores, as well as department stores, country stores and other (generally small) generalist retailers selling skis, bikes and other sporting goods. The majority of sport retailers were small generalist outlets, selling not just goods for sport and recreational activities, but also lawnmowers, fishing gear, fireworks, chainsaws, working tools, paint, toys, etc. For many of these country stores, repairing and servicing skis as well as assembling bikes and other custom goods were as important as the sale of industrially produced ready-to-sell products. As much as 50% of the turnover, or even more, may have been repair services in representative stores of the 1950s in Sweden.

Still, in bigger Scandinavian cities, some business pioneers had in the decades after WWII established full-range stores primarily oriented towards sporting goods. These pioneers were often ex-sport figures who wanted to exploit a second career built on the fame of the former. Successful athletes were not always successful entrepreneurs, and, in the 1950s and 1960s, they were hit by hard competition from the department stores that grow substantially in Sweden at that time. Moreover, not an insignificant number of stores opened during the 1950s that were satellite stores of larger manufacturers. For example, *Monark*, a Swedish bicycle manufacturer that at that time also manufactured skis, scooters, radios, televisions and more, established stores across Sweden with local merchants where the local

merchant provided a venue and staff, etc., while the factory owned the inventories and paid commissions on sales.

Especially for the small and local Norwegian ski factories, the local meant a lot still in the 1950s. Besides running an adjacent factory store, the owners (usually a local family) were part of the local community. The forest owners that accounted for a vital part of the material supply were situated locally, and last but not least the local customers constituted an essential market. A typical Norwegian ski factory in the 1950s shipped skis to the local stores, stores in the rest of the country and stores abroad differently. Most small Norwegian manufacturers did not even have nation-wide distribution, but were very much local or regional. This applied to a lesser degree also to Swedish factories of that time. While the locals often was handled directly without intermediaries, the rest of the country could be served through up to four intermediates; factory agents taking up orders from multi-brand wholesale businesses that in turn hired representatives and agents to consult the individual store. With hundreds, perhaps thousands, retailers who were not organized in buying groups, the roles of both producers and intermediaries of those days where different from modern ones. In addition, since it was impossible for one intermediate to regularly visit every store that sold the goods, they had to sell to an array of middlemen.

The small share of ski production that were exported from the Scandinavian ski factories, were often exported via export intermediates who operated in a business-to-business setting with importing firms abroad that took title to the goods before selling it either directly to stores via sales agents or through wholesale firms. Firms specializing in export operations were formed in Norway already in the 1920s, and at least two such significant firms branded the exported skis with their own label. Hence, skis from the same Norwegian factory had different brands domestically and when exported.

Moreover, the data shows that several other defunct ski brands from the wooden ski era did not belong to a particular ski factory. In Norway (as well as in the United States) larger significant retailers (such as *Gresvig* of Oslo) had its own private ski label: special make-ups manufactured in one or several factories. This is an early example of private label house brands in the ski industry, but also a testament to that there existed larger retailers that were more important customers to the factories. In the particular Gresvig case, Gresvig bought a ski factory in the 1920s and was then a key financier who made it possible for the manufacturer of the *Splitkein ski*, the first patented laminate ski, to expand beyond the Oslo area to become a bestseller through licensed production in a many countries including Sweden, US, France and Italy.

The network as of 1950s is depicted in Figure 1.