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Tangled Webs: Transnational Production Networks and Regional Integration

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Tangled Webs:
Transnational Production Networks and Regional Integration

Abstract: Two of the most significant developments of the past few decades in the reshaping of the geography of the global economy have been the increasing transnationalization of production networks and the proliferation of regional economic blocs. This paper addresses some of the issues involved in understanding these phenomena, particularly some of the ambiguities and gaps in the conceptualization of production networks and the relationships between transnational production networks and political regional integration. Automobile production networks in East Asia provide an illustrative case.

Key words: Transnational production networks, regional economic integration, automobile production, East Asia

1. Introduction

Two of the most significant developments of the past few decades in the reshaping of the geography of the global economy have been the increasing transnationalization of production networks and the proliferation of regional economic blocs. These are developments of vital political-economic significance, changing peoples' life-chances and transforming the economic prospects of communities around the world in geographically uneven ways. We need to understand them better. And to some extent we do. There is a growing – though relatively recent - literature on production networks and a huge, long-standing, literature on regional economic blocs. However, despite some very significant progress there are still many unanswered – or only partially answered – questions. In this paper, I address some of these questions by exploring the nature end extent of these two developments and speculating on the relationships that connect them into what are, in fact, highly complex and 'tangled' political-economic webs.

It is important to emphasize that this is very much work-in-progress and not a completed and polished piece of research. The issues are ones that have occupied my attention for a good many years (see, for example, the review in Yeung and Peck 2003). Most recently, they have been explored, with a number of colleagues, in a large-scale research project entitled 'Making the Connections: Global Production Networks in Europe and East Asia' funded by the UK's Economic and Social Research Council (see the project website at *www.sed.manchester.ac.uk/geography/research/gpn*).

The paper is organized in two major sections. In the first section, I focus on the concept of transnational production networks, particularly by attempting to identify some of the ambiguities and some of the gaps that currently exist in such a conceptualization. The aim is to contribute towards a more organizationally nuanced and geographically grounded analysis. In the second section, I look at the increasing proliferation of regional economic agreements and speculate on the potential relationships between such state-based political-economic integration and firm-based transnational production networks. The case of the automobile industries in East Asia is used as an illustrative example of such relationships.

2. Networks and chains: terminological diversity within (relative) conceptual unity[1]

Despite differences in terminology, as well as in focus, between different writers, there is a broad consensus around the idea that one of the most useful keys to understanding the complexity of the global economy – especially its geographical complexity – is the concept of the *network*. This is not to imply that networks are, in any way, new (see Dicken, Kelly, Olds and Yeung 2001; Dicken 2004: 10) but rather that they reflect the fundamental *structural* and *relational* nature of how production, distribution and consumption are – indeed always have been – organized. Although they have undoubtedly become far more complex organizationally, as well as far more extensive geographically, production networks are a *generic* form of economic organization. They are not some hybrid form existing in the void between markets and hierarchies as some continue to argue (see, for example, Thompson 2003).

Production networks are essentially dynamic; they are always, by definition, in a process of flux - in the process of *becoming* - both organizationally and geographically. The *spatio-temporality* of production networks, therefore, is highly variable and contingent. As Hudson (2004: 462) points out, "[…] economic processes must be conceptualized in terms of a complex circuitry with a multiplicity of linkages and feedback loops rather than just "simple" circuits or, even worse, linear flows". Some networks are long-lived, others are more ephemeral; some are geographically extensive, others are more geographically localized. None remain completely unchanged for very long. Adjustments, some large, some small, are continuously being made in response to both internal and external circumstances.

It is not my intention here to review in any detail the extensive literature on production networks. This has been done elsewhere (see footnote 1). However, there is a number of ambiguities and gaps in the literature that need some clarification if we are to develop a more robust analytical framework. I want to focus on two broad sets of issues relating to

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[1] Within the literature on the global economy, three sets of terminology have become especially prominent. The notion of the *global commodity chain (GCC)* was popularized by Gereffi through a number of publications since 1994 (see, for example, Gereffi and Korzeniewicz, 1994; Gereffi 2005). This has subsequently been superseded, in the collaborative research of Gereffi, Humphrey, Sturgeon and others (see the contributions in Gereffi and Kaplinsky 2001; Gereffi, Humphrey and Sturgeon 2005), by the term *global value chain (GVC)*, a usage with direct links to the notion of the value-added chain as developed by Porter (1986). The third approach is that of the *global production network (GPN)*, developed independently by Ernst (see Ernst and Kim 2002) and in our ESRC project (see Henderson, Dicken, Hess, Coe and Yeung 2002; Coe, Hess, Yeung, Dicken and Henderson 2004).

transnational production networks. The first relates to the organizational structure of, and the nature of the processes within, production networks; that is, with their *internal connectivities*. The second is concerned with the embeddedness of such networks, and their component parts, in specific geographical and institutional contexts; that is, with their *external connectivities*. Of course, such a separation is artificial; it is no more than an analytical convenience The key point is that these two sets of processes are both inter-connected and mutually constitutive. All production networks are specifically grounded.

2.1 Internal connectivities in transnational production networks

At the general level, a production network may be defined as the nexus of interconnected functions and operations through which goods and services are produced, distributed and consumed. In some cases, the term is used, at least implicitly, as being synonymous with a specific industry although, in reality, an industry is made up of many production networks, focused on specific firms, and displaying considerable variety in the way they are organised and configured. A *transnational production network* is one whose inter-connected nodes and links extend spatially across national boundaries and, in so doing, integrate parts of disparate national and sub-national territories.

Analytically, it makes most sense to define a production network in terms of a focal firm. However, this need not necessarily be a dominant firm in the sense implied in Gereffi's distinction between producer-driven and buyer-driven structures or the kind of 'flagship' firm discussed by Ernst and Kim (2002). An advantage of adopting a production network framework is that it is possible to shift the focal point to different positions in the network and this enables us to understand better the differentiated network positionality of firms and, therefore, their potential local impacts. However, it is important to bear in mind that virtually all firms belong to more than one – in some cases many - production networks.

A firm's position within a production network is defined both functionally (the nature of its product) and organizationally. In the latter case, its position may be defined by ownership (the firm being a subsidiary or affiliate of another) or by varying degrees of non-ownership incorporation into another firm's operations. This may range from an arm's-length, short-term relationship through to one of a long-term, preferred supplier or customer and/or a joint-venture collaborative partnership. But none of these positions is necessarily fixed, in either time or space. Organizationally, the functional (as opposed to the legal) boundaries of firms are blurred (see Badaracco 1991; Dicken and Malmberg 2001) as well as being continuously in flux. Sourcing decisions by firms – whether to perform a particular function in-house or to externalize it to outside firms – provide a clear example. However, such

decisions are not necessarily one-way or irreversible. Despite the current attention being paid to the apparent increased out-sourcing of IT and some other service functions (nothing new, of course, in the case of manufacturing functions) such decisions are, not infrequently, reversed as a firm decides to re-integrate a function and to bring it back in-house.

In a production network, whose 'purpose' is to create value through the transformation of material and non-material inputs into demanded goods and services, there is inevitably an element of *linearity* or *verticality* in the structure of its nodes and links. It is not too surprising, therefore, that so much attention has been devoted to *chain* structures (as in the value chain and commodity chain literature). This captures the process of *sequential transformation* from inputs, through stages of transformation to outputs and through to distribution and final consumption, a sequence in which each stage adds value to the process of production of goods or services.[2] It is the set of processes that is conventionally involved in supply chain analysis. Indeed, we can learn a good deal from the supply chain literature (see, for example, Lambert and Cooper 2000).

However, restricting our view to the linear/vertical dimension of a production network is a problem (Henderson, Dicken, Hess, Coe and Yeung 2002; Smith, Rainnie, Dunford, Hardy, Hudson and Sadler 2002). In reality, each stage of a production chain is embedded in much wider sets of non-linear/horizontal relationships. Such multi-dimensionality must be incorporated in any analysis of production networks without, at the same time, losing sight of the 'directed' nature of the processes involved. In this regard, Lazzarini, Chaddad and Cook (2000: 7) have put forward the concept of the *netchain*, which they define as "[...] a set of networks comprised of horizontal ties between firms within a particular industry or group, which are sequentially arranged based on vertical ties between firms in different layers...Netchain analysis explicitly differentiates between horizontal (transactions in the same layer) and vertical ties (transactions between layers), mapping how agents in each layer are related to each other and to agents in other layers."

Although it seems unnecessary to add further terminological complexity to an already rather confused field, the ideas contained in the netchain concept are very useful because they make us more aware of the multi-dimensional nature of production networks. The overall structure of a production network, therefore, can be thought of in terms of a series of intricate intersections between vertical and horizontal networks of varying degrees of size

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[2] Of course, the question of who 'captures' that value is a key developmental issue (see Henderson, Dicken, Hess, Coe and Yeung 2002: 448-450).

(length, width) and complexity (see Lambert and Cooper 2000: 71-72). In some production networks, the vertical length of the sequential process (the production chain itself) may be very short and consist of only a small number of layers. In others, the chain may be very long. Equally, the horizontal width of each layer may be broad or narrow, depending on the number of actors involved.

Such an approach also emphasizes the complex nature of the *interdependencies* that exist within production networks. Thompson's (1967) typology of intra-organizational interdependencies – sequential, pooled, reciprocal – merits further attention in this broader, inter-firm context (see also Dicken 1976: 408-409). Such interdependencies, of course, have to be "[…] ordered by formal or informal agreements on the division of labour between the actors" (Andersen and Christensen 2004:3). This takes us on to issues of co-ordination and control within production networks, that is, to questions of *network governance* and of *power relationships*.

In the global commodity chain and global value chain literature, the issue of governance has received by far the most attention, often to the neglect of other attributes. Following Gereffi's initial conceptualization of chain governance into two polar types - buyer-driven and producer-driven - he and his colleagues have recently proposed a more sophisticated five-fold typology (Gereffi, Humphrey and Sturgeon 2005). This is undoubtedly a major step forward in helping us to capture more of the complexity and variability of network governance. However, despite its greater breadth and depth it remains, as do all typologies, a set of ideal-types. The specific configurations and asymmetries of power within transnational production networks are infinitely more complex, contingent, and variable over time. For example, the power relationships between firms and their suppliers are rarely as simple as the conventional wisdom tends to suggest whereby the large automatically dominate and exploit the small. Size does not always matter.

As in all bargaining situations, the relative bargaining power of actors within a network depends, in large part, on the extent to which each possesses assets sought by the other party and the extent to which access to such assets can be controlled. The scarcer the asset the greater the bargaining power it conveys and vice versa. In a transnational production network, therefore, the firms in the weakest position are those producing what are in effect commodities that are easily replaced. But this is not necessarily a static situation. Firms may be able to upgrade their assets and competencies. In addition, the *position* a firm develops within a transnational production network may well, in itself, confer significant bargaining power, especially when one bears in mind that firms tend to belong to more than one production network at the same time. Andersen and Christensen (2004) identify

five types of suppliers which, they argue, may act as important 'connective nodes' in transnational production networks.

This latter point leads me to a brief consideration of what is undoubtedly a major 'missing link' in virtually all studies of transnational production networks: the *circulation processes* through which the nodes in the network are actually connected in a functional and physical sense (see Dicken 2003b chapter 14). For reasons that remain something of a mystery, social scientists seem to assume that, with the development of the time-space shrinking technologies of transportation and communication, the problem of actually moving materials, components and finished products has been solved. In fact, with the vastly increased complexity and geographical extensiveness of production networks, and the need to coordinate and integrate extraordinarily intricate operations as rapidly and efficiently as possible, the *logistics* problem is absolutely central. We need to understand it. And yet it is virtually ignored outside the specialist technical world of supply chain management. I find it especially paradoxical that transportation geographers (at least those writing in English) appear to have totally neglected this key area.

But it is not only academics who tend to under-estimate the importance of logistics. A German automobile manufacturer made the following observation to us (Dicken 2003a: 23-24): "Logistics costs are the most hidden and underestimated costs in production. Under globalization, of course, they gain importance. As a rule of thumb, if you look at the value-added of a car, about one-third of it is attributed to logistics costs. [...] And for that the customer doesn't pay a single deutschmark. So we are well advised to reduce these costs. If I see the eagerness with which we try to save a minute of production time here and there, and how much we have neglected the issue of logistics costs, then there is a wide area" (Interview with German automobile assembler, 2001).

At the core of the need to develop efficient circulation services within transnational production networks is the fact that "[...] time- and quality-based competition depends on eliminating waste in the form of time, effort, defective units, and inventory in manufacturing-distribution systems. [...] Time- and quality-based competition requires firms to practise such logistical strategies as just-in-time management, lean logistics, vendor-managed inventory, direct delivery, and outsourcing of logistics services so that they become more flexible and fast, to better satisfy customer requirements" (Min and Keebler 2001: 265).

As a result of such pressures, a highly sophisticated set of logistics service providers has emerged, some developing out of traditional transportation companies (rail, road, shipping, airlines), some from wholesalers and trading companies, others are entirely new forms of

logistics organizations. Such providers are 'tiered' in a similar manner to conventional suppliers (see Schary and Skjott-Larsen 2001: Figure 7.4).

The simplest logistics functions are provided by 1st and2nd party (logistics service providers): the *traditional transportation and forwarding companies*. The other three categories are 3rd or 4th party LSPs, the latter performing the most comprehensive strategic logistics tasks, often for an entire production network. The *asset-based LSPs* first emerged during the 1980s, developing primarily from the diversification of some of the traditional transportation companies into more complex LSPs. During the 1990s, a number of *network-based LSPs* appeared, most formerly being couriers and express parcel companies, and developed highly sophisticated global transportation and communication networks. The fourth category of LSPs appeared on the scene in the late 1990s. These *skill-based LSPs* generally do not own any major physical logistics assets but provide a range of primarily information-based logistics services. In addition to such LSPs, some of the traditional trading companies have also re-invented themselves to become heavily involved in certain kinds of logistics. Examples include the leading Japanese *sogo shosha* (see Dicken and Miyamachi 1998) and some other East Asian companies such as Li and Fung (Dicken 2003b: 490-492).

2.2 External connectivities of transnational production networks

In focusing on the internal complexities of production networks it is all too easy to overlook the fundamental fact that such networks do not exist in a vacuum. Unfortunately, far too much of the production network literature pays little more than lip service to the institutional and geographical environments within which networks not only operate but also within which they are formed and shaped. All production networks exist within a diversity of multi-scalar structures within the global economy; a relational topology, to use Amin's (2002) terminology. "The variety of institutions leads to complex spatialities of governance and regulation. These combine the diverse spaces and spatial scales (national, supranational and subnational) of state organizations and institutions within civil society. Systems of governance and regulation are now more multiscalar…but *national states retain a critical role* within them" (Hudson 2004: 453, emphasis added).

Every element in a transnational production network – every firm, every function – is, quite literally, *grounded* in specific locations. Such grounding is both material (the fixed assets of production), and also less tangible (localized social relationships and distinctive institutions and cultural practices).

Hence, the precise nature and articulation of transnational production networks are deeply influenced by the concrete socio-political, institutional and cultural 'places' within which

they are embedded, produced and reproduced. The relationships between firms and territories are exceedingly complex (see Dicken and Malmberg 2001). There are strong processes of path-dependency – though not determinacy – involved in these mutually constitutive processes of embeddedness[3], what I have described elsewhere in this context as processes of 'placing' firms and 'firming' places (Dicken 2000, 2003c). As the geographical extensiveness and complexity of TPNs increases, the nature of this embeddedness also becomes far more complex.

On the one hand, the nature of the places within which the parts of TPNs are situated influences how these component firms or establishments behave and perform within the overall network subject, of course, to the prevailing power relationships in the network. As Schoenberger (1999: 211) observes, "[…] different 'places' within the firm, organizationally and geographically, develop their own identities, ways of doing things and ways of thinking over time, the reason being that they live in different places and must confront and respond to the particularities of these places across a whole range of practices and issues."

One of the major problems in coordinating TPNs, therefore, is that, by definition, they are made up of actors from a wide variety of national (and local) environments. In the case of a dominant firm within a TPN, the country of origin remains an important influence on how it operates both across the network as a whole and in those specific locations where its operations are situated.

On the other hand, the nature of the production networks themselves, in which the individual firms or establishments are connected, has a profound influence on their prospects and that of the communities in which they are located. Humphrey and Schmitz (2002), for example, make this point in discussing the prospects of industrial upgrading of enterprises in localized industrial clusters (see also Schmitz 2004). More broadly in a regional development context, Coe, Hess, Yeung, Dicken and Henderson (2004) explore the complex ways in which global production networks and regional development interact through what is termed a 'strategic coupling process'.

All transnational production networks are influenced by *multi-scalar regulatory systems*. International regulatory bodies, such as the WTO - part of the 'confusion' of institutions that makes up the incoherent architecture of global governance - are immensely significant in influencing the geography of transnational production networks. One needs only look at

[3] The concept of 'embeddedness' is much used and often abused. It involves far more than simplistic territorial embeddedness, although this is undoubtedly an important category. For a recent critical discussion, see Hess (2004).

the influence of the Multi-Fibre Arrangement in the clothing and textiles industries to be aware of this (the abolition of the MFA at the beginning of 2005 seems likely to have a massive influence on transnational production networks in these industries). International institutions establishing technical standards (like the ISO 9000, the international quality management standard, or the ISO 14000 international environmental standard), likewise, play a highly significant role.[4] In some cases they make the operation of transnational networks more feasible through their introduction of codifiable standards. In other cases, they create problems of conformity to an international standard in specific places.

Among the multiplicity of regulatory institutions, and allowing for the proliferation of international and sub-national bodies, the *national state* remains especially important. *All* the elements in transnational production networks are regulated within some kind of political structure whose basic unit is the national state. International institutions exist only because they are sanctioned by national states; sub-national institutions are commonly subservient to the national level, although, of course, the situation is more complex in federal political systems.

As a result, TNCs and states are continuously engaged in intricately choreographed negotiating and bargaining processes. On the one hand, TNCs attempt to take advantage of national differences in regulatory regimes (such as taxation or performance requirements, like local content). On the other hand, states strive to minimize such 'regulatory arbitrage' and to entice mobile investment through competitive bidding against other states. The situation is especially complex because while states are essentially territorially fixed and clearly bounded geographically, a TNC's 'territory' is more fluid and flexible. Transnational production networks slice through national boundaries (although not necessarily as smoothly as some would claim). In the process parts of different national spaces become incorporated into TPNs (and vice versa).

There is, in other words, a territorial asymmetry between the continuous territories of states and the discontinuous territories of TNCs and TPNs and this translates into complex bargaining processes in which, contrary to much conventional wisdom, there is no unambiguous and totally predictable outcome. TNCs do not always possess the power to get their own way, as some writers continue to assert. In the complex relationships between TNCs and states – as well as with other institutions – the outcome of a specific bargaining process is highly contingent (see Stopford and Strange 1991: 215-216).

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[4] Braithwaite and Drahos (2000) and Messner (2004) provide useful discussions of international standards.

3. Transnational production networks and regional political integration

Throughout this paper I have deliberately used the term *transnational* - rather than 'global' - production network for two reasons. First, the term 'global' implies that states and national boundaries are no longer significant, a position I believe to be completely untenable. As I have argued earlier, production networks have to operate within an immensely complex web of regulatory systems, of which those at the national state level remain the most fundamental. Second, the term 'global' production network implies an extent and degree of geographical spread that is, in reality, relatively rare. Just as there are few, if any, truly 'global' corporations (see Dicken 2003c) so, too, there are few, if any, truly global production networks. The geographical extent of production networks is, in fact, immensely varied. However, there is an especially strong tendency towards transnational, but *regionally cohesive*, forms of spatial organization. By 'regional' I mean the meso-scale between the global and the national, not the sub-national scale most commonly used by geographers. It is this trend I want to address in this section by considering the potential connections between the regional organization of TNCs and the proliferation of politically-created regional economic agreements.

3.1 The proliferation of regional economic agreements[5]

The fundamental basis for regional economic agreements – indeed their sole *raison d'être* in most cases – is the *preferential trading arrangement (PTA)*. PTAs simply involve states agreeing to provide mutual preferential access to their domestic markets. Hence PTAs have a two-sided quality: they liberalize trade between members and, at the same time, discriminate against third parties. There has been a remarkable acceleration in PTAs notified to the WTO, especially since the early 1990s. Around one-third of world trade occurs within PTAs. The WTO (2005) estimates that 176 of the 300 PTAs notified to the GATT/WTO up to October 2004 occurred after 1995. Of these, 150 are currently in force and another 70 are believed to be operational but not yet notified. By far the majority of PTAs are simple free-trade agreements – around 90 per cent according to WTO estimates. Only a small minority, therefore, are customs unions (defined by the existence of a common external tariff in addition to free trade between members) and not all PTAs are between neighbouring states. Indeed, many of the recent PTAs have been between non-contiguous states.

[5] Recent data on the formation of regional economic agreements can be found in Schiff and Walters (2003), WTO (2000, 2005)

The WTO's concern at what it terms a 'spaghetti bowl' of preferential trading arrangements is with its implications for the future of the world's rules-based multilateral trading system. That is not my interest here. My focus is on the relationship between PTAs and the spatial organization (and re-organization) of transnational production networks within *regional* economic blocs.

3.2 Regionalizing transnational production networks

There is, undoubtedly, a link between the political structures of regional economic blocs and the configuration of transnational production networks. However, the relationship is far from simple and the direction of causality is far from clear. Does regional economic integration cause TNCs to organize their production networks along such geographical lines or do the investment needs of TNCs create encourage states – always anxious to attract productive investment – to move towards greater regional integration?

There are strong arguments to suggest that TNCs have a very marked propensity to organize their activities on a regional basis, regardless of the existence of regional political integration. For example, on the basis of his detailed analysis of 122 TNCs, Muller (2004: ix, 219, original emphasis) claims that "[…] for Western core companies, regionalism has become the institutional framework of choice within which the struggle for preservation of their core positions is played out […] *the acceleration in the rate of internationalization after 1995 was an intra-regional phenomenon*." Rugman and Brain (2003) reach a similar conclusion.

Some reasons for such a regional strategic orientation by TNCs are suggested by Morrison and Roth (1992: 45-46): "[…] a regional strategy offers many of the efficiency advantages of globalization while more effectively responding to the organizational barriers it entails. […] From the perspective of a TNC, a regional strategy may represent an ideal solution to the competing pressures for organizational responsiveness and global integration." They support this argument on three grounds. First, regional scale manufacturing facilities may represent the limits of potential economies of scale (although, presumably this will vary by product or process). Second, regionalization permits faster delivery, greater customization and smaller inventories than would be possible under globalization. Third, regionalization may better accommodate organizational concerns and exploit subsidiary strengths. The forces of simple geographical proximity, therefore, remain extremely powerful and should not be underestimated.

As a result, as Yoshimatsu (2002: 128-129) argues, pressures by TNCs may well stimulate the initiation or the enhancement of regional political integration where it is seen to meet

their strategic requirements: "Firms are likely to support the formation of a regional trade arrangement if the formation would enable them to enjoy benefits from preferential access to the regional market where they are heavily dependent, or to procure intermediate parts and components from countries in the region with reduced tariffs. In contrast, firms tend to oppose a regional trade arrangement if they have plants manufacturing products with a high degree of national integration and in markets protected against international competition. [...] A preference for a regional trade arrangement is also strong in industries where scale economies (or increasing returns to scale) exist. [...] If firms with scale economies operate in the market where they can achieve the optimal scale, they would prefer import protection because such a protectionist policy enables the firms to capture a large domestic market and/or promote exports. However, firms with scale economies are likely to prefer regional liberalization to either market protection or global liberalization when their profitability becomes greater by broadening their market access and blocking competition from rivals in extra-regional countries."

On the other hand, the actual existence (or planned implementation or strengthening) of a regional political arrangement undoubtedly tends to stimulate the inward flow of foreign direct investment. For example, prior to the creation of the European Common Market in 1957, almost two-thirds of all US FDI in Europe was located in the UK. Between 1957 and 1973, when the UK was not a member, the balance of US FDI shifted strongly towards continental Europe. After the UK entered in 1973, its position as the dominant destination for US investment was resumed. More generally, FDI in Europe has been greatest during periods of rapid integration, as with the completion of the Single European Market in 1992. Recently, there has been substantial growth in FDI in many of the countries to the east prior to their entry into the EU. Likewise, FDI in Mexico increased significantly in connection with the introduction of the NAFTA in 1994.

Although there is, undoubtedly, a counterfactual problem in trying to establish causality, it is clear that the relationship between the regional development of transnational production networks and regional political integration is both contingent and dynamic. Where regional political integration occurs and develops then it will tend to attract inward foreign investment and, in certain circumstances, the further development of regional production networks. Conversely, pressures exerted by TNCs on states for greater integration of regional economic spaces may, in some cases, help to speed up the process of political integration. The actual configuration and geographical scale of regional political integration will also influence the subsequent development of transnational production networks within a region. The nature and degree of intra-regional differentiation – economic, social, cultural,

political – will also be a significant influence on the ways in which transnational production networks develop.

Transnational production networks organized at the regional scale are particularly evident, not surprisingly perhaps, in the three so-called 'triad' regions of the global economy. In North America, the establishment of the NAFTA has reinforced the 'natural' forces of geographical proximity and is leading to a reconfiguration of corporate activities (especially involving Mexico) to meet the opportunities and constraints of the new regional political system (see, for example, Eden and Monteils, 2000; Holmes 2000). We should not forget, however, that there was a great deal of integrated production between Mexico and the United States long before the NAFTA came into existence in 1994, much of which – though not all - was related to the *maquiladora* programme.

In Europe, the increasing integration of the European Union has led to substantial reorganization of existing production networks and the establishment of pan-European networks by existing and new TNCs. Indeed, "[…] the EU can be seen as a gigantic international production complex made up of the networks of TNCs which straddle across national boundaries and form trade networks in their own right" (Amin 2000: 675). However, the process is a complicated one. On the one hand, supply-side forces are stimulating a pan-EU structure of operations to take advantage of scale efficiencies. On the other hand, demand-side forces are still articulated primarily at the country-specific level, where linguistic and cultural differences play a major role in the nature of the demands for goods and services.

Although East Asia does not have the same kind of regional political framework as the EU or even the NAFTA, sophisticated regional production networks have been developed in East Asia, particularly by Japanese firms but also by firms from Korea, Hong Kong, Taiwan and Singapore (see, for example, Abo 2000; Borrus, Ernst and Haggard 2000; Dicken and Yeung 1999; Yeung 2000). This provides further support for the importance of geographical proximity as a driver of transnational production networks. It is a process that Abo (2000) has called 'spontaneous integration' and is manifested in a clear intra-regional division of labour.

The precise nature of regionally-focused transnational production networks is both sectorally and geographically specific. The particular technical and market characteristics of different industries means that both the geographical configuration of their production networks and the ways in which such networks are influenced by, and interact with, regional and state institutions are highly contingent. I use, as an illustrative example the case of automobile production networks in East Asia

4. An illustrative example: automobile production networks in East Asia

Automobile production in East Asia is dominated by Japan and, to a lesser extent, Korea. Elsewhere, the volume of production is still very limited. Outside Japan and Korea, the major automobile production foci in the region are China, Malaysia, Taiwan, and Thailand. Overall, Japanese firms dominate the region's automobile production. Through a network of assembly plants and joint ventures with domestic firms, Japanese cars are assembled in Thailand, Malaysia, the Philippines, Indonesia, Taiwan, and China. In several of these countries, Japanese manufacturers totally dominate the automobile market. In Thailand, for example, Japanese firms have a market share of more than 90 per cent; Toyota alone controls almost 30 per cent of the Thai vehicle market. Most of these vehicles are assembled locally in individual countries to serve the local market. "Everywhere in the region, Toyota and other Japanese car makers have, in effect, re-created a whole supply chain in order to serve the local market" (*The Economist* 24 June 2000). This is less out of choice on the part of the Japanese manufacturers than out of the necessity created by high levels of import protection in virtually all the East Asian countries, particularly those in South East Asia (notably Malaysia).

In comparison, Korean firms have preferred to serve East Asian markets from their domestic bases, although Hyundai has operations in Indonesia. Western automobile companies have only recently taken a really serious interest in East Asia. Of course, several US and European firms have had small CKD plants in different parts of the region for many years, while GM and Ford have had significant equity involvement in Japanese firms (Isuzu and Suzuki in the case of GM; Mazda in the case of Ford). Today, virtually all the major western automobile companies are in the process of establishing operations in the region. In the case of Renault this has involved the acquisition of 44% of the equity in Nissan.

More broadly, however, the nature of automobile firms' operations in the region is determined not only by the specific strategies of the firms themselves but also by the highly differentiated political environment within East Asia. The situation is very different from that in Europe, where the size and affluence of the regional market and the high degree, and wide geographical extent, of political integration have facilitated the development of an increasingly sophisticated intra-regional integration of production. Although East Asia is regarded as potentially the fastest-growing market for cars over the next few decades, the size and composition of the regional market remains limited. In addition, the East Asian automobile market remains primarily a series of individual *national* markets, some of them very heavily protected against automobile imports. On the other hand, the undoubted potential of the East Asian market, set against the saturation of most

Western markets, makes it an absolutely necessary focus for the leading automobile manufacturers.

In this section, I will focus on two specific areas within East Asia – ASEAN and China – emphasizing, in particular, the contrasting power and bargaining relationships between automobile TNCs, attempting to create production networks, and states attempting to capture as much value as possible from their participation in such transnational networks.

4.1 The automobile industry in ASEAN[6]

Although ASEAN is the only regional political grouping in East Asia it is still, from an economic point of view, and notwithstanding the establishment of the ASEAN Free Trade Agreement (AFTA), a fragmented entity. This is despite the fact that a 'complementation' plan was devised as early as the 1960s among the four largest ASEAN members to reap the benefits of scale economies in production. In the case of the automobile industry, it was not until the late 1980s that the BBC (Brand-to-Brand Complementation) scheme was implemented to allow some degree of reciprocal tariff reductions on mutual transactions by specified firms between their operations within ASEAN. The BBC scheme excluded non-OEM component manufacturers. However, in 1996, a new complementation scheme, AICO (ASEAN Industry Cooperative Organization), was introduced which does include components (see Yoshimatsu 2002).

Within ASEAN, Malaysia stands apart as a special case that has invested very heavily in a national car project: the Proton. Initiated by the government in 1985, the Proton project was based upon a close relationship with Mitsubishi. The Japanese company still retains a stake in Proton, but the Malaysian firm is now growing rapidly in its own right and is now the largest car manufacturer in the ASEAN region. It also has joint-venture assembly plants in the Philippines and Vietnam (UNCTAD 2000: 164). However, to protect Proton in its domestic market, "Malaysia has decided to delay the opening of its car market to 2005, rather than the 2000 agreed by the AFTA [ASEAN Free Trade Area] regional trade grouping. Proton now benefits from preferential treatment over foreign carmakers, who must pay high import tariffs" (*Financial Times* 11 October 2000).

Despite remaining intra-ASEAN problems there has been considerable progress towards creating a more integrated market for automobiles and components. Certainly it is the

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[6] This section is derived from Dicken (2003a). Yoshimatsu (2002) presents a detailed analysis of the negotiating processes between TNCs and ASEAN governments in the development of industry policy.

expectation of further progress that underlies the very rapid growth of foreign investment in the region. Within ASEAN, Thailand has emerged as the major focus of automobile and component production (outside the special case of Malaysia). Development of an export-oriented automobile industry has been a central plank of Thailand's industrialization strategy since the early 1990s. Virtually all the major foreign assemblers and component manufacturers either already have, or plan to have, a presence there. Thailand has emerged not only as a major concentration of Japanese automobile and components production but also as the favoured point of entry of Western car manufacturers, notably GM and Ford through their Japanese partners (Isuzu/Suzuki and Mazda respectively). GM established a $600 million assembly plant in 2000 and BMW has also recently opened an assembly plant in Thailand.

As a consequence of the large number of inward investments, Thailand has become the third largest exporter of automobile products in East Asia, after Japan and Korea; in effect it is the South East Asian export hub for Japanese, US, and European firms. There is a particular emphasis on the production of pick-up trucks and small, basic cars and on a high concentration of component production. "Thailand has more than 725 components producers, with roughly 225 supplying the OEM market and the rest catering to the after-market" (UNCTAD 2000: 160).

For all the automobile assemblers, unrestricted access to the entire South East Asian regional market is absolutely essential to achieve economies of scale and to be able to develop full, rather than mere CKD, production. Free flow of materials and components within ASEAN is even more important to enable both OEMs and component manufacturers to establish an intra-regional division of labour. The leading Japanese components firm, Denso, provides a good example of this. The evolution of its network strongly reflects the industry policies of the individual countries. Denso's first operations in South East Asia were established in Thailand in 1972, followed by Indonesia in 1975, Malaysia in 1980, and the Philippines in 1995. In 2001, an operation was established in Vietnam. These operations are controlled from the company's regional headquarters in Singapore (DIAS -Denso International Asia), which is responsible for a range of key functions, notably: materials purchasing for all the operations in the region, financial management, intra-regional complementation. DIAS has varying equity stakes in each of the plants in the ASEAN countries, as well as in Taiwan and Australia.

In terms of production, Malaysia is Denso's most important site, followed by Indonesia, Australia, and Thailand. Most production in each case is for the local market, a reflection of the regulatory restrictions imposed by individual countries on automobile assembly. The components manufacturers have to follow the assemblers. However, Denso's national

operations export significant proportions of their output (Malaysia 30%, Thailand 24%, Indonesia 20%). Some of this is for the world market but a significant proportion is designed for inclusion in the 'complementation' scheme in ASEAN and represents a developing intra-regional division of labour.

Yoshimatsu (2002) argues that the slow, but progressive, integration of the ASEAN region very much reflects the relative bargaining strength of the leading automobile manufacturers – especially the Japanese – in relation to the relatively weak states. He shows how pressure from the TNCs forced the ASEAN states to introduce schemes to modify the tariff structures, which began to make it possible for assemblers and component manufacturers to create more regionally-integrated production networks. In particular, he argues that "Japanese auto [T]NCs preferred tariff reduction under the AICO in order to consolidate the production of specified parts at particular plants in the region. They considered that extra-regional barriers were still necessary in order to protect the ASEAN auto industries, given their weak competitiveness. [...] Japanese [T]NCs show less interest in market liberalization at the more multilateral level. The APEC Automotive Dialogue began in July 1999 under the initiative of the US Department of Commerce. The US government, reflecting the US automakers' interests in further advancement into Southeast Asia, sought to promote trade and investment liberalization in the automobile markets. However, Japanese automakers, in concert with local partners, pushed back the liberalization proposal. [...] Japanese auto [T]NCs have preferred discriminatory regional arrangements in order to secure their status in the ASEAN market against foreign competition. At the same time, they hope to extend the preferential arrangement adopted in ASEAN to neighbouring Taiwan and Australia" (Yoshimatsu 2002: 142, 143).

4.2 The automobile industry in China[7]

In contrast to the situation in South East Asia, the balance of power in the automobile industry in China is very much in favour of the state. China has become the fastest-growing automobile market in the world. While stagnant demand and associated over-capacity continue to bedevil the mature automobile markets of North America and Western Europe, the combination of historically low absolute levels of vehicle ownership, together with rising affluence in the major cities, has resulted in China's emergence of the third largest

[7] This section is derived from Liu and Dicken (2005). Depner and Bathelt (2003) provide a perceptive discussion of the experiences of German automobile firms in the 'Shanghai automobile cluster'.

automobile market in the world. By 2003, all of the world's leading automobile producers had established production facilities in China.

However, the recently emerging production networks created by foreign manufacturers in China are deeply influenced, organizationally and geographically, by the bargaining strength of the Chinese state, which has been able to impose stringent entry and operating restrictions on foreign automobile firms. Successful operation of transnational production networks in China, in fact, depends not only on conforming to state policies (at central and local levels) but also on adapting to the complexities of the Chinese social, cultural and institutional system (see Depner and Bathelt 2003).

Although the policy of the Chinese government towards the automobile industry has changed in a number of ways since the sector was chosen as a key strategic sector in the late 1980s, a high degree of control remains which establishes the limits within which foreign manufacturers are able to operate. For example, despite reforms, the Communist Party of China not only retains effective control over government appointments but also over appointments of general managers in large state-owned enterprises. Indeed, the general manager of the First Auto Works Group sits on the CPC Central Committee. Similar state involvement exists at local levels, in the Shanghai Automotive Industry Corporation (SAIC), for example. The political decentralization that has occurred since 1978 has also created intensified local-local and local-central rivalry, especially in such key sectors as automobiles. As a result, local authorities have become major stakeholders in the industry. Such complex layers make it even more vital that foreign manufacturers find ways of adapting to Chinese patterns of social behaviour.

The basic strategy of the Chinese government has been to offer access to the domestic market – which it unequivocally controls – in return for capital and technology. Joint ventures have been the basic organizational form, with foreign manufacturers allowed to have no more than two such arrangements. Although various changes have had to be made to meet the requirements of China's recent entry into the WTO, the state's strong bargaining position has not been significantly weakened. It retains the right to approve joint ventures and decide which Chinese firms can develop such ventures with foreign firms, although this may be based on bargaining between the central and local governments.

The Chinese government has effectively used its control over the rate of entry into China as a measure to play off TNCs against each other (a reverse of the usual situation in which TNCs play off one government against another). Automobile TNCs have not been able to choose Chinese partners and production locations freely. The normal case has been that the Chinese government has permitted a domestic assembler to seek foreign partners for a joint venture and then TNCs have competed for the opportunity to break into the Chinese market.

In this particular political environment, TNCs are the bidders. Hence, the locational choices of TNCs have also been constrained by the regulatory framework and by the existing geography of the automobile industry. The evidence suggests that foreign firms have responded to these circumstances in varying ways, depending on their particular corporate culture and the timing of their entry into China (see Liu and Dicken 2005 for a discussion of the strategies of VW, GM and Toyota in China).

A key issue from the outset has been that of local content. As always, such requirements create tensions between the government and foreign firms. The government wants to upgrade the indigenous supply base while the foreign assembler wants to use its own parts suppliers, especially for sophisticated items. Facing the dilemma of low-quality local parts and strict local content requirements, the early TNC entrants into China either invested in local parts suppliers or encouraged (enforced might be a better term) their major existing suppliers to establish operations in China. Again, however, the state's role has been important. In 1995, for example, the central government selected 60 key parts considered to be bottlenecks for raising car production quality and recommended 170 local producers to foreign companies as candidates for forming joint ventures.

Some important local governments have also been active in this process. The Shanghai municipal government, for example, has, through a variety of mechanisms, ensured that an increasing proportion of the suppliers to SVW and SGM are located in the Shanghai area. One mechanism was the permission granted by the central government to the Shanghai municipality to levy a localization tax on buyers of the VW Santana. By the end of 1994, when this discriminatory tax was abolished, the municipal government had accumulated more than $1.2 billion as a localization fund for the Santana. It is perhaps significant that this special concession to SVW was connected with the then mayor of Shanghai, Zhu Rongji, who subsequently became State Premier. The revenue was used to support the technological upgrading of SVW's suppliers and to encourage their concentration in Shanghai.

In consequence, by 1994, 85% of the Santana was locally sourced (92.9% by 1997). The number of local suppliers to SVW has increased to around 300, nearly two-thirds of which are located in Shanghai itself, which provides half of SVW's outsourced parts in terms of value. SVW now, of course, produces a much wider range of cars – although this has only really occurred since SAIC made another joint venture with GM. Interestingly, too, VW did not undertake any significant R & D investment in China until GM was allowed to enter China in 1997, after which VW established a design centre in Shanghai as part of the firm's global R & D network.

The widely-held view that states are essentially, and universally, powerless to influence transnational production networks is, therefore, misleading. Under certain specific

conditions, the state *can* exert a material influence and can ensure that there are positive national and local benefits. To achieve this, however, the state not only has to have the *theoretical* capacity to control access to assets within its territory but also the power *actually* to determine such access. In other words, 'strong' states can be highly effective in the power struggle over investments. There is little doubt that the form – and the geography – of automobile production networks in China would have been quite different had the firms had unhindered access and freedom optimally to organize their transnational production networks. But the Chinese government has exerted virtually complete control over such entry and has adopted a policy of limited access for foreign firms, including the form that their involvement can take. Here, therefore, we have the obverse of the usual situation. Whereas, in many cases, TNCs are able to play off one country against another to achieve the best deal, in the Chinese case it is the state whose unique bargaining position has enabled it to play off one TNC against another.

Hence, the Chinese state has been able to control the entry and operation of automobile TNCs to a much greater extent than in most other parts of the developing world. This largely reflects differences in the kinds of political transformations that have occurred, as well as the sheer magnitude of the Chinese economy and market. In the case of China, a state-controlled political economy – albeit significantly changed and changing – continues to exist and the nature of the integration of foreign capital reflects this. In the countries of Eastern Europe, on the other hand, there has been a much more fundamental political – as well as economic – transition towards a more neo-liberal position. The transitional states of Eastern Europe overwhelmingly adopted neo-liberal market policies, which considerably reduced their individual bargaining power. But, as Bartlett and Seleny (1998: 320) have argued, the situation is made far more complex by these states' increasing integration into the EU political system which, they suggest, has, at least partially, shifted the balance of bargaining power between automobile TNCs and states.

However, the increasing *political* integration of the Eastern European states into the European Union, with its particular regulations on the concessions and incentives that can be granted to TNCs, has enabled those states to retrieve some of their bargaining power. But, as Bartlett and Seleny emphasise, this was only possible because, in effect, the EU acted as a 'strong state'. Left alone, the post-communist Eastern European countries would have been relatively powerless. As it is, their degrees of bargaining freedom should not be over-exaggerated. As experience throughout Europe shows, the intensity of competition between states for mobile investment – especially in industries like automobiles – places them in a far weaker position than China. There are far more substitutable locations within

Europe for potential investors to retain considerable bargaining strength. In the Chinese case, that does not apply.

Nevertheless, it seems clear that 'size matters'. Large individual states or, as in the EU case, organized conglomerations of states, are in a potentially stronger position to bargain with TNCs over access and local performance. But, this is a highly contingent process. The Chinese case is, in many respects, unique. We cannot be sure whether the Chinese state's ability to continue to shape its automobile industry so strongly can be maintained into the future. Already, membership of the WTO has placed certain constraints on the Chinese state's degrees of policy freedom. As yet, however, the balance of bargaining power remains strongly with the state. It will probably remain so for as long as the automobile producers feel impelled to have a direct presence in China and, in effect, have no alternative means of penetrating the Chinese market effectively. In those circumstances, the state holds the balance of power because it controls access to a much sought after asset.

5. Conclusions

The central argument in this paper is that, although the use of a production network conceptualization helps us to understand the organizational and geographical complexity of economic activities, we need to refine and further develop our understanding of these processes. There are issues to be resolved concerning the internal nature of production networks – we need a more sophisticated and nuanced approach to understanding their dynamic, multi-dimensional nature that goes beyond our currently rather simplistic approaches. This involves, in particular, a recognition of the mutually connected vertical and horizontal nature of production networks, the complex positionality and variable power and bargaining relationships of firms within such networks, and the central importance of circulation (logistics) processes in their operation.

At the same time, we need to pay far more attention to the external connectivities of production networks: the intricate ways in which each part of a network is grounded in, and connected into, specific geographical contexts. Within such a complex multi-scalar relational topology, certain scales have particular significance, most notably the national state scale. The state still matters – a lot. It is for this reason that I have used the term *transnational* – rather than global – production network. One of the most significant relationships in the global economy, therefore, is that of power and bargaining between TNCs and states, a process in which the outcomes are far less predictable and far more contingent than most of the literature allows. We still know far too little about these processes. Increasingly, however, such relationships are also embedded within regional

structures, either the 'natural' structures based on simple geographical proximity or the created structures of regional-political blocs. Both TNCs and states demonstrate a strong propensity to organize themselves regionally. Again, however, the relationships between transnational production networks on the one hand and regional political institutions and structures on the other are extremely variable and, essentially, indeterminate. The need, then, is not only for more robust conceptualizations but also more sensitive empirical research which seriously attempts to unravel the tangled webs of the real world of the global economy.

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