1. Strategic cluster coupling

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1.1 INTRODUCTION

Clusters have been analysed from several perspectives. Firstly, the oldest and arguably richest literature on clusters is about networks and agglomeration effects, stressing the competitive advantages of firms in clusters vis-à-vis firms that are not located in clusters (Delgado, 2018). This literature particularly stresses the advantages of spatial proximity for firms based in clusters. Secondly, the development of clusters through time has been a popular research topic in recent times and several terms, such as cluster evolution, cluster life cycles and cluster transformation, have been used in this context (Fornahl et al., 2015; MacGregor and Madsen, 2018). Thirdly, the importance of extra-regional dimensions for clusters have been emphasized in the seminal paper by Bathelt et al. (2004) on local buzz and global pipelines, as well as in several older articles about global–local cluster interactions, as has been shown by Belussi (2018). Fourthly, whereas previously the research focus has only been on permanent clusters, more recently, temporary clusters have been introduced in the literature (Henn and Bathelt, 2015). They form a connection between the local and the trans-local level and are suggested as opportunities for knowledge transfer and interregional learning during short-lived events. These events include business meetings, trade fairs, fieldtrips and conferences. Fifthly and finally, and related to the previous perspectives, as economic globalization has been moving on, increasingly the extra-regional links of clusters are studied. New perspectives and concepts emphasizing these links include district internationalization (Bellandi and Caloffi, 2008), transnational communities (Saxenian, 2006), as well as clusters in global value chains, global production networks and the related concept of strategic coupling (Coe et al., 2004; Mudambi et al., 2017; Ingstrup and Christensen, 2017; Turkina and Van Assche, 2018; Wolfe and Gertler, 2004). Based on the literature of global value and global commodity chains, global production networks can be regarded as an analytic tool to study globalization processes, particularly developed by the so-called Manchester School around Peter Dicken (Dicken, 2015; Coe, 2009). Strategic coupling is a concept that tries to place regional development

in global production networks, by referring to the matching processes between regional assets, on the one hand, and the needs of transnational corporations that steer the global production networks, on the other (Coe et al., 2004). Recently the main scholars in this field have extended the global production network framework and the strategic coupling from 1.0 to 2.0 versions (Coe and Yeung, 2015), to which I will pay attention in the course of this chapter.

Although the concept of strategic coupling has been developed to theorize regional development in times of globalization, in fact, much of the literature citing the concept is about cluster development. In most regional economies, we find several clusters. Some of them might be strongly affected by global production networks, others much less so. Therefore, in many cases, such as in Yang (2009), it is more appropriate to write about strategic cluster coupling than about strategic coupling and regional development. This conceptual chapter therefore redesigns the strategic coupling concept into a new concept, strategic cluster coupling. The focus of this chapter is deliberately on repositioning of clusters in global production networks, not on the narrower terms of cluster upgrading and downgrading along the value chain. The focus is on change, not only on up- and downgrading. For instance, with a different focus or orientation or also function, the position of the cluster in the global production network might have changed, although neither upgrading nor downgrading along the value chain might have taken place. The concept of strategic cluster coupling provides a research framework for analysing the relationships between cluster change in global production networks, on the one hand, and cluster policies needed to support this repositioning process, on the other. In sections 1.2 and 1.3, I first discuss the literature on global production networks and strategic coupling 1.0 and 2.0, respectively. In section 1.4, the concept of strategic cluster coupling is presented, and in section 1.5, conclusions are drawn, as well as research questions for future research will be posed.

1.2 GLOBAL PRODUCTION NETWORKS AND STRATEGIC COUPLING 1.0

Global production networks 1.0 is an approach developed by a group of economic geographers based at Manchester University in the early 2000s (Coe, 2009; Coe and Yeung, 2019). It is an approach that ‘seeks to reveal the multiactor and multiscalar characteristics of transnational production systems – and their developmental implications – through exploring the intersecting notions of power, value, and embeddedness’ (Coe, 2009, p. 556). According to Coe et al. (2004, p. 471), global production network can be defined as ‘the globally organised nexus of interconnected functions and operations by firms and non-firm institutions through which goods and services are produced and distributed’.

The main research focus has been on global production networks steered from transnational corporations based in industrialized countries, although recently emerging multinationals – that is, transnational corporations based in emerging economies, such as China – are becoming more prominent. Global production networks in different industries have been analysed, such as the car industry, telecommunication industry and retailing, as well as the clothing industry (Dicken, 2015). Since the focus has often been on specific industries, the step towards clusters is small, as often these industries are geographically concentrated in agglomerations of firms, research institutes and supporting institutions.

The concept of global production networks has several theoretical underpinnings. In addition to drawing from the global value chain approach, it draws from several other theoretical underpinnings, which include networks and embeddedness, actor-network theory and global commodities in development studies (Coe, 2009). There are, therefore, a number of significant differences from global value chains. First, the focus on networks and embeddedness implies that, in contrast to the global value chain approach, a broad group of actors (geographical agents) is analysed: not only transnational corporations, but also states (local, regional and national) and civil social organizations, as well as consumer organizations. Power relations and asymmetries play a key role in the analysis of global production networks. Secondly, geography is undertheorized in the global value chain approach. The global production network approach brings in geography more strongly. It analyses how actors in global production networks are anchored in different places and at multiple scales. In the global commodity chain approach, the impact of industry rather than geography (country of origin) on governance is more emphasized.

One main advantage of the global production network approach is that value creating, value capturing and value enhancing (upgrading) in a global production network can be analysed (Coe, 2009). Moreover, the points of intervention and resistance within the network, expressed for instance through the work of civil social organizations, can be identified. Cultural diversity and embeddedness affect power asymmetries and network configurations, which is not much dealt with in global value and global commodity chain approaches. Interestingly, the geography of non-firm actors (labour, consumers, civil society organizations and the state) potentially can differ from the geography of firm networks, which lead to spatial asymmetries. We can often observe a polycentric spatiality of global production networks versus more mono-territorial geographies of states and other non-firm actors. The global production network approach pays more attention to place-related situatedness, which affects the decisions to invest, reinvest or disinvest in specific locations. Cultural and institutional differences manifest themselves in a large group of actors, both firm and non-firm actors, which are emphasized in the

global production network perspective. However, these place-related differences should not be seen in a static way, as that would make it difficult to track cluster dynamics.

It is particularly due to the focus on embeddedness (societal, network and territorial embeddedness) that global production networks can be regarded as a geographical framework. Network embeddedness denotes the characteristics of the connectivity to firm and extra-firm actors in the production network. Territorial embeddedness grasps how global production networks anchor in places. Clusters are agglomerations that can play an important role in embedding and anchoring economic activities in global production networks in places. ‘This anchoring will reflect a firm’s dependence on the particular resources, labour markets, state policies, and so on, found in particular places’ (Coe and Yeung, 2015, p. 18).

Although the link to the regional level was not very strong at the beginning, the launching of strategic coupling as a concept linking local and regional economies to global production networks steered by transnational corporations changed that situation. According to Coe (2009, pp. 559–560): ‘when such a complementary effect exists between regions and GPNs, a coupling process will take place through which the advantages of regions interact with the strategic needs of actors in these GPNs’ (see also Coe et al., 2004). Advantages or assets which regions can offer include qualified labour, public or private technological knowledge and know-how, as well as financial aid schemes to support investments. Regional institutions include state agencies, industry associations and labour unions. Depending on the political-administrative systems, regional institutions have more or less autonomy to influence the regional assets through their policies and strategies. The assets that regions can offer and the policies with which they influence the assets are not static, which seems to be slightly in contrast to the above-mentioned embeddedness argument. These assets are in fact the outcome of the coupling processes between the needs of transnational corporations and the networks they steer, on the one hand, and assets available in regional economies, on the other. In general, the higher the specificity of regional assets, the greater the bargaining power is of regional institutions vis-à-vis transnational corporations. In the earlier versions, the concept has been launched as a general framework for studying regional development in times of globalization.

Over the years, there have also been critical voices (MacKinnon, 2013; Barnes and Christophers, 2018). According to this literature, the global production network approach and the related strategic coupling concept 1.0, due to their holistic and inclusive focus on networks, have ‘tended to under-play the tensions that arise from the differential powers of key agents’ (MacKinnon, 2012, p. 5; see also Dawley, 2011). Although already in earlier work Coe et al. (2004) had stressed the bargaining power of regions vis-à-vis transnational

corporations, Coe and Hess (2011) more recently confessed the ‘dark sides’ of strategic coupling. These include potential ruptures (strong changes because of sudden decisions of transnational corporations) and frictions (conflicts between transnational corporations and local firms and institutions) between global production networks and regions, such as disinvestment, the exit of foreign firms, labour exploitation and a clash of cultures, among others (see also MacKinnon, 2013). According to Phelps et al. (2017, p. 240): ‘[many] of the questions posed for GPN [global production network] theory by a dark side of regional development outcomes have been rather left to others to elaborate’. Moreover, in the conceptualization of strategic coupling there are naïve expectations that regional policy-makers and institutions create regional assets only for the sake of pleasing transnational corporations and global production networks. The latter might be the case in some regional economies that are highly embedded in global production networks. However, in most cases, regional assets are created mainly for endogenous small and medium-sized enterprises. There is, in fact, often no distinction between regional assets created for transnational corporations or global production networks and endogenous firms. In addition, the degree of specialization or diversification of a regional economy is also crucial. In diversified regional economies, one cannot expect regional policy-makers to prioritize one industry over another for investing in regional assets. This is particularly the case in large metropolitan areas.

1.3 GLOBAL PRODUCTION NETWORKS AND STRATEGIC COUPLING 2.0: A CRITICAL APPRAISAL

The global production network as an analytical framework (global production network 1.0) has recently been upgraded toward a dynamic theory (global production network 2.0), working with the conceptual categories of value, embeddedness, power and strategic coupling (Coe and Yeung, 2015). The theory aims to ‘explain why and how three competitive dynamics – optimizing cost–capability ratios, sustaining market development, and working with financial discipline – interact with firms and nonfirm actors ... to produce ... different actor-specific strategies for organizing global production networks’ (Yeung and Coe, 2015, p. 32). Global production networks 2.0 is defined as ‘an organizational arrangement, comprising interconnected economic and non-economic actors, coordinated by a global lead firm, and producing goods or services across multiple geographical locations for worldwide markets’ (Coe and Yeung, 2015, pp. 1–2). Coe and Yeung (2015) decided to upgrade the older version for the following reasons. Firstly, according to them, the older version offered too little on the causal mechanisms between power, value and embeddedness on the one hand, and the dynamic configuration of global

production networks, on the other. In other words, it was more an analytical framework than a theory with explanatory power. Secondly, the older version was an analytical framework for studying global production networks once they were formed, whereas the underlying capitalist dynamics influencing corporate strategies were insufficiently considered. In the 2.0 version, underlying capitalist dynamics consisting of costs, markets, finance and risks are therefore emphasized as the basis of strategies of transnational corporations which, in turn, lead to special value capture trajectories that influence (regional) development outcomes.

In addition to the upgrade of global production networks, Coe and Yeung (2015) also further develop the strategic coupling concept. They pay more attention to evolutionary elements of a firm's value capture position and what kind of trajectories it might follow and therefore also pay more attention to strategic coupling processes. Working with the options of recoupling and decoupling (see also MacKinnon, 2012), they develop three different kind of trajectories: relatively fixed ones, multi-directional ones or shifts between different kinds of global production networks.

They also conceptualize in much more detail than in the previous version the different ways of coupling between regional economies and global production networks (see also Yeung, 2015). They have refined the concept by distinguishing different modes of coupling, namely indigenous (in which regional actors have much autonomy and control), functional (in which they have some autonomy) and structural (with strong dependence on decisions made by external actors, often transnational corporations). These different modes are then combined with eight different regions, namely innovation hubs, global cities, international partnerships, offshore jurisdictions, logistic hubs, market regions, assembly platforms and commodity source regions (Coe and Yeung, 2015). With every concrete example they give of these different regions in combination with different modes of coupling, they mention concrete sectors. Therefore, instead of focusing on the whole urban or regional economy of Seoul, Baden-Württemberg or Silicon Valley, as examples of innovation hubs, they focus only on the electronics sector. In each case, they focus on the main sector involved in strategic coupling and global production networks. Therefore, the focus is more on sectors and clusters than on regional economies as a whole. In the 2.0 version of strategic coupling, they also conceptualize more about the different coupling mechanisms and identify three: coupling through industrial organization, through states and institutions, and through transnational communities (Saxenian, 2006). The dark sides of coupling with its wide range of potential ruptures and frictions get more attention, particularly in cases with a structural mode of coupling, such as the assembly platform in Penang in Malaysia. Under the surface of overall capturing of value, social conditions of workers might worsen. Coe and Yeung (2015) also

point to the fact that intra-regional social issues and inequalities concerning class, gender and ethnicity need more detailed analysis of impact of global production networks.

The challenge for policy-makers and regional institutions is to adapt fast enough, as strategic needs of transnational corporations, and the global production networks they steer, change faster than regional assets. Moreover, Coe and Yeung (2015) emphasize strategic coupling policies that are geared towards the specific geographical context in individual regions, as well as specific industrial structures. The latter can, again, be very much linked to cluster policies. Strategic coupling does not come automatically and is not always successful. It requires intentional and active intervention, it is time-space contingent and it transcends territorial boundaries, particularly in regions in centralized political-administrative systems. In addition, the quality of governance and institutions matter for successful strategic coupling. Overall, policy recommendations are very much beyond one-size-fits-all, and in line with the recommendations in favour of place-based regional policies (Barca et al., 2012).

On a critical note, the recent literature on strategic coupling is confusing, as H.W.C. Yeung (2015, 2016) uses the term in two different ways. Firstly, it is used in the sense of regional development, regional institutions and regional policy-makers and their leeway to affect global production networks via influencing regional assets, as has been pointed out above. Secondly, it is used as the strategic coupling between lead firms and their suppliers (see, for instance, H.W.C. Yeung, 2016). In the latter way, the regional level, regional institutions and regional economic development are hardly considered. Yang (2017) is one of the first empirical applications of global production network 2.0: she strongly focuses on strategic partners and suppliers, and firm strategies, but also on strategic coupling. Moreover, recently a special issue has been published in the *Journal of Economic Geography* with some early applications of global production networks 2.0 (Coe and Yeung, 2019).

In early reactions, the global production networks 2.0 has been criticized for several reasons (Scholvin et al., 2017; Kleibert, 2016). Firstly, according to some economic geographers it has moved too much to business economics, particularly by taking lead firms as the starting point of analysis, not non-economic actors (see Kleibert, 2016), and by stressing capitalist underlying dynamics (costs, risks, financial, market). Political and socio-economic context factors affecting economic developments are blended out too much (Scholvin et al., 2017, p. 117; Lim, 2018), and related to that, there is too little focus on the effects on uneven development (Werner, 2016, 2019). In a recent paper, Coe and Yeung (2019) admit that the global production networks concept is more about development in a region than development of a region, and more about a necessary than a sufficient tool to study uneven development.

Secondly, it is weakly embedded in theories and paradigms of economic geography. In their book, Coe and Yeung (2015) prominently ignore other paradigms and perspectives in economic geography, such as evolutionary and institutional economy geography. The only paradigms they refer to are relational economic geography and geographical political economy. According to Coe and Yeung (2015, p. 74), their work is embedded in geographical political economy. However, they neither define what they mean by it, nor do they cite its main advocates, such as Sheppard.

Thirdly, although developed by economic geographers, too little attention has been paid to the territorial configurations of production networks, their nodes being located in different kind of locations, such as in global cities, capital cities and rural areas, as well as in what Phelps (2017) coined interplaces. Breul et al. (2019), in particular, stress that gateway cities, such as Singapore, can play intermediary, filtering roles in global production networks, limiting the leeway for strategic coupling processes in other South-East Asian countries.

Fourthly, the theory of global production networks 2.0 has ignored other key concepts in economic geography touching upon the local–global interaction, such as global pipelines (and local buzz) and internationalization of industrial districts, and has only touched upon some others, such as transnational communities.

Fifthly, there has been a too-strong focus on Western transnational corporations. According to Aoyama (2016, p. 297), although ‘Some of these Global South locations have emerged as new centres of production (i.e., China)’, the ‘global production networks and global commodity chain literatures’ are ‘implicitly monocentric, with the decision-making power of global capitalism residing firmly in the Global North’.

Sixthly, because of the strong focus on transnational corporations as lead firms and their strategies, local and regional actors often get too little attention, leading to a problematic helicopter view on globalization. A counterexample would for instance be the role of ITRI in Taiwan positively affecting the rise of Taiwan’s information technology (IT) industry (Ernst, 2010).

Seventhly, more and more the adjective global in global production network can be questioned, as what we see in fact is an increasing relative importance of macro-regional production networks. Dicken (2015) repeatedly stresses the regionalization of production networks in his textbook, concerning different industries. This trend might be recently reinforced due to recent increasing protectionism. Moreover, Aoyama (2016) observes that intra-Asian trade is growing much faster than intercontinental trade.

More specifically, strategic coupling has been criticized. An increasing ambiguity can be observed concerning the geographical units of analysis concerning strategic coupling. In H.W.C. Yeung (2016), for instance, strategic

coupling drifts toward coupling between local and global firms, which is not the original meaning (see also Liu, 2017). In Horner (2014), the whole of India is taken to show the strategic coupling between ‘regional’ institutions and global production networks. In Yeung (2015), the central state at the national level (South Korea and Taiwan as developmental state) is emphasized in fostering the development of the semiconductor industry in the framework of strategic coupling. Lim (2019) recently also states that the existing conceptualization of strategic coupling downplays interregional competition. Moreover, G. Yeung (2016) raises issues concerning the operationalization of the concept for empirical research. Finally, it is strongly assumed that all regional economies are strongly embedded into global production networks and that local and regional policy-makers and institutional actors are able to identify and support specific regional assets relevant to lead firms and global production networks.

1.4 TOWARDS STRATEGIC CLUSTER COUPLING

Despite some critical issues related to strategic coupling, it is a concept that potentially can be used to analyse and explain the repositioning of clusters in global production networks. As will be shown in the following review, most of the existing empirical studies on strategic coupling focus on clusters rather than regional economies, the latter being the unit emphasized in the original concept (Coe et al., 2004).

Since Coe et al. coined strategic coupling in 2004, a rich empirical literature has been developed in economic geography working with the concept. Most of that literature deals with cases in China or other East and South-East Asian countries. Yang (2009) was one of the first studies comparing the foreign direct investment of personal computer companies from Taiwan investing in the Pearl River Delta (Dongguan) and the Yangtze River Delta (Suzhou) in China. She shows that differences in local development initiatives can strongly affect investment patterns coming from the same industry and country. Zhu and He (2016) provide another study touching upon strategic coupling in China, comparing two clusters – apparel in Ningbo and hardware in Yongkang – with only the former being embedded in global value chains. The case of Ningbo apparel shows that some companies go up (upgrade) without strong governmental support. Butollo (2015) shows in his study on the garment industry in the Pearl River Delta, China, in contrast, that local governments play an active and successful role in recoupling and upgrading processes despite rising production costs. In another study, Chou et al. (2011) provide evidence that in Wuxi, China, the semiconductor industry cluster has done well thanks to successful state-supported strategic coupling, not so much to international lead firms, but more to transnational Chinese technical communities. In another recent study, Gao et al. (2019) work with the strategic

coupling concept to analyse and explain the successful relocation and development of the Chongqing notebook computer cluster and the active role played by the Chongqing Municipal Government in this process. In yet another study on a cluster in China, Amdam et al. (2018) focus on Norwegian small and medium-sized multinational enterprises in the maritime cluster in the Greater Shanghai Region, and particularly emphasize how regional selection mechanisms affect coupling, recoupling and decoupling processes. Yang et al. (2009) describe geographically varied strategic coupling based on a study of three clusters in three different Taiwanese high-tech parks. Other empirical research in South-East Asia on strategic coupling include work done by Van Grunsven and Hutchinson (2016) on the electronics industry in Johor (Malaysia) and by Breul et al. (2019) on the oil and gas sector in Singapore, Vietnam and Indonesia. In addition, Indraprahasta et al. (2019) used the concept to analyse the industrial Bekasi District in Indonesia, and Kleibert (2014) used it to research the offshore sector in the Philippines.

In addition to a large number of studies on China and other Asian countries, work has been done on strategic coupling in other parts of the world. In Europe, Dawley et al. (2019) analysed the case of the Siemens offshore wind turbine plant in the Humber region of England from a strategic coupling perspective; and in Norway, both Nilsen (2019) and Steen and Underthun (2011) worked on strategic coupling and local industrial upgrading processes in the natural gas extraction and refining complex in Northern Norway. Moreover, in a study by Jacobs and Lagendijk (2014), strategic coupling is applied to investigate the development of the port of Rotterdam. MacKinnon (2013) carried out a critical study on the Pilbara mining region in Western Australia, a resource-based cluster in peripheral regions, which is an example of unbalanced structural coupling. It is also an example of development in a region (a particular, small group of actors benefit), rather than development of a region (a broad group of actors benefit). Finally, Sanz-Ibáñez and Clavé (2016) developed an application of strategic coupling in the tourist destination of central Costa Daurada, Catalonia, Spain.

Overall, however, most of the young and extending literature on strategic coupling is in fact about clusters specialized in different industries; mainly in emerging economies, such as China, but also in some industrialized countries. Moreover, as has been mentioned above, also in the new theoretical literature, empirical illustrations of the different types of strategic coupling clearly refer to specializations in sectors and clusters (see, for instance, Yeung, 2015). Therefore, in my view, it makes sense to conceptualize strategic cluster coupling as an important subcategory of strategic coupling and to tease out the commonalities and differences between the two.

Similar to the process of the broader strategic coupling (Coe et al., 2004), I define strategic cluster coupling as a process by which advantages and assets

of clusters in regions are coupled with the needs of lead firms and their global production networks (Figure 1.1). Although there is certainly some degree of overlap with strategic coupling in the broader regional development perspective, strategic cluster coupling differs from it concerning the following issues. Firstly, the focus is on slightly different actors. Whereas strategic coupling focuses on a broad group of actors, such as regional promotion agencies, or national ministries, strategic cluster coupling pays attention to cluster-specific actors, such as cluster support organizations, cluster managers and industry associations, at the regional but certainly also at the national level. Secondly, whereas strategic coupling focuses more on generic regional assets, such as skills, financial aid schemes and technology transfer (also called horizontal measures), strategic cluster coupling emphasizes cluster-specific assets, for instance specific skills, venture capital, social capital and research and development (R&D) related to the cluster (so-called vertical measures; Foray, 2015). Both cluster institutions and cluster-specific assets are embedded in and affected by larger geographical units, namely by regional and national institutions and by regional and national assets, respectively. They mutually affect each other in a co-evolutionary, multi-scalar way (Gong and Hassink, 2019). Moreover, regional and national institutions and regional and national assets, in turn, affect cluster-specific assets and thus coupling between cluster-specific assets and the needs of lead firms and their global production networks. Strategic cluster coupling processes therefore influence the repositioning of clusters in global production networks, which can consist of up- or downgrading processes, or the changing functions of the cluster in the global production network.

The degree of territorial embeddedness indicated by local linkages differs according to the function of the activities and linkages between local firms and lead firms. From a cluster and regional development perspective, bargaining processes with transnational corporations serve to territorially embed their global production network activities in the region where the cluster is located. The stronger the territorial embeddedness, which can also be strong because of large investments in capital-intensive production plants, the more likely that decoupling processes can be avoided, at least in the short term.

The different extensions developed over time concerning strategic coupling can also be used to analyse strategic cluster coupling. First, the evolutionary perspective by MacKinnon (2012) referring to decoupling and recoupling processes can also be used in analysing strategic cluster coupling processes. Secondly, related to the first point, the dark sides of strategic coupling with reference to rupture and frictions can also count for strategic cluster coupling (Coe and Hess, 2011). Thirdly, the different modes (for example, indigenous, functional and structural coupling) and types (for example, innovation hubs, logistics hubs, assembly platforms) of strategic coupling developed in the

Source: Based on Coe et al. (2004).

Figure 1.1 Strategic cluster coupling

framework of global production networks 2.0 can be used to study strategic cluster coupling as well (Coe and Yeung, 2015).

Strategic cluster coupling is both a strategy tool for local and national actors supporting clusters in a global production networks perspective, but also an analytical framework for analysing these processes from a critical academic perspective, also for instance taking into account the dark sides and paying attention to ruptures and decoupling processes.

1.5 CONCLUSIONS

As has been argued in this chapter, for a long time only agglomeration effects have been stressed as being important for fostering innovation and competitiveness of clusters. However, as economic globalization moves on, this literature has been criticized for neglecting extra-regional links. As has become clear in this chapter, global production networks and strategic coupling, and their recent extensions to 2.0, have been developed partly to compensate for this shortcoming (Coe et al., 2004; Coe and Yeung, 2015). Global production networks and strategic coupling point to the increasing importance of multi-scalar issues in regional development, but they will only be theories explaining the development of an entire regional economy in very seldom and specific cases, as in most cases only a part of the regional economy is embedded in a global production network in a very unambiguous way. In by far the majority of regions, firms are embedded in several different global production networks. Moreover, most regions consist of a mixture of local small and medium-sized enterprises, transnational corporation headquarters, as well as affiliates in several different industries (Dicken, 2015). Even Silicon Valley has both lead firms and transnational corporation affiliates. It is particularly some clusters within regional economies that are embedded in global production networks. In most cases, we find more than one cluster in a regional economy, and some of them will be more embedded in global production networks than others. Therefore tailor-made strategic cluster coupling for those clusters that are strongly embedded in global production networks makes more sense than a general coupling strategy for the whole regional economy.

As has become clear in this chapter, strategic cluster coupling as part of a broader strategic coupling is useful to analyse and understand both the position of clusters in global production networks as well as the policies needed to maintain, reposition or improve their position. Such strategic cluster coupling is a process by which advantages and assets of clusters in regions are coupled with the needs of lead firms and their global production networks. The focus is particularly on cluster institutions and cluster-specific assets, which are linked to and embedded in regional and national institutions and assets.

Strategic cluster coupling as a policy strategy and analytical framework can be used both in emerging economies, such as China, but also for clusters in industrialized countries, such as Germany. For that aim, the typology developed by Yeung (2015) for strategic coupling in a broader context, consisting of international partnership, indigenous innovation and production platforms, is useful for strategic cluster coupling as well. It is particularly the type of indigenous innovation, with many headquarters of lead firms located in the cluster, that we might find in clusters in industrialized countries. However, these types are not set in stone, but might also change, as is recently shown in many clusters in Bavaria and Baden-Württemberg in Germany. In these states, recently a considerable number of small and medium-sized enterprises have been taken over by Chinese transnational corporations in a relatively short period, changing parts of clusters into transnational corporation subsidiaries instead of transnational corporation lead firms steering global production networks.

This chapter has also shown that there are also a number of caveats that need to be taken into account in future research on strategic cluster coupling, such as the dark sides of strategic coupling, consisting of ruptures and frictions, as well as decoupling, and the focus on the development of a region rather than the development in a region. Inequalities within regions might increase due to the concentration of investments in a selected cluster in the framework of strategic cluster coupling. Moreover, not all cluster institutions have power and room to influence the repositioning of clusters in global production networks. Regional economic policy in industrialized countries, such as Germany, is mostly oriented towards supporting endogenous, regional enterprises, in particular, small and medium-sized enterprises. Their aim is to adapt the regional assets to their needs, not so much to the needs of lead firms from other countries. The latter might be more the case in countries with a stronger focus on attracting foreign direct investment, such as the United Kingdom.

Finally, based on the above elaborations, some research questions on the repositioning of clusters in global production networks and strategic cluster are posed for future research. To what extent do we find a match or mismatch between general strategic coupling and specific cluster assets? What positions do clusters have in the overall regional economy and what room do their institutions have to lobby for support for their cluster-specific assets? How is the development of clusters in regional economies influenced by other clusters in the regional economy? Do these influences affect the position of clusters in global production networks? How can they be influenced by cluster policies in the framework of strategic cluster coupling? Are inequalities within regional economies due to the support of a certain cluster at the expense of other clusters or parts of the regional economy? Are there differences in value creation between clusters due to differences in control and dependency in global production networks, and how do they change through time? To what extent do

the existence or absence of strategic cluster coupling policies lead to or avoid decoupling processes? Finding answers to these research questions will lead to a better understanding of the role of strategic cluster coupling in the repositioning of clusters in global production networks, as well as of broader and related issues of regional economic development.

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REFERENCES

- Amdam, R.P., O. Bjarnar and J. Wang (2018), 'The dynamic role of small-and medium-sized multinationals in global production networks: Norwegian maritime firms in the Greater Shanghai Region in China', *Asia Pacific Business Review*, **24**, 37–52.
- Aoyama, Y. (2016), 'Reorienting the drivers of development: alternative paradigms', *Area Development and Policy*, **1**, 295–304.
- Barca, F., P. McCann and A. Rodríguez-Pose (2012), 'The case for regional development intervention: place-based versus place-neutral approaches', *Journal of Regional Science*, **52**, 134–152.
- Barnes, T.J. and B. Christophers (2018), *Economic Geography: A Critical Introduction*, Chichester: Wiley-Blackwell.
- Bathelt, H., A. Malmberg and P. Maskell (2004), 'Clusters and knowledge: local buzz, global pipelines and the process of knowledge creation', *Progress in Human Geography*, **28**, 31–56.
- Bellandi, M. and A. Caloffi (2008), 'District internationalisation and trans-local development', *Entrepreneurship and Regional Development*, **20**, 517–532.
- Belussi, F. (2018), 'New perspectives on the evolution of clusters', *European Planning Studies*, **26**, 1796–1814.
- Breul, M., J. Revilla Diez and M.T. Sambodo (2019), 'Filtering strategic coupling: territorial intermediaries in oil and gas global production networks in Southeast Asia', *Journal of Economic Geography*, **19**, 829–851.
- Butollo, F. (2015), 'Growing against the odds: government agency and strategic recoupling as sources of competitiveness in the garment industry of the Pearl River Delta', *Cambridge Journal of Regions, Economy and Society*, **8**, 521–536.
- Chou, T.L., C.H. Ching, S.M. Fan and J.Y. Chang (2011), 'Global linkages, the Chinese high-tech community and industrial cluster development: the semiconductor industry in Wuxi, Jingsu', *Urban Studies*, **48**, 3019–3042.
- Coe, N. (2009), 'Global production networks', in R. Kitchin and N. Thrift (eds), *International Encyclopaedia of Human Geography*, Oxford: Elsevier, pp. 556–562.
- Coe, N.M. and M. Hess (2011), 'Local and regional development: a global production network approach', in A. Pike, A. Rodríguez-Pose and J. Tomaney (eds), *Handbook of Local and Regional Development*, London: Routledge, pp. 128–138.

- Coe, N., M. Hess, H.W. Yeung, P. Dicken and J. Henderson (2004), “Globalizing” regional development: a global production networks perspective’, *Transactions of the Institute of British Geographers*, **29**, 468–484.
- Coe, N.M. and H.W.C. Yeung (2015), *Global Production Networks: Theorizing Economic Development in an Interconnected World*, Oxford: Oxford University Press.
- Coe, N.M. and H.W.C. Yeung (2019), ‘Global production networks: mapping recent conceptual developments’, *Journal of Economic Geography*, **19**, 775–801.
- Dawley, S. (2011), ‘Transnational corporations and local and regional development’, in A. Pike, A. Rodriguez-Pose and J. Tomaney (eds), *Handbook of Local and Regional Development*, London: Routledge, pp. 394–412.
- Dawley, S., D. MacKinnon and R. Pollock (2019), ‘Creating strategic couplings in global production networks: regional institutions and lead firm investment in the Humber region, UK’, *Journal of Economic Geography*, **19**, 853–872.
- Delgado, M. (2018), ‘Firms in context: internal and external drivers of success’, in G. Clark, M. Gertler, M.P. Feldman and D. Wójcik (eds), *The New Oxford Handbook of Economic Geography*, Oxford: Oxford University Press, pp. 324–344.
- Dicken, P. (2015), *Global Shift: Mapping the Changing Contours of the World Economy*, London: SAGE.
- Ernst, D. (2010), ‘Upgrading through innovation in a small network economy: insights from Taiwan’s IT industry’, *Economics of Innovation and New Technology*, **19**, 295–324.
- Foray, D. (2015), *Smart Specialisation: Opportunities and Challenges for Regional Innovation Policy*, Abingdon: Routledge / Regional Studies Association.
- Fornahl, D., R. Hassink and M.-P. Menzel (2015), ‘Broadening our knowledge on cluster evolution’, *European Planning Studies*, **23**, 1921–1931.
- Gao, B., M. Dunford, G. Norcliffe and W. Liu (2019), ‘Governance capacity, state policy and the rise of the Chongqing notebook computer cluster’, *Area Development and Policy*, **4**, 321–345.
- Gong, H. and R. Hassink (2019), ‘Co-evolution in contemporary economic geography: towards a theoretical framework’, *Regional Studies*, **53**, 1344–1355.
- Henn, S. and H. Bathelt (2015), ‘Knowledge generation and field reproduction in temporary clusters and the role of business conferences’, *Geoforum*, **58**, 104–113.
- Horner, R. (2014), ‘Strategic decoupling, recoupling and global production networks: India’s pharmaceutical industry’, *Journal of Economic Geography*, **14**, 1117–1140.
- Indraprahasta, G.S., B. Derudder and D. Hudalah (2019), ‘Local institutional actors and globally linked territorial development in Bekasi District: a strategic coupling?’, *Singapore Journal of Tropical Geography*, **40**, 219–238.
- Ingstrup, M.B. and P.R. Christensen (2017), ‘Transformation of cluster specialization in the wake of globalization’, *Entrepreneurship and Regional Development*, **29**, 500–516.
- Jacobs, W. and A. Lagendijk (2014), ‘Strategic coupling as capacity: how seaports connect to global flows of containerized transport’, *Global Networks*, **14**, 44–62.
- Kleibert, J.M. (2014), ‘Strategic coupling in “next wave cities”: local institutional actors and the offshore service sector in the Philippines’, *Singapore Journal of Tropical Geography*, **35**, 245–260.
- Kleibert, J.M. (2016), ‘Book review: Global Production Networks: Theorizing Economic Development in an Interconnected World’, *Journal of Economic Geography*, **16**, 539–540.

- Lim, K.F. (2018), 'Strategic coupling, state capitalism, and the shifting dynamics of global production networks', *Geography Compass*, **12**, e12406.
- Lim, K.F. (2019), 'Infrastructure, strategic coupling and the politics of regional development', Keynote speech at Regional Studies Association Winter Conference, London, 15 November.
- Liu, Y. (2017), 'The dynamics of local upgrading in globalizing latecomer regions: a geographical analysis', *Regional Studies*, **51**, 880–893.
- MacGregor, N. and T.L. Madsen (2018), 'Cluster evolution', in *Oxford Research Encyclopedia of Business and Management*. Retrieved 7 December 2020 from <https://oxfordre.com/business/view/10.1093/acrefore/9780190224851.001.0001/acrefore-9780190224851-e-141>.
- MacKinnon, D. (2012), 'Beyond strategic coupling: reassessing the firm–region nexus in global production networks', *Journal of Economic Geography*, **12**, 227–245.
- MacKinnon, D. (2013), 'Strategic coupling and regional development in resource economies: the case of the Pilbara', *Australian Geographer*, **44**, 305–321.
- Mudambi, R., S.M. Mudambi, D. Mukherjee and V.G. Scalera (2017), 'Global connectivity and the evolution of industrial clusters: from tires to polymers in Northeast Ohio', *Industrial Marketing Management*, **61**, 20–29.
- Nilsen, T. (2019), 'Global production networks and strategic coupling in value chains entering peripheral regions', *Extractive Industries and Society*, **6**, 815–822.
- Phelps, N.A. (2017), *Interplaces: An Economic Geography of the Inter-Urban and International Economies*, Oxford: Oxford University Press.
- Phelps, N.A., M. Atienza and M. Arias (2017), 'An invitation to the dark side of economic geography', *Environment and Planning A*, **50**, 236–244.
- Sanz-Ibáñez, C. and S.A. Clavé (2016), 'Strategic coupling evolution and destination upgrading', *Annals of Tourism Research*, **56**, 1–15.
- Saxenian, A. (2006), *The New Argonauts*, Cambridge, MA: Harvard University Press.
- Scholvin, S., J.R. Diez and M. Breul (2017), 'Book review of Global Production Networks (Coe and Yeung, 2015)', *Zeitschrift für Wirtschaftsgeographie*, **61**, 117–118.
- Steen, M. and A. Underthun (2011), 'Upgrading the "Petropolis" of the North? Resource peripheries, global production networks, and local access to the Snøhvit natural gas complex', *Norsk Geografisk Tidsskrift – Norwegian Journal of Geography*, **65**, 212–225.
- Turkina, E. and A. Van Assche (2018), 'Global connectedness and local innovation in industrial clusters', *Journal of International Business Studies*, **49**, 706–728.
- Van Grunsven, L. and F.E. Hutchinson (2016), 'The evolution of the electronics industry in Johor (Malaysia): strategic coupling, adaptiveness, adaptation, and the role of agency', *Geoforum*, **74**, 74–87.
- Werner, M. (2016), 'Global production networks and uneven development: exploring geographies of devaluation, disinvestment, and exclusion', *Geography Compass*, **10**, 457–469.
- Werner, M. (2019), 'Geographies of production I: global production and uneven development', *Progress in Human Geography*, **43**, 948–958.
- Wolfe, D.A. and M.S. Gertler (2004), 'Clusters from the inside and out: local dynamics and global linkages', *Urban Studies*, **41**, 1071–1093.
- Yang, C. (2009), 'Strategic coupling of regional development in global production networks: redistribution of Taiwanese personal computer investment from the Pearl River Delta to the Yangtze River Delta, China', *Regional Studies*, **43**, 385–407.

- Yang, C. (2017), 'The rise of strategic partner firms and reconfiguration of personal computer production networks in China: insights from the emerging laptop cluster in Chongqing', *Geoforum*, **84**, 21–31.
- Yang, D.Y.R., J.Y. Hsu and C.H. Ching (2009), 'Revisiting the Silicon Island? The geographically varied "strategic coupling" in the development of high-technology parks in Taiwan', *Regional Studies*, **43**, 369–384.
- Yeung, G. (2016), 'The operation of Global Production Networks (GPNs) 2.0 and methodological constraints', *Geoforum*, **75**, 265–269.
- Yeung, H.W.C. (2015), 'Regional development in the global economy: a dynamic perspective of strategic coupling in global production networks', *Regional Science Policy and Practice*, **7**, 1–23.
- Yeung, H.W.C. (2016), *Strategic Coupling: East Asian Industrial Transformation in the New Global Economy*, Ithaca, NY: Cornell University Press.
- Yeung, H.W.C. and N.M. Coe (2015), 'Toward a dynamic theory of global production networks', *Economic Geography*, **91**, 29–58.
- Zhu, S. and C. He (2016), 'Global and local governance, industrial and geographical dynamics: a tale of two clusters', *Environment and Planning C*, **34**, 1453–1473.