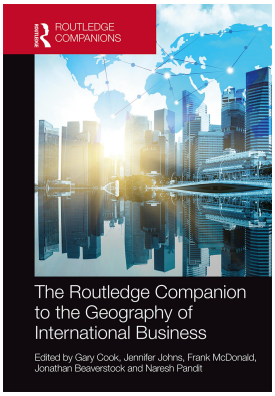

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Networks and alliances

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3
NETWORKS AND ALLIANCES

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> At the beginning of this century it is all but impossible to quickly review and categorize all of the relevant literature on alliances and networks
>
> – *Hagedoorn and Osborn (2002, p. 518)*

Introduction

Since the mid-1980s the organization of firms and the underpinnings of competitive advantage have undergone a significant change with the flourishing of interfirm cooperation. For many firms, cooperation with other companies is now indispensable to strategic success (Contractor & Lorange, 2002b). More generally, Parkhe, Wasserman and Ralston (2006, p. 560) claim 'Of all the phenomena that have gripped the business world in recent years, few match the impact of networks'. Scholars from multiple fields have shown increasing interest in various aspects of networks and alliances (N&As), resulting in proliferation of research on N&As in the past several decades. There have been numerous books, journal papers and book chapters that have reported new work and reviewed extant work in the N&A area. For instance, there are collections of papers published by Contractor and Lorange (1988, 2002a), Reuer (2004) and Shenkar and Reuer (2006); review papers by Barringer and Harrison (2000), Borgatti and Foster (2003), Provan, Fish and Sydow (2007), Jack (2010), Kilduff and Brass (2010), Parmigiani and Rivera-Santos (2011), Di Guardo and Harrigan (2012), Beamish and Lupton (2016), Gomes, Barnes and Mahmood (2016); and book chapters summarizing key aspects, for example, Inkpen (2001a, 2001b) and Faulkner (2003).

Most alliance studies have focused on questions such as the motivation for alliance formation, the selection of partners, the management of alliances, the determinants of the governance structure or mode of alliance, learning and dynamics in alliances, and the performance of alliances (Lavie, 2006). In recent years the study of alliance networks has gained popularity. Although prior research has significantly improved understanding of N&A activity, it 'has led to a veritable jungle of work' (Parmigiani & Rivera-Santos, 2011, p. 1109) such that the sheer volume of research makes it extremely difficult to consolidate and integrate extant knowledge in the area with its collective impact difficult to appreciate (Shi, Sun & Prescott, 2011). Given this difficulty, this chapter does not attempt to provide a comprehensive review of the

extant literature on N&A. Rather, there is a selective examination of research principally from the business/management literature and to an extent from the geography literature, given the increased interest in N&As by geography scholars and the focus of this book. With this in mind the chapter is set out as follows. After an attempt to set out the definitions of alliances, there follows a discussion on data availability and trends in alliances. The next section considers briefly the dominant theoretical perspectives adopted to investigate alliances. This serves as a background to a consideration of a recently growing interest in portfolio alliance management, which has become an important strategic issue (Hoffmann, 2007). Although considered critical to the management of the MNE, it remains underdeveloped in most firms (Goerzen, 2005). This is followed by an examination of global production networks, largely drawn from the geography literature. Conclusions are in the final section.

Definitions

Parmigiani and Rivera-Santos (2011, p. 116) note that definitions of alliances vary from narrow to so broad that almost any interorganizational relationship could be considered an 'alliance'. In the reviews they identified, definitions range from 'any agreement between two (or more) organizations to jointly carry out a task involving more interactions than a one-time arm's-length contract' (Rivera-Santos & Inkpen, 2009, p. 199) to 'any inter-firm cooperation that falls between the extremes of discrete, short-term contracts, and the complete merger of two or more organizations' (Contractor & Lorange, 2002b, p. 4). Essentially, an interfirm alliance is a voluntary arrangement between firms that exchange or share resources and that engage in the co-development or provision of products, services, or technologies (Gulati, 1998). Joint ventures, minority equity stake, coproduction, and joint research and development are just some forms of alliances. The distinguishing feature of joint ventures, as a subset of alliances, is that they involve the creation of a jointly owned separate entity by the partners (Contractor & Lorange, 2002b). Das and Teng (1998) note that the key features setting alliances apart from other single-firm strategies are the element of interfirm cooperation and the uncertainty about the presence of such desired cooperation, which has been termed 'relational risk'. Das and Teng (1998, p. 492) define partner cooperation as the willingness of a partner firm to pursue mutually compatible interests in the alliance rather than act opportunistically.

Although interorganizational networks are a commonly understood phenomenon, 'it is not always clear exactly what organizational scholars are talking about when they use the term' (Provan, Fish & Sydow, 2007, p. 480). In part this is because terms other than 'network' are often used, for example, partnerships, interorganizational relationships, coalitions, cooperative arrangements, or collaborative agreements. Borgatti & Foster (2003) provide some terminology, identifying a network as a set of actors (or 'nodes') connected by a set of ties, which connect pairs of actors. When attention is on a single focal actor, that actor is called 'ego'; the set of nodes that ego has ties with is called 'alters'. Together ego, alters, and all ties among them is called an ego-network. A network may therefore be defined as 'a set of nodes and the set of ties representing some relationship, or lack of relationship, between the nodes' (Brass, Galaskiewicz, Greve, & Tsai (2004, p. 795). Inkpen (2001a, p. 420) notes that although the ultimate definition of networks depends on arbitrary identification of boundaries, from an alliance perspective, networks can be defined as 'a set of organizations linked by a set of social and business relationships that create strategic interfirm opportunities for the organizations'. The key attribute of networks is 'the existence of multiple, intertwined partners with a many-to-many structure' (Parmigiani & Rivera-Santos, 2011, p. 1119). The essence is that the firm, from its perspective, lies at the centre of an extended network of organizations, bound by a variety of ties, from tight

equity relationships to loose informal arrangements. Network models suggest that functional firm boundaries are 'fuzzy', or vague and somewhat uncertain (Tallman, 2003). Networks differ from alliances in that they generally involve a lower level of interdependence between the members, and the learning factor is rarely so important (Faulkner, 2003, p. 141).

Data availability and trends

Since the mid-1980s researchers have observed the proliferation and increasing importance of alliances (Hagedoorn, 1996, 2002; Gulati, 1998; Gulati, Nohria & Zaheer, 2000). However, a major problem with attempting to discern trends in alliance formation is that 'there is no omniscient database of alliances' (Schilling, 2009, p. 237). Firms are not required to report their alliances to any governing body, and although many firms make public announcements, whether and how these announcements are reported is highly variable. Also, the range of languages that may be used to announce an alliance means it is very difficult to search news retrieval sources to construct a comprehensive list of alliance announcements (Schilling, 2009). The implication is that the major databases used to analyse alliance formation cannot be considered to contain the population of alliances but are at best samples. Nevertheless, Schilling's examination of the available databases, including three replication studies, suggest that the databases are a valuable, and generally reliable, resource for the study of interorganizational relationships, providing the research design takes the sample limitations into account.

Several studies have examined the trend and distribution of alliances (for example, Hagedoorn, 2002; Moskalev & Swensen, 2007; Bojanowski, Corten & Westbrock, 2012), with all reporting an increase in alliance formation through the 1980s and early 1990s, but then observing a decline from the mid-1990s. Schilling (2009), for instance, in considering the extent to which the MERIT-CATI database, the CORE database, and the SDC database agree about alliance activity over the 1990–2005 time period, finds that all of the alliance databases report a steady increase in the number of alliances, reaching a significant peak in activity in 1995, followed by declines in activity from 1995 to 2000. The observed reduced propensity of MNEs to use Joint Ventures was investigated by Desai, Foley and Hines (2004) using the Bureau of Economic Analysis (BEA) annual survey of US direct investment abroad from 1982 through 1997. They maintain that the decline in the use of shared ownership is consistent with an increased preference for control by MNE parents that reflects growing differences between the costs of operating overseas operations as joint ventures and the costs of administering foreign activities as wholly owned subsidiaries. Desai et al. (2004) identify three sources of the rising coordination costs of shared ownership. First, tax-efficient structuring of worldwide operations is made more difficult by tensions between joint venture partners concerned with local profits and multinational parents concerned with global profits. Second, the ability to transfer intellectual property is limited by fear of its appropriation by local partners. Third, the desire to structure worldwide production in a decentralized way with greater intrafirm trade creates the room for more conflict with local partners who have competing goals. Desai et al. (2004) conclude that given MNEs increasingly rely on cost savings and market opportunities created by worldwide tax planning, technology transfer, and production decentralization, they face growing incentives to avoid sharing ownership of their foreign affiliates and to increase use of 100% ownership.

The suggestion that international alliances have been replaced by cross-border mergers and foreign direct investments is contested by Hagedoorn (2002), who proposes an alternative explanation. He argues that the share of international R&D partnerships has declined in the United States more as a result of domestic developments rather than changes in the international environment. Over the 1980s and 1990s there was a strong growth in the US biotech and

information technology industries, associated with the establishment of many new businesses. According to Hagedoorn (2002), the diminishing importance of international collaboration is explained by the availability of attractive local partners, rather than a tendency to avoid foreign alliance partners.

Theoretical perspectives

Researchers have examined the alliance phenomenon through various theoretical perspectives, including, but not limited to, transaction cost economics (TCE) (Hennart, 1988), game theory (Parkhe, 1993), bargaining theory (Yan & Gray, 1994), resource dependence theory (Pfeffer & Salancik, 1978), resource-based view (Das & Teng, 2000), and strategic behaviour theory (Glaister & Buckley, 1996). As Hagedoorn and Osborn (2002, p. 529) observe, one perspective is not clearly dominant over another: 'They are all partially correct and incorrect'. The following sub-sections briefly outline some key theoretical perspectives.

Transaction cost economics

TCE suggests that firms act to minimize the sum of production and transaction costs. Alliances are formed as an efficient response to conditions where transactions cannot be easily conducted through market contracts, but the transaction costs of an alliance are not so high as to mandate internal organization (Williamson, 1991; Geyskens, Steenkamp & Kumar, 2006). Beamish and Lupton (2016) point out that in research on cooperative strategies TCE has been used in two general ways: in studying the choice between different modes of foreign direct investment, and in minimizing transaction costs within a particular agreement. Under conditions where transaction costs are high, firms tend to prefer a higher degree of control given by joint ventures, whereas market-based contractual agreements are more likely where transaction costs are low. Further, the minimization of transaction costs is an important consideration in partner selection. Partners' knowledge of local markets and institutional environments reduces the cost of market mechanisms, and hence impacts a foreign firm's choice of local partner. In summary, alliances are formed when it is more efficient for a firm to conduct an activity with a partner than either on its own or through the market. The focus is on creating an appropriate governance structure, obtaining complementary resources, and aligning incentives among partners (Parmigiani & Rivera-Santos, 2011).

Resource-based view

The resource-based view (RBV) of the firm argues that differential firm performance is fundamentally due to firm heterogeneity (Wernerfelt, 1984; Barney, 1991). Firms that are able to accumulate resources and capabilities that are rare, valuable, non-substitutable, and difficult to imitate will achieve a competitive advantage over competing firms (Rumelt, 1984; Dierickx & Cool, 1989; Barney, 1991). Thus, extant RBV theory views the firm as the primary unit of analysis. However, as noted by Dyer and Singh (1998), a firm's critical resources may span firm boundaries and may be embedded in interfirm routines and processes. Where partners bring distinctive resources to the alliance, they may be combined resulting in a synergistic effect, such that the combined resources are more valuable, rare, and difficult to imitate than they were before they were combined. Consequently, these alliances produce stronger competitive positions than those achievable by the firms operating individually. This indicates that firms who combine resources in unique ways may realize an advantage over competing firms who are

unable or unwilling to do so (Dyer & Singh, 1998). Complementarity amongst resources is thus a significant driver of partner selection and alliance performance.

Learning

Firms form alliances with the specific intention of acquiring new knowledge and know-how. Various scholars have argued that interorganizational learning is critical to competitive success, noting that organizations often learn by collaborating with other organizations (Levinson & Asahi, 1996; Powell, Koput & Smith-Doerr, 1996). This implies that firms that are unable to create (or position themselves in) learning networks are at a competitive disadvantage (Powell et al., 1996). Consequently, a firm's alliance partners are, in many cases, the most important source of new ideas and information that result in performance-enhancing technology and innovations. Thus, alliance partners can generate rents by developing superior interfirm knowledge-sharing routines (Dyer & Singh, 1998). Alliance partners that are particularly effective at transferring know-how, especially tacit knowledge (which cannot be efficiently transferred in the marketplace, but its transfer between firms requires close cooperation in alliances), are likely to outperform competitors who are not. Jiang and Li (2008) show that collaborative forms of organization, such as international joint ventures, are superior knowledge transfer mechanisms compared to arm's-length (market) contracts, and that the associated learning translates into better financial performance. A partner's absorptive capacity (Cohen & Levinthal, 1990), that is the ability to recognize and assimilate valuable knowledge from a particular alliance partner, is crucial to interorganizational learning. This capacity necessitates employing a set of interorganizational processes that allows partner firms to identify valuable know-how and then transfer it across organizational boundaries.

Social network theories

Networks as a unit of analysis have become increasingly important in understanding the value creation and competitive advantage of firms. Maximizing the value of participating in alliances requires managers to assess not just each two-party alliance, but multiple ties in a network of innovation and learning (Ahuja, 2000). Social network theories cover a wide range of theoretical perspectives that focus on the analysis of patterns of relationships among interacting social actors. The fundamental unit of analysis is the network, which consists of the collection of actors and their connecting ties (Lavie, 2006). This literature is critical of perspectives that explain firm strategies and performance on the basis of independent profit-seeking behaviour in a resource-based or competition-oriented environment (Granovetter, 1985; Nohria, 1992; Gulati, 1995). Instead, social network researchers analyse interfirm relationship structures and examine the impact of network-level cooperation, communication, learning, and imitation on a firm's actions and performance (Lavie, 2006).

Agency theory

Reuer and Ragozzino (2006) offer a contrarian view of alliance formation. They argue that if joint ventures offer managers benefits which they value more than do shareholders, this encourages managers to develop joint venture portfolios. Consequently, part of the growth in firms' alliance portfolios may be accounted for by incentive misalignments owing to the separation of ownership and control in organizations. Further, the motivations usually given for inter-firm collaboration can be viewed from the perspective of the hazards emphasized by agency theory.

For example, learning views of alliances, as noted earlier, propose that collaboration provides rapid access to technologies or skills of other firms. However, Reuer and Ragozzino (2006) argue that they also can be undertaken for reasons of competitive avoidance or defensiveness, hence failing to generate competitive advantages for the firm. One argument for joint ventures is that they enable firms to reduce risk while facilitating growth opportunities. However, as Reuer and Ragozzino (2006) point out, the finance literature customarily emphasizes that shareholders are generally able to diversify their investment risks at lower transaction costs than the firm through portfolio investments. Reuer and Ragozzino (2006) also note several features of joint ventures and their resource allocation and monitoring processes which suggest that agency problems may have a bearing on firms' joint venture portfolios. For instance, joint ventures tend to be relatively small in size, so a firm with a given amount to invest can achieve a higher level of diversification and risk reduction through multiple joint venture investments than through a single acquisition. Further, joint ventures may not receive the due diligence and ongoing scrutiny expected with a large acquisition. While agency theory provides a contrarian view, this does not deny the possible benefits of alliances, however. Reuer and Ragozzino (2006) conclude that it does caution against imputing positive organizational payoffs or motives to alliance investments.

Alliance portfolios

Increasingly, researchers are recognizing that firms engage in multiple alliances, leading to alliance portfolios that can vary by number, type, and partners (Wassmer, 2010). Hagedoorn and Osborn (2002) make the point that with the vast number of partnerships, it would be difficult to assume that each one was 'strategic' or motivated by the firm's specific strategy. 'Instead of an alliance being strategic, it is the establishment of a portfolio of innovative alliances that is strategic' (Hagedoorn & Osborn, 2002, p. 532). Beamish and Lupton (2016) contend that researchers could gain a clearer understanding of the benefits, drawbacks, and uses of different cooperative arrangements by relaxing the common assumption that each represents a discrete investment choice. They argue it is likely that MNEs make multiple investments in a country or region as a suite. However, researchers tend to assume that the choice in locating a particular investment is discrete and do not consider the full spectrum of other investments the firm has made or is planning. Consequently, a subunit portfolio perspective could provide a more precise and accurate understanding of how managers make these decisions. Further, by examining the relationship between organizational, geographic, and 'spatial' diversity, a better understanding of how the MNE's (planned) portfolio of alliances and international joint ventures impacts location choice would be gained.

Contrasting with networks, the emphasis of alliance portfolios is on the focal organization and how it manages all of these one-to-one relationships simultaneously (Parmigiani & Rivera-Santos, 2011). Most previous alliance research has concentrated on the management problems associated with a dyadic relationship, neglecting the consequences where dyads are often embedded in an interorganizational network encompassing many different interorganizational relationships. Further, although numerous studies have explored the impact of strategic alliances on a firm's performance, the focus of prior research has been primarily limited to activity-based motivations, and there has been little research that addresses the impact of a firm's internal strategic orientation on its management of large numbers of external relationships (Vapola, Paukku & Gabrielsson, 2010).

Kale and Singh (2009, p. 57) observe that while each individual alliance is important, a firm can gain additional advantages by considering its entire set of alliances as one portfolio,

and managing it as such. They contend that firms need to learn how to manage their alliance portfolio as a whole, which they term 'alliance portfolio capability'. This leads to a number of new issues. A firm needs to know how to configure its alliance portfolio along several dimensions (Hoffmann, 2007). First, it must assess the extent to which its portfolio is complete, such that collectively all of its alliances meet its strategic needs. Second, firms must guard against competition that might arise between individual alliances in the portfolio, which would be the case should a firm undertake more than one alliance for the same purpose. Where one alliance rivals another alliance in the portfolio, this can lead to significant adversities that might ultimately outweigh the benefits. Third, some alliances in a firm's portfolio may actually complement, rather than compete with each other, such that the benefits they offer are extra-additive in nature. Kale and Singh (2009) maintain that alliance portfolio capability comprises multiple dimensions, including the skills to configure an alliance portfolio (i.e. to create a set of complete, noncompetitive, and complementary alliances), to foster and maintain trust across different alliance partners, to resolve conflicts between alliances, to coordinate strategies and operations across alliances, to create routines to share operational know-how across individual alliances, to monitor the extra additive benefits (and costs) that arise due to interaction between different individual alliances in the portfolio, and so on.

Alliance portfolio configuration is about the content of alliance portfolios and its arrangement. Wassmer (2010) notes that alliance portfolio configuration is a complex concept comprising multiple dimensions including: (a) a size dimension determined by characteristics such as the number of alliances and partners; (b) a structural dimension constituted by characteristics such as breadth, density, and the level of redundancy (alliances are redundant if they provide access to the same information and resources) within the portfolio; (c) a relational dimension made up of characteristics such as the tie strength of individual alliances in the portfolio; and (d) a partner dimension focusing on certain partner-related characteristics. Additional complexity is added to the conceptualization of alliance portfolio configuration by the fact that these four configuration dimensions span across multiple levels of analysis. Although the size-related and structural characteristics of alliance portfolios are on the alliance portfolio level of analysis, the relational dimension is on the individual alliance level of analysis, and the partner dimension is on the partner firm level of analysis.

Hoffmann (2005) identified four tasks of multi-alliance management that are necessary for professional alliance portfolio management:

(1) Developing and implementing a portfolio strategy, i.e. a main strategic direction for all alliances in a particular business unit (alliance strategy) and general rules for managing all the alliances of the entire company (alliance policy).
(2) Portfolio monitoring, i.e. monitoring and controlling the contribution of the alliance portfolio to implement the business strategies (monitoring the alliance strategy) and the corporate strategy (monitoring the alliance policy).
(3) Portfolio co-ordination to utilize synergies and avoid conflicts among alliances.
(4) Institutionalizing multi-alliance management, i.e. establishing an alliance management system to support the other tasks of multi-alliance management.

In later work, Hoffmann (2007) examined portfolio strategy in detail. Empirical evidence shows that in a multi-business firm, the strategic alignment between company strategy and its alliance activities is mainly achieved at the business level, which leads Hoffmann (2007) to focus on business-level alliance portfolio strategy, whose purpose is to strategically align all alliances of a business unit with the business strategy. Alliance strategies, which are derived from the business

strategy, thereby determine the goals of all alliances of the business unit and the configuration of the business alliance portfolio.

Hoffmann (2007) argues that alliances can act as buffers, which help the focal firm overcome the problem of environmental uncertainty. Consequently, strong inducement to form alliances comes from rapid and unpredictable change of the firm's environment and the accompanying high strategic uncertainty. Opportunities to establish new alliances depends on the firm's position in the interorganizational field and its prior interorganizational relationships as well as on its attractiveness to other firms because of its own resource endowment. The choice of an alliance strategy – and thus the configuration of the alliance portfolio – is therefore contingent on the shaping potential of the focal company, i.e. its resource strength, and on the strategic uncertainty it faces. For example, high strategic uncertainty fosters exploration strategies through alliances which can be used either to actively shape the environment according to the company's business strategy or to adapt the business development to the unfolding environmental changes. With less environmental uncertainty firms prefer exploitation strategies that deepen and exploit the resource base efficiently, which can be supported by alliances that stabilize the business environment and leverage the built-up resources (Hoffmann, 2007).

Hoffmann (2007) further argues that the characteristics of the particular alliance portfolio differ, such that when firms pursue an adapting strategy (reactively adapting to the changing environment), the alliance portfolio is characterized by a large number of alliances with high dispersion and weak linkage intensity as well as low redundancy. In contrast when firms pursue a shaping strategy (actively shaping the environmental development), the alliance portfolio is characterized by a small number of alliances with low dispersion and strong linkage intensity as well as high redundancy. Finally, when firms pursue a stabilizing strategy (stabilizing the environment in order to avoid organizational change), the alliance portfolio is characterized by a small number of alliances with low dispersion and strong linkage intensity as well as high redundancy. Hoffman's conjectures are supported by longitudinal data gathered to analyse the course of development of the Siemens alliance portfolios in two business units. Hoffmann (2007) stresses, however, that there is not a unidirectional relationship between shaping potential (resource strength) and strategic uncertainty as independent variables, and alliance strategy as a dependent variable. This is because the development of the resource endowment of a business unit and the strategic uncertainty it faces are also affected by the outcome of the firm's alliance activities. 'This interdependent relationship of contingency factors and alliance strategy represents how alliance portfolio, business strategy, resource endowment, and environmental changes coevolve' (Hoffmann, 2007, p. 834).

Wassmer (2010) argues that even though research such as that by Hoffmann (2007) has shown that alliance portfolio configuration is driven by business strategy and in many firms is not the outcome of a random process, the alliance portfolios of many firms are configured inefficiently and often represent nothing more than a random mix of strategic alliances with sometimes even conflicting demands. This may be explained by corporate governance issues such as agency hazards as discussed earlier (Reuer & Ragozzino, 2006).

Vapola et al. (2010) provide an international strategy perspective on alliance portfolio management. They note that while there is a wealth of literature both within the international strategy and the strategic alliance research streams, there is less research explicitly examining the link between the two. In order to address this gap, Vapola et al. (2010) consider how the MNE's choice of international strategy impacts its alliance portfolio management. Specifically, they extend the understanding of how the needs for local responsiveness and global integration, the Integration–Responsiveness (I–R) framework (Prahalad & Doz, 1987; Bartlett & Ghoshal, 1989), lead the MNE to choose different types of partners and different levels of partner

integration. Their case firms represent three different types of international strategies: global, multi-domestic, and transnational. The empirical findings classify three different approaches to alliance portfolio management: alliance portfolios with a high level of integration, high level of heterogeneity, or a combination of both. Vapola et al. (2010) report a pattern and a relationship between the MNE's international strategy and the management characteristics of the partnerships within its alliance portfolios. A global strategy was associated with highly integrated global alliance portfolio management: in order to achieve a high level of integration internally, the MNE requires a similarly high need for integration of its partners as reflected in its alliance portfolio management. A multi-domestic strategy was associated with local demand oriented heterogeneous alliance portfolio management: in order to achieve a high level of local responsiveness the MNE requires high levels of customization in order to serve the local needs, which implies drawing on diverse partners best suited to a particular role or location. A transnational strategy was associated with dual-focused transnational alliance portfolio management: a transnational strategic orientation favouring both local responsiveness and global integration, requires both a greater partner heterogeneity and integration level of partners within the alliance portfolio.

Vapola et al. (2010) conclude that the alliance portfolio management approaches of the case MNEs vary according to their international strategies. Further, the observed pattern suggests that the I–R axes are a powerful explanatory paradigm by which to explain the alliance portfolio management of the case MNEs. Finally, it should be noted that Vapola et al.'s (2010) findings are not necessarily in contrast with Hoffmann (2007) because, as discussed, he focuses on the alliance portfolio in a given business unit, whereas they address the MNE as a whole.

Another dominant research strand examines if and how alliance network positions influence firm performance. Koka and Prescott (2008) note that research has emphasized two distinct yet interrelated approaches to the structural design of alliance networks. In the first, firms pursue a strategy that enables them to attain a position of prominence in the network. Benefits to network prominence result from access to crucial information in the network due to the formation of multiple ties with many partners. Network prominence also enables the firm to influence its partners so that it may follow its own strategic agenda, thereby enhancing its own performance. In the second, firms pursue a strategy that enables them to occupy an entrepreneurial position in the network. Benefits from such a position arise because of non-redundant information, information diversity, and control of information flow, which in turn enhance firm performance. There is, however, little consistent empirical evidence that either of these two different approaches positively affect firm performance. In their own work Koka and Prescott (2008) instead of asking if network positions affect firm performance, focus on a more nuanced question: under what conditions are the two different types of network positions effective in enhancing firm performance? Their findings indicate that when environmental change occurs in an industry, firms that have developed an entrepreneurial position perform better, while firms that were prominent in the network suffer performance decline. However, when there is more rather than less radical change, both network positions are negatively related to performance. Further, their results indicate that the effect of particular network positions on firm performance changes over time. 'This finding suggests that over time, managers need to assess their alliance portfolios and make structural adjustments based on environmental and strategic contingencies' (Koka & Prescott, 2008, p. 640). Koka and Prescott (2008) further note that their contingency findings support the call for a strategic approach to the design and management of strategic alliances, as such managers have multiple alliance design choices.

Sarkar, Aulakh and Madhok (2009) consider a process view of alliance capabilities, noting that literature on alliance capabilities is characterized by an emphasis on structure, with little regard for the processual aspects of this capability. Learning curves vary greatly between

firms, which means that firms with similar accumulated experience can develop non-similar capabilities. Consequently, experience may be insufficient to guarantee superior collaborative performance without explicitly considering an organization's expertise with processes through which it designs and manages its alliance portfolio. Sarkar et al. (2009) identify a set of processes that constitute distinct dimensions of a firm's alliance portfolio management capability and relate these dimensions to value creation. Specifically, Sarkar et al. (2009, p. 586) delineate three organizational processes that constitute this capability: (1) partnering proactiveness: a proactive portfolio formation dimension reflecting organizational routines related to discovering and responding to promising partnering opportunities; (2) relational governance: a relational dimension related to the governance of the portfolio in a way that removes relational imperfections, such as feelings of mistrust and opportunism, and promote co-mingling of resources and capabilities across multiple partners; and (3) portfolio coordination: a coordination dimension which integrates strategies, activities, and knowledge flows across different alliance partners in the portfolio. Sarkar et al.'s (2009) findings suggest that each of the three constituent dimensions of this capability enhance the overall value of a firm's alliance portfolio. Moreover, after controlling for experiential (alliance experience), compositional (alliance diversity), and structural (dedicated alliance function) aspects, their results show that alliance portfolio capital uniquely contributes to the performance of a focal firm. Sarkar et al. (2009) further note that their study suggests that firms with similar structural positions in networks may accumulate heterogeneous levels of network capital due to variance in process capabilities, a finding that supports the work by Dyer and Hatch (2006).

Geographic perspectives on global production networks

Parkhe, Wasserman and Ralston (2006) note that network scholarship has a varied and impressive lineage, drawing on sociology, psychology, anthropology, and mathematics. Di Guardo and Harrigan (2012) also observe that several disciplines have contributed to the literature on alliances and alliance-related innovation processes, including economics, sociology, psychology, management, finance, accounting, law, and political science. Notably, this list of disciplines does not include geography and despite geographers' interest in networks and alliances, there is little recognition in the business/management literature on the contribution of geographers to research in this area. Nevertheless 'Global Production Networks (GPNs) have become a key focus of research in Economic Geography and related fields in recent years, focusing attention on the processes by which goods and services are produced, distributed and consumed' (MacKinnon, 2012, p. 227). Indeed, Glückler (2007, p. 620) notes, 'In Economic Geography, networks have celebrated an exceptional career over many years and they have coined terminology in theories of geographical clusters, global cities, international production systems and globalization'. Further, 'In Economic Geography the notion of the network has come to play a critical role in a range of debates' (Grabher, 2006, p. 163). It should be recognized, therefore, that geographers have made a significant contribution to the understanding of GPNs.

According to Coe, Dicken and Hess (2008a), the GPN framework was developed initially by researchers in Manchester and their collaborators (Henderson et al., 2002; Dicken & Henderson, 2003; Coe et al., 2004). They note that GPN analysis combines insights gained from global commodity chain (GCC) and global value chain (GVC) analysis with ideas derived from the actor-network theory (ANT) and the literature relating to varieties of capitalism/business systems. Hess and Yeung (2006) further note that the GPN framework in Economic Geography has a diverse set of historical precursors mostly from outside the discipline. They identify four influential antecedents: (1) the value chain framework in strategic management since the early

1980s; (2) the networks and embeddedness perspectives in economic and organizational sociology since the mid-1980s; (3) the actor-network analysis in science studies since the mid-1980s; and (4) the global commodity/value chain analysis in economic sociology and development studies since the mid-1990s.

Yeung (2009a) argues that the GPN approach seeks to provide a meso-level theorization of the geographical and organizational configuration of TNC activity:

> It does so, however, not by treating geography and location as an *exogenous* variable in the constitution of TNC activity. The GPN approach takes on board the TNC as the central orchestrator of GPNs and, yet, grounds it in complex geographies of cities, regions, and territories in today's global economy.
>
> *(Yeung, 2009a, p. 217)*

According to Glückler (2007) the relation between geography and networks can be theorized in (at least) two ways. First, proximity affects network formation. In Economic Geography the most widely used approach aims at assessing the latent effects of physical proximity/distance on economic processes. It should be recognized that geographical proximity is a matter of scale. Glückler (2007) points out that two firms may be co-located in the same office building but also in the same country. Second, place makes a difference, with place conceived of as a bundle of resources and opportunities with the additional characteristic of spatial contiguity. This localized resource profile comprises the structural aspects of relationships (e.g. social capital, structural holes) as well as the material, social, and institutional resources that these relationships access and transfer. Glückler (2007) stresses that the association between the region and the network is by no means unidirectional. Places not only constrain network formation but social interaction in networks also shapes its geography. For Glückler (2007, p. 622), 'Both views of geography matter in a concept of geographical network trajectory'.

Coe (2011, p. 389) considers that '[GPN] is perhaps best thought of as a heuristic framework for understanding the interconnectedness and uneven development of the global economy'. The GPN framework in Economic Geography thus deals with how actors in various GPNs are anchored in different places and multiple scales, from the national to the local scale (Hess & Yeung, 2006). The GPN 'aims to reveal the multi-actor and multi-scalar characteristics of transnational production systems through intersecting notions of power, value and embeddedness' (Coe et al., p. 267). 'By drawing distant actors both firms and non-firm institutions into a common analytical framework, the GPN analysis seeks to provide a dynamic conceptual apparatus that is sensitive to multiple scales and power relations' (Hess & Yeung, 2006, p. 1197). Coe, Dicken & Hess (2008b, p. 272) argue that there is a growing consensus that one of the most useful means to understanding the complexity of the global economy – especially its geographical complexity – is the concept of the network. For Coe et al. (2008b), GPNs incorporate all kinds of network configuration and attempt to encompass all relevant sets of actors and relationships. Moreover, production networks are a generic form of economic organization and are not a hybrid form between markets and hierarchies (as argued, for example, by Williamson, 1975, 1985).

For Coe et al. (2008b, p 274) a production network is:

> [t]he nexus of interconnected functions, operations and transactions through which a specific product or service is produced, distributed and consumed. A global production network is one whose interconnected nodes and links extend spatially across national boundaries and, in so doing, integrates parts of disparate national and subnational territories.

They go on to note that each stage of a production chain is embedded in a wide set of non-linear/horizontal relationships, such that the overall structure of a production network, may be viewed 'in terms of a series of intricate intersections between vertical and horizontal networks of varying degrees of size (length, width) and complexity' (Coe et al., 2008b, p. 275).

MacKinnon (2012, p. 228) notes that the GPN approach is based on three conceptual categories. First, value, i.e. the economic return or rent generated by the production of commodities for sale. 'Processes of value creation, enhancement and capture are central to GPN analysis' (Coe, 2011, p. 396). Second, power, defined primarily as a practice in terms of the capacity to exercise power. Third, embeddedness, of which three forms are identified: (1) societal embeddedness, emphasizing how actors are positioned within wider institutional and regulatory frameworks; (2) network embeddedness, which highlights the social and economic relationships in which a particular actor or firm participates; and (3) territorial embeddedness, which refers to the 'anchoring' of GPNs in different places. For instance, a GPN can become territorially embedded because of the lead firm's historic ties to a particular location, often its regions of origin, which may provide advantages such as government support, links with key suppliers, and access to labour skills.

For Coe et al. (2008b) a networked approach brings several advantages: it facilitates identification of a wide range of non-firm actors as constituent parts of the overall production system; it transcends the linear progression of the focal product/service to uncover the complex circulations of capital, knowledge and people that underlie the production of all goods and services; further, a multidimensional network perspective reveals the connections and synergies between processes of value creation in different production networks.

Coe et al. (2008b, p. 280) note, however, that GPNs are much more than economic phenomena, they are also fundamentally social, cultural, and political systems, which is why they argue that a critical cultural political economy of GPNs is needed. Although the economic processes of production, distribution, and consumption are at the core of a GPN, these processes are not simply driven by 'firms'. Rather, the operation and governance of GPNs involves, some or all of the other relevant actors – states, civil society organizations, labour and consumers – and these need to be incorporated into GPN analyses.

For instance, a criticism of the network approach is that it ignores consumption because it is overwhelmingly 'productionist'. Consequently, the consumer plays a marginal role – if any – with firms comprising the main unit of analysis. Coe et al. (2008b) point out that although it is really final consumption that has been neglected in much research, it is necessary to find ways of integrating the role of consumption more fully into GPN analysis. More broadly, they argue that GPNs are contested fields, made up of a diversity of actors and institutions, each with its own agenda. Achieving such agendas depends on the relative power configuration in specific situations. Importantly, Coe et al. (2008b) note that power relationships between GPN actors are not structurally determined and are not unidirectional, with each of the major sets of actors simultaneously involved in both cooperation/collaboration and in conflict/competition. MNEs in the same industry, for example, may be both fierce competitors and involved in a web of collaborative relationships.

In reviewing contemporary GPN research in Economic Geography, Hess and Yeung (2006) conclude that there is now a much better understanding of upgrading processes and their limits, with particular emphasis put on integrating local clusters into global value networks. An evolving literature is contextualizing global interfirm networks and value creation processes by incorporating the role of the state and other non-firm institutions as important agents of GPN in their analysis. Finally, more is now known about the embedded and path-dependent nature of GPN development and its spatialities.

A recent refinement of the GPN framework has made an analytical link between GPNs and regional development (a core issue for economic geographers since the 1980s) (Coe et al., 2004; Yeung, 2009a, 2009b). For Yeung (2009a) growth is no longer restricted to endogenous sources as previously stipulated in trade and growth theories, rather regions can plug into these global production systems that in turn sustain their growth efforts. The region is viewed as 'a porous territorial formation whose national boundaries are transcended by a broad range of network connections' (Coe et al., 2004, p. 469). While regional assets in the form of specific knowledge, skills, and expertise provide an important resource for regional development, they must be harnessed by regional institutions to 'complement the strategic needs of trans-local actors situated within global production networks' (Coe et al., 2004, p. 470). Coe et al. (2004, p. 469) conceptualize regional development 'as a dynamic outcome of the complex interaction between territorialized relational networks and global production networks within the context of changing regional governance structures'. From this perspective, regional development is a product of the strategic coupling (Yeung, 2009b) by which relational assets are matched to the strategic needs of lead firms in GPNs, with regional institutions playing a key role in this process. Coe et al. (2004) maintain that regional development will depend ultimately on the ability of this coupling to stimulate processes of value creation, enhancement, and capture. The strategic coupling process has three central characteristics: (i) it requires intentional and active intervention on the part of both institutions and inward investors to occur; (ii) it is a temporary coalition; and (iii) it transcends territorial boundaries (Yeung, 2009b; Coe, 2011, p. 391). MacKinnon (2012, p. 231) notes that recent contributions have started to examine the so-called 'dark side' of strategic coupling. This is associated with the tensions that arise from the differential strengths of key agents, particularly the often asymmetrical power relations between MNEs and local communities, associated with uneven value capture, labour exploitation, and social and class conflict. However, GPN research has tended to under-play these tensions.

Coe et al. (2008b) identify three gaps in virtually all studies of GPNs. The first relates to the circulation processes through which the nodes in the network are actually connected in a functional and physical sense. They argue that with the increased complexity and geographical extensiveness of production networks, and the need to coordinate and integrate operations as efficiently as possible, the logistics problem is central. However, the usual assumption is that the problem of moving materials, components, and finished products has been solved, so it is largely ignored.

The second gap concerns the treatment of the firm, which is usually treated as a black box. Virtually all of the attention in the GPN literature focuses upon interfirm relationships to the neglect of intra-firm relationships and of the ways in which the internal structures and relationships inside firms play a critical role in how GPNs operate and have an impact. For Coe et al. (2008b), opening up the black box of the firm would have important advantages. It would allow exploration of the way in which firms produce multiple responses to similar economic and competitive pressures, thereby avoiding the tendency for GPN analyses to assume that firms occupying similar positions in production networks will respond in a similar fashion. It would also help to explain how strategically proactive firms, despite the restraints prevailing in GPNs, can exploit the established power relationships and move into higher value-added activities.

The third gap concerns the failure of most of the GPN literature to connect the processes of production, distribution, and consumption to the natural environment. As is well known, all forms of production, distribution, and consumption place demands on the natural environment in terms of resource inputs to production and outputs in the form of pollution/waste. The result is the emergence of significant environmental stress. For Coe et al. (2008b), a GPN framework has the potential to be an insightful way of understanding such environmental issues, because it

can integrate what are often seen as separate sets of processes dealt with by different academic interests. Moreover, they argue that making an attempt to incorporate materials flows and balances into GPN analyses will enrich the explanatory capacity of those analyses.

Coe (2011) also notes other lacunae. A persistent criticism of GPN research is that it has underplayed the role of financial capital and the financial sector in shaping the configuration of global production systems. A remaining research challenge is to examine in detail the impact of financialization at the sectoral and corporate level on GPN structures and dynamics. Also, the GPN literature has had little to say regarding labour as an active component of the global economy, as distinct from a passive casualty of restructuring processes. Coe (2011, p. 393) sees this as a substantial paradox, 'given both the centrality of labour to all elements of GPNs and the growing body of work under the labour geography banner that asserts the (always geographical and variable) agency of workers'.

Conclusion

It is clear that a wide variety of research approaches and topics make up the study of networks and alliances. This chapter has attempted to provide a flavour of recent work in this area, particularly that relating to alliance portfolios and the concept of GPNs in the context of the geography literature. There is a substantial literature on networks and alliances that has been produced on the back of a tremendous research effort since the mid-1980s; however, work in the area remains somewhat disparate, with a lack of synthesis among different perspectives. It is interesting to note that while geography scholars have taken much from the business/management literature relating to networks and alliances, there has been little reciprocal insight derived from the geography literature by business and management scholars. There is thus an opportunity for greater learning by the latter group of scholars from broadening their perspectives on the relevant and significant informing literature.

Despite the substantial contribution to knowledge on networks and alliances, clearly more remains to be done when it is recognized that researchers have only a marginal understanding of whole networks. This is especially the case in the relatively recently examined but under-researched areas relating to the strategic development and management of alliance portfolios and in particular network governance, where further work would be beneficial. Also, measuring alliance performance remains problematic. Research will need to move beyond examining performance of inter-firm dyadic alliances to considering value creation and appropriation at the network level, where little is known about performance and success. Research methods in this area also pose a challenge; however, many scholars have called for an increased use of longitudinal studies, in order to follow developmental patterns in detail over a longer time, for instance, in order to understand the evolution of alliance strategies and alliance management capability (Hoffmann, 2005).

Geographers recognize that fulfilling the potential of a GPN framework is some way off. Coe et al. (2008b) call for an integrative perspective that combines the insights from political economy and cultural economy approaches to describe and explain the complexities and emergent properties of GPNs. This is echoed by Hess and Yeung (2006) who argue that the ontological challenge that GPN research faces lies in integrating both the material and the socio-cultural dimensions of GPN development. Further, it is recognized that the GPN framework suffers from a relatively underdeveloped methodological foundation, i.e. 'there is no explicitly articulated methodology for doing GPN research' (Hess & Yeung, 2006, p. 1201).

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