

GLOBAL PRODUCTION NETWORKS AND THE ANALYSIS OF ECONOMIC DEVELOPMENT

by

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Abstract

The analysis of economic development has been bedevilled by a series of analytical disjunctions that have resulted in work either at macro or meso levels of abstraction or, where empirical investigations have probed micro level processes, the larger analytical picture has often been absent, merely implicit, or at best weakly developed. In this paper, a concept of the 'Global Production Network' (GPN) is developed, which attempts to overcome the analytical difficulties of other approaches to explain global economic activities and their impact on development at various scales. After a critical examination of antecedents and contemporaries, we outline a conceptual framework for mapping and analysing economic globalisation and its developmental consequences. In so doing we have foregrounded the ways in which companies organise and control their global operations, the ways in which they are (or can be) influenced by states, trade unions, NGOs and other institutions in particular locations and the implications that the resulting combinations of agents and processes might have for industrial upgrading and ultimately for the prospects of poverty reduction and/or generalised prosperity in those locations. The main categories and dimensions of GPN analysis then are briefly discussed, using a stylised example.

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1. INTRODUCTION

The analysis of economic development has been bedevilled by a series of analytical disjunctions that have resulted in work either at macro or meso levels of abstraction or, where empirical investigations have probed micro level processes, the larger analytical picture has often been absent, merely implicit, or at best weakly developed.¹ While there are notable exceptions to this general rule,² behind it lies half a century and more of scholarship in the political economy and sociology of development as much as in development economics, irrespective of the latter's paradigmatic stripe.³ From the beginnings of 'dependency' approaches to development (prefigured in the work of Raoul Prebisch and subsequently the UN Economic Commission on Latin America) and its twists and turns in work as varied as that of Baran (eg. 1962), Frank (eg. 1969), Cardoso (eg. Cardoso and Faletto 1979), Evans (eg. 1979) and others, through to arguments over the respective roles of 'states' and 'markets' in the East Asian 'miracle'

¹ Our comments here should not be taken to imply our automatic acceptance of such scalar notions of abstraction. At the same time, however, we would resist their complete abandonment as is evident in some contributions to 'actor-network theory'. Our position is rather one of a 'critical acceptance' of scale abstractions and is outlined in Dicken et al (2001).

² Armstrong and McGee's (1985) analysis of the relation of capital accumulation to the formation of cities and regions is an important, if underrated, example from within development geography.

³ While this proposition is perhaps less contentious for the neo-classical tradition in development economics from the work of Viner (1953) and Bauer and Yamey (1957) onwards, we contend that it is also largely true of the work that draws on other traditions, such as the pioneering work of Lewis (eg. 1954), Myrdal (eg. 1957), Hirschman (eg. 1958) and more recent scholars who have worked in similar veins. For the purposes of this paper, however, our intellectual engagement is largely with contributions to the political economy of development be they in 'sociological', 'economic', 'geographic' or 'political science' guises.

and its alleged recent demise (cf. Wade 1990, 1998, Balassa 1991, World Bank 1993, Krugman 1998, Chang 1998, Chang et al 1998, Henderson 1999, Haggard 2000), the central agent in development has often been perceived as the state, whether the assessment of its role has been positive or negative.⁴ Although the developmental significance of labour, gender and other social movements as well as international agencies such as the IMF and World Bank, tend to figure in radical analyses, the analytical space given to development actors other than these, has been limited.

Nowhere is this relative absence more obvious than with regard to the firm. Although there is a long history of work on foreign investment and development (summarised, for instance, in Jenkins 1987, Dunning 1993 and Dicken 1998), this tends to deal largely with the role of transnational corporations (TNCs) and to rely primarily on secondary data for its empirical bases. Little of it probes the organisational dynamics of TNC subsidiaries as they emerge, evolve and impact on particular economies and even less of it deals with domestic firms, be they associated or not with foreign companies.⁵

There is, of course, a considerable amount of research that has been conducted by sociologists of work and organisation and by specialists in management studies. However, this has been largely confined to companies in developed economies and the former state-socialist societies of Central and Eastern Europe, and where it has been conducted by management specialists, it has remained outside the social science mainstream and thus has largely failed to influence (or be influenced by) more general developmental discourses. Where work of this nature has been conducted in the developing world, it has been done largely by feminist researchers and has tended to engage more with gender-related issues than with the broader questions of industrial organisation and economic development (see for instance, Grossman 1979, Elson and Pearson 1981, Heyzer 1986, Mitter 1986)

A further – and given contemporary circumstances, perhaps fatal – analytical disjuncture is that research on economic development (as with the vast majority of social science) has been state-centric in its assumptions and analyses.⁶ While the emergence of world-systems theory has provided an analytical framework that moves

⁴ We have in mind here the arguments of the supposed panacea of ‘free’ markets as development tools, on the one hand, through to the stress on state industrial initiatives on the other, as well as those that view the state-market relation as symbiotic for development purposes. In all of these cases, however, the analytical weight tends to be placed on the nature and application of state economic policy (see Evans 1992).

⁵ The few notable monographs here (such as Gereffi 1983, Henderson 1989, Doner 1991, Sklair 1993, Kaplinsky 1994) only serve to underline the general rule.

⁶ We do not mean to deny the relevance of some state-centric contributions to the analysis of globalisation and its problems and how the latter might be resolved. Some of the work on the East Asian crisis, for instance (e.g. Chang 1998, Chang et al 1998, Henderson 1999, 2000, Weiss 1999), are cases in point.

beyond these limitations, it is a framework that has yet to act as a significant guide to empirical work on contemporary problems of development. As has often been noted since the early critiques (eg. Skocpol 1977) onwards, world-systems theory seems to be mired in a trans-historical research programme⁷ and has failed to generate the meso and micro level categories necessary to guide research on the present.

Yet we may now live in a world that in Castells' terms is being transformed from a 'space of places' into a 'space of flows' (Castells 2000a, 2000b; see also Castells and Henderson 1987). In order to understand the dynamics of development in a given place, then, we must comprehend how places are being transformed by flows of capital, labour, knowledge, power etc. and how, at the same time, places (or more specifically their institutional and social fabrics) are transforming those flows as they locate in place-specific domains. Globalisation (for that is the shorthand for our concerns) has undercut the validity of traditional, state-centred, forms of social science, and with that the agendas that hitherto have guided the vast majority of research on economic and social development. Investigations adequate to the study of globalisation and its consequences demand of social scientists the elaboration of analytical frameworks and research programmes that simultaneously foreground the dynamics of uneven development transnationally, nationally and sub-nationally. Such investigations require us to focus on the flows *and* the places *and* their dialectical connections as these arise and are realised in the developed and developing worlds alike. They require us to conduct investigations that operate at all levels of abstraction be those abstractions conceptual, spatial or empirical. Additionally, if the object of our endeavours is the possibilities for economic development and prosperity, then we should recognise that in order to speak authoritatively on these issues, we need to study what firms do, where they do it, why they do it, why they are allowed to do it, and how they organise the doing of it across different geographic scales.

In this paper we sketch an analytical framework which offers the promise of delivery on most, if not all, of the above dimensions. We recognise, of course, that we share our concerns with a growing number of scholars of whom Gary Gereffi (eg. Gereffi and Korzeniewicz 1994, Gereffi 1995, 1999a), Leslie Sklair (eg. 1995, 2001), Neil Brenner (1999) and those developing the new research field on 'transnational communities'⁸ come immediately to mind. In what follows we build on some of their work in order to

⁷ Albeit one that has provided a number contributions of the utmost significance. In addition to Wallerstein's foundational work, examples include those of Moulder (1977), Chase-Dunn (1989) and Arrighi (1994).

⁸ See for instance the work being conducted under the auspices of the Economic and Social Research Council (UK), Transnational Communities Programme (www.transcomm.ox.ac.uk) and its affiliated journal, *Global Networks*.

offer a framework that we believe will be more adequate to the task of analysing the relation of globalisation to economic development – in both ‘developed’ and ‘developing’ worlds – in the current epoch.

The framework we propose is that of the ‘global production network’ (GPN). We begin with a number of critical reflections on the most relevant precursors to our work. We then outline the conceptual elements of the GPN and in so doing, highlight the reasons for its analytical superiority over competing frameworks. Penultimately we present a stylised example of a GPN and finally sketch the sorts of research agendas that could flow from this perspective and the benefits that they could deliver.

2. ANTECEDENT AND CONTEMPORARY APPROACHES

There are five contributions to the analysis of the cross-border activities of firms that we should mark, though with varying degrees of utility.

Value Chains

The least useful of these for our purposes is Michael Porter’s (1985, 1990) notion of ‘value chains’. His conception delivers a purely linear sense of the various elements involved in producing, marketing and distributing a good or service and is designed to assist corporate executives to identify the ‘value’ embodied in those elements and to decide how that value can be enhanced in the interests of building ‘competitive advantage’. It is a notion that is intellectually bounded by the firm or inter-firm network and pays no attention to issues of corporate power, the institutional contexts of – and influences upon – firm-based activities, or to the territorial arrangements (and their profound economic and social asymmetries) in which the chains are embedded. As a consequence, its relevance for the study of economic development is decidedly limited.

Filières

Of greater interest is the ‘filière’ concept, which is defined as a system of agents producing and distributing goods and services for the satisfaction of a final demand (Malsot 1980: 33). Developed in the 1970s by French economists in order to achieve a more structured understanding of economic processes within production and distribution systems (Lenz 1997: 21), the concept stems from a predominantly empirical tradition, the main objectives of which are to map commodity flows and to identify the agents and activities within the filière (Raikes et al. 2000: 404-5). By doing so,

hierarchical relationships between the agents can be identified, allowing for a detailed analysis of the dynamics of economic integration and disintegration.

Unlike other contributions - global commodity chains, for instance (see below) - a distinct theoretical core for the *filière* approach is hard to identify. There is, in fact, a plurality of theories underlying recent *filière* analyses, particularly those of regulation and convention theory.⁹ Both of these help to overcome the statics of the *filière* model by introducing an evolutionary and historical perspective on the development of different production systems. Although the *filière* approach focuses on agents within the system, as well as on dependency and the distribution of power, it concentrates mainly on two types of agents – large firms and (national) state institutions – and how their scope of activity is limited by technological constraints (cf. Jacquemin and Rainelli 1984). Hence, the spectrum of agents in production networks, their role in shaping these networks and thus influencing development at different scales, is only partially dealt with. Furthermore, the nature and properties of the networks per se are not thoroughly taken into consideration (Dicken et al. 2001:101).

Actor-Networks

Given the shortcomings of the value-chain and *filière* concepts, an explicitly relational, network-focussed approach promises to offer a better understanding of production systems. One such approach is actor-network theory (ANT)¹⁰, which has been developed by Michel Callon, Bruno Latour and John Law, amongst others. ANT emphasises the relationality of objects and agency in heterogeneous networks ('relational materiality'), pointing out that entities in networks are shaped by, and can only be understood through, their relations and connectivity to other entities (Law 1999: 4). For the study of global production networks, this means that space and distance have to be seen not in absolute, Euclidian terms, but as 'spatial fields' and relational scopes of influence, power and connectivity (Harvey 1969, Murdoch 1998). Amongst other things, this has important implications for the conceptualisation of the 'global' and of 'globalisation'.¹¹

⁹ On the former see, for instance, Jessop's (2001) collection of some of the seminal contributions. On the latter see Storper and Salais (1997, particularly chapter 10).

¹⁰ ANT constitutes a means of analysis and a methodology, rather than a theory (Latour 1999: 20).

¹¹ Specifically it implies rejection of the term 'global' as a simplistic geographical construct (see our later discussion). Similarly economic 'globalisation', comes to refer to the extension of functionally integrated (and thus socially relational) economic activities across national boundaries (cf. Dicken 1998: 5). The implication of this for the conceptualisation of GPNs is that they come to be seen as dynamic topologies which potentially change shape and scope over time.

Another important aspect of ANT is its rejection of artificial dualisms. For our current purposes, this points to the need for a sceptical relationship to the traditional global-local and the structure-agency dichotomies. Finally, ANT conceptualises networks as hybrid collectivities of human and non-human agents (Dicken et al. 2001: 101-2) and thus allows the consideration of the important technological elements that underly and influence GPNs. Taking cognisance of these insights, then, enables us to deal consistently with the different dimensions and categories of a given GPN. However, while ANT offers an interesting methodology, that already has been adopted for the study of globalisation and production networks (see, for instance, Whatmore and Thorne 1997), its contribution to the analysis of globalisation and economic development is constrained by the fact that it lacks an appreciation of the structural preconditions and power relations that inevitably shape GPNs (Dicken et al. 2001: 107).

Global Production Networks

One contribution with a direct affinity to our work is Dieter Ernst's version of the 'global production network'. Developed contemporaneously, but independently of our work,¹² Ernst's view of a GPN refers to a particular organisational innovation, namely networks that 'combine concentrated dispersion of the value chain across firm and national boundaries, with a parallel process of integration of hierarchical layers of network participants' (Ernst and Kim, 2001: 1). Put simply, Ernst is concerned with characterising TNC networks that operate within and across vertically disintegrated agglomerations of economic activity in different countries, rather than through a series of 'stand-alone' overseas investments. The fundamental rationale for firms to establish GPNs of this nature is supposedly to access flexible, specialised suppliers in lower-cost locations. The GPN is seen to supersede the transnational corporation as the most effective form of industrial organisation, a shift that has emerged in response to three constituent processes of globalisation; namely the ascendancy of liberalisation policies, the rapid uptake of information and communication technologies, and the onset of 'global' competition. The empirical evidence used to illustrate this alleged wholesale shift in industrial organisation is anecdotal and almost exclusively drawn from the electronics and information technology industries. Consequently, rather than having developed an explanatory category of general relevance, Ernst has tended to highlight only one particular form of industrial organisation; and one at that which seems to be drawn from a sectorially narrow range of cases. While on one level Ernst's notion of the

¹² Though he had previously worked with the notion of the 'international production network', Ernst first adopted the term 'global production network' in a paper of 1999 (see Ernst 1999 and Ernst and Kim 2001). Our first attempt to elaborate a GPN framework appeared in a research proposal that same year (Dicken and Henderson 1999).

GPN is in accord with that developed in this paper (in that it is concerned to explicate the range of intra-firm and extra-firm transactions and forms of co-ordination that characterise contemporary corporate networks), our intention is more concerned with establishing a frame of understanding that can be applied to all forms of global production.

Ernst's work is particularly helpful, however, in that he highlights a number of key problems that have hindered previous research in this area. First, he suggests that there has been a tendency to focus narrowly on the role of key 'flagship' firms within GPNs, at the expense of attention to network suppliers that are more than one stage removed from the flagship.¹³ This is unsatisfactory both theoretically and practically in terms of revealing the sources of competitive success within GPNs. Second, he notes that in mapping the dispersion of production units, research has often overlooked the wide range of service functions (from design to marketing and beyond) that are crucial to the viability of GPNs. With this in mind, specialised service inputs of all kinds must be accorded a full and active role in conceptual frameworks. Third, Ernst notes a pre-occupation with formal R&D and technology transfers, which may preclude an appreciation of the importance of diffusion of less codified forms of knowledge. Indeed, much of Ernst's research under the GPN banner has been concerned with the potential for different forms of knowledge (which he variously terms 'embrained', 'embedded', 'encultured') to be diffused from GPNs in developing country locations and thereby stimulate local industrial upgrading (see, for example, Ernst, 2000b).

While Ernst's work is of considerable value for the development of a research agenda on production networks, the most conceptually advanced precursor to our own work is Gary Gereffi's elaboration of the 'global commodity chain' (GCC). Given its particular significance for our purposes, we need to explore its elements in more detail than has been necessary with the other contributions.

Global Commodity Chains

Gereffi's work is in one sense merely the latest in a series of attempts to frame economic development in terms of the (broadly defined) 'dependency' tradition of analysis. In focussing on the dynamics of the global organisation of production, however, it has a particular affinity with the work in the late 1970s and 1980s on the emergence of a 'new international division of labour' and its economic and socio-spatial consequences (cf.

¹³ We are uncomfortable with the term 'flagship' (firm) which appears to pre-suppose the direction of power relations within a given GPN rather than viewing them contingently. Specifically, so-called 'flagships' may not be as powerful as they (at first) appear.

Fröbel et al 1980, Friedman 1986, Sassen 1988, Henderson and Castells 1987, Henderson 1989). As with the work of Fröbel and his colleagues, Gereffi's contribution was an explicit attempt to operationalise some of the world-systems categories¹⁴ for the empirical study of cross-border firm-based transactions and their relation to development (Gereffi 1995). Unlike their work, however, it broke with the static (and now empirically redundant) spatial categories of the core/semiperiphery/periphery typology and as such was better able to grasp the reality of the 'new' forms of industrial organisation that had become the objects of scholarly attention during the 1980s and 1990s. These forms – associated with post-fordism, flexible specialisation, industrial districts and the like – highlighted the significance of productive, inter-firm and social networks and seemed to result in asymmetries of development (both inter- and intra-nationally) that could not be easily comprehended by earlier theorisations.

For Gereffi and his collaborators, global commodity chains consist of:

“sets of interorganizational networks clustered around one commodity or product, linking households, enterprises, and states to one another within the world-economy. These networks are situationally specific, socially constructed, and locally integrated, underscoring the social embeddedness of economic organization...Specific processes or segments within a commodity chain can be represented as boxes or nodes, linked together in networks. Each successive node within a commodity chain involves the acquisition and/or organization of inputs (e.g. raw materials or semi-finished products), labor power (and its provisioning), transportation, distribution (via markets or transfers) and consumption” (Gereffi et al 1994: 2).

As well as being one of the earlier definitions of GCCs, the one quoted above is also one of the most comprehensive. With the exception of trade unions and other NGOs, here are listed most of the elements that are pertinent to the organisation of firm and inter-firm networks and their relation to the possibilities for economic and social development. As we shall see later, however, only a small selection of these elements have been followed through empirically or analytically by Gereffi, his collaborators, or others who have worked in this vein.¹⁵ As a result, the ambitious programme for GCCs research set out above, has only partially been delivered. As we suggest later, one of the reasons for this is the in-built limitations of the framework's conceptual armoury.

¹⁴ In Gereffi's case derived particularly from a paper by Hopkins and Wallerstein (1986).

¹⁵ Hardly any work has been done, for instance, on households and the reproduction of labour power (including 'provisioning') from within a GCCs perspective. The only partial exception (as its analytical

Gereffi (1994: 96-7, 1999b) has identified four main dimensions of GCCs¹⁶. These are: (1) an *input-output structure* by which he means the raw materials, knowledge, productive and service functions (with their different value-adding capabilities) that link together across a given industry or related industries; (2) a *territoriality* by which he means the spatial patterning of the chain-related activities and particularly the extent to which these are spatially concentrated or dispersed and whether or not they are territorially bounded (such as within a given nation state); (3) a *governance structure* whereby the relations of power within and between the firms in a given chain determine how resources are allocated and how they flow between the various nodal points in the chain; and (4) an *institutional framework* that provides the national and international contexts (policy regimes, formal and informal 'rules of the game' etc.) that impact on the chain at each of its nodal points.

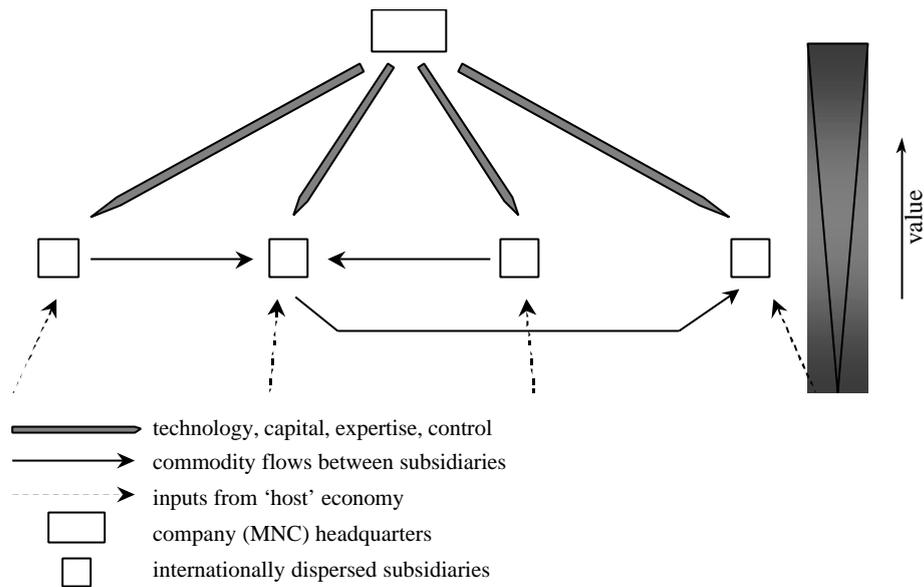
In practice Gereffi himself and most of his collaborators concentrate on only one of its analytical dimensions: the governance structure of the chains. With the partial exception of input-output relationships (but only in the apparel and footwear industries) the other analytical dimensions are given little or no consideration. While we address below the problems which flow from these issues, we first need to mark the utility of the framework even when restricted to the question of chain governance.

From a plethora of possible governance structures, Gereffi (1994) distils two ideal-types: producer-driven and buyer-driven commodity chains. Drawing on work on the spatial organisation of production in the electronics and automobile industries (particularly, it seems, that by Henderson 1989, Hill 1989 and Doner 1991) he regards producer-driven chains as characterising the integrated production systems of TNCs in such capital and technology intensive industries as automobiles, mainframe computers, semiconductors, aircraft, power generating and other heavy electronic equipment. In producer-driven chains, corporate power is seen as being exercised vertically in the sense that it emanates from headquarters and flows 'downwards' through the subsidiaries. Conversely the value generated in the various dispersed locations tends to flow 'upwards' from the subsidiaries to headquarters by virtue of the nature of subsidiary ownership (total or majority) and the ability to repatriate all profits (see Figure 1).

relation to GCCs is tangential) is Bonacich and Appelbaum's work on the Los Angeles garments industry (Bonacich and Appelbaum 2000).

¹⁶ Initially only three dimensions were identified (Gereffi 1994). The fourth – the institutional framework – appeared later (Gereffi 1995).

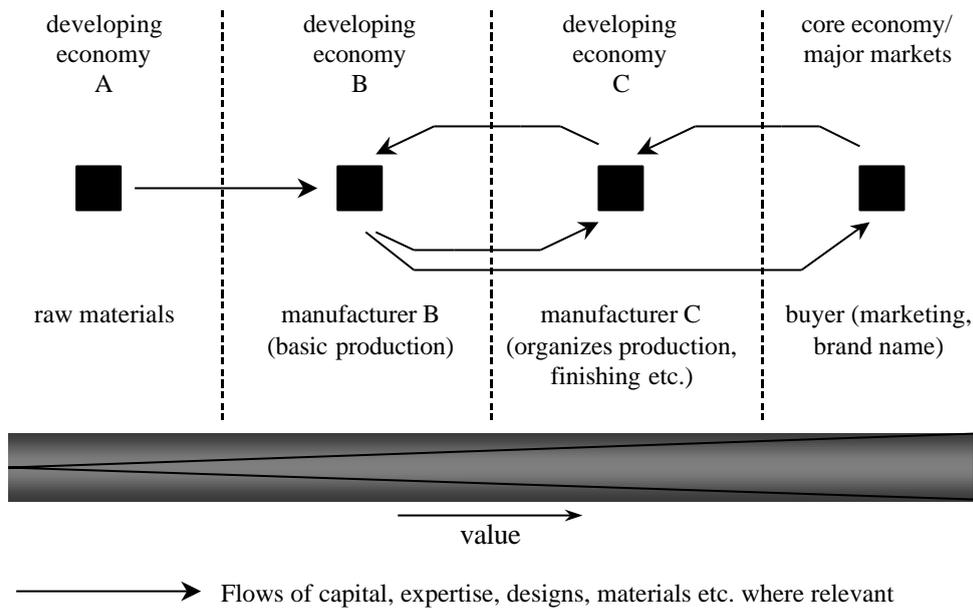
Figure 1: *Global commodity chains: producer driven*



Source: Henderson 1998: 369

Influenced by his work with Korzeniewicz on footwear production (e.g. Gereffi and Korzeniewicz 1990) and subsequent work, through the 1990s on the apparel industry (e.g. Gereffi 1999a, Bair and Gereffi 2001), Gereffi sees buyer-driven chains as being typical of those developed by large retailers and brand name merchandisers. These companies are 'manufacturers without factories' in the sense that while they are responsible for product specification, purchase orders and marketing, production is dispersed to independent companies who operate as 'original equipment manufacturers', often with their own networks of suppliers and subcontractors. Industries organised through buyer-driven chains include apparel, footwear, personal computers, some consumer electronics, toys, metal products such as bicycles, and some agricultural products. In buyer-driven chains the corporate power originates with the retailer or brand-holder but can be more dispersed by virtue of the independent ownership of the companies incorporated into the chain. As a result it tends to be exercised horizontally (see Figure 2). Additionally, in industries organised through buyer-driven chains, the bulk of the value is added not in the production stages, but at the stages of 'branding' and marketing.

Figure 2: *Global commodity chains: buyer driven*



Source: Henderson 1998: 370

In spite of this concentration on the governance dimensions of the chains, what we have – even in this truncated form – is a scheme that potentially takes us a long way towards identifying and analysing the dynamics and consequences of uneven economic development in developed and developing countries alike. It has helped to spawn important work on footwear, garments, electronics, horticulture, tourism and auto-components, for instance, and has provided the analytical rationale for what could become new policy initiatives from the International Labour Office (ILO)¹⁷. Additionally Gereffi (1999b) has recently linked this governance scheme to differing development strategies and thus to ways of upgrading industrial production in terms of skill, technology, management learning and value-added. In spite of the undoubted improvements on earlier work that the GCC framework has stimulated, however, it is fraught with analytical difficulties, that in our view, point to the need for a new scheme. In the next section we outline these problems as a prelude to our response: global production networks.

¹⁷ See, for instance, the essays collected in Gereffi and Korzeniewicz (1994) and Gereffi and Kaplinsky (2001). See also Clancy (1998), Dolan and Humphrey (2000), Bonacich and Appelbaum (2000) and Kaplinsky (2000). The ILO's research institute, the International Institute of Labour Studies, in the late 1990s sponsored a programme on 'global commodity chains'. For the results of some of the research developed for that programme, see Gereffi et al (2001). The continuing media attention to the exploitative working conditions evident in the supplier companies integrated into the (buyer-driven) chains of the likes of Nike and Gap, for instance, underlines the utility of the GCC framework for agencies such as the ILO.

In spite of the utility of the GCC focus on the governance structure of the chains, Gereffi's distinction between producer and buyer driven chains is a crude one which in itself leads to problems. First, although the rationale for this distinction lies in differential barriers to entry into the various product markets (Dicken et al 2001), it is clear that the distinction is intended to refer to sectorally and organisationally specific empirical realities. Producer-driven chains, for instance, are essentially seen as typifying fordist and neo-fordist forms of productive activity, while buyer-driven chains refer essentially to post-fordist operations associated with flexible specialisation. As the vast majority of work in the GCCs tradition has been concerned with industries organised along post-fordist lines ¹⁸, it is hardly surprising that the problems that arise from the empirical application of this distinction have rarely been a source of comment. However in the few cases where the GCC framework has been used to study industries supposedly organised on the bases of producer-driven chains (such as in automobiles), it is clear that the empirical reality is far more complex than this bifurcated governance structure would lead us to believe (see for instance, Czaban and Henderson 1998, 2001 and Harvas 1997).

Second, much of the work from within the GCC tradition seems to have been concerned with describing governance structures and (occasionally) input-output relations as they currently exist. Only recently has work begun to emerge which seeks to re-construct the history of the nature and implications of the chains (eg. Bair and Gereffi 2001). Paying attention to these issues, however, is important because of the likelihood that the social relations embodied in the chains may have imposed a 'path dependency' upon them; may have constrained, in other words, the trajectories of chain development through to the present and beyond. Where new industrial formations are being studied – such as in parts of the developing world – this absence of attention to issues of path dependence may be less of a problem. Where industrial economies are being studied, however, and particularly industrial economies – such as those of Western Russia and East-Central Europe – that are being networked into the world economy for the first time in more than 50 years, the extent of their path dependence becomes a central issue. As a growing body of scholarship on the dynamics and consequences of transformation in Eastern Europe has shown, for instance, the institutional contexts and social arrangements of the state-socialist period linger-on and circumscribe in important ways the potential for economic and political development (see for instance, Stark 1992, Hausner et al 1995, Elster et al 1998, Eyal et al 1998).

¹⁸ At a rough estimate, over two thirds of publications that have been influenced by the GCCs framework

Third, although the GCC framework seeks to incorporate the international production systems developed by TNCs into its analysis, there have been few attempts to understand the significance of firm ownership (domestic or foreign, and in the latter case, by nationality) for economic and social development in particular societies. Even though this ‘silence’ may be a product of the scheme’s primary concern with buyer-driven chains, there is clearly a long tradition in the political economy of development that hypothesises the ‘nationality’ of firm ownership as a key element in economic and social progress.¹⁹

The fourth problematic issue for the GCC framework is the fact that commodity chains link not only firms in different locations, but also the specific social and institutional contexts at the national (sometimes sub-national) level, out of which all firms arise, and in which all – though to varying extents – remain embedded. The implication of the GCC framework seems to be that firms are principally reflexes of the way given commodity chains are organised and of the structural requirements this imposes on their operation in any given location (except, presumably, TNC or ‘buyer’ headquarter locations). In this scheme of things firms appear to have little autonomy to develop relatively independent strategies (though this seems crucial for the prospects for sustained development). Additionally there appears to be little room for understanding where national and local differences in labour market organisation, working conditions etc. come from. In our view these issues cannot be effectively theorised unless it is understood that inter-firm networks link societies which exhibit significant social and institutional variation, embody different welfare regimes and have different capacities for state economic management: in short, represent different forms of capitalism (cf. Hollingsworth et al. 1994, Boyer and Drache 1996, Whitley 1999, Coates 2000).

As an emerging theory of development the GCC perspective has much to recommend it and in our view is superior to other frameworks that attempt to guide empirical research on the dynamics of economic globalisation. As we have argued it carries forward the task of transcending the limitations of state-centred forms of analysis and in so doing highlights the restrictions on firm – and thus economic and social – development that arise from the structure of corporate power embedded in the intra and inter-firm networks which circle the globe. By helping to show that the capacities to generate value are asymmetrically distributed, due to the structure of GCCs, the perspective points to the existence of new forms of ‘dependent

have been concerned with the garments industry.

¹⁹ See, for instance, the work on the Brazilian ‘reserved market’ for personal computers (Evans 1986, Schmitz and Hewitt 1992).

development', as well as to possible ways of transcending those constraints. In our view, however, the analytical problems with the framework are of sufficient significance to require further theoretical innovation.

3. GLOBAL PRODUCTION NETWORKS

Our concept of the global production network (GPN) draws directly on the work of Gereffi and his collaborators, but takes seriously the criticisms that have been levelled against it and which have been summarised above. Concomitantly, the framework aims to provide a more rigorous and thorough conceptualisation of the GPN and its many constituent elements and contexts than is currently on offer in the work of Ernst. In particular, as intimated above, our approach seeks to elucidate the characteristics and developmental possibilities of all global production systems rather than delimit a particular form of organisational innovation. Before we elaborate the nature of the GPN, however, we need to explain our preferences for the terms 'production' rather than 'commodity' and 'network' rather than 'chain'. We also need to indicate our understanding of 'global'.

With regard to the first issue, in contemporary usage the term 'commodity' generally connotes standardised products and with that, the fixity of their production in time and space. While this remains the reality of some forms of productive activity and products (some agriculture and some heavy industry, for instance), it clearly does not capture adequately the post-fordist forms of activity that characterise many of the industries that the GCCs framework, for instance, was designed to analyse. More importantly, perhaps, our preference for a discourse of production places the analytical emphasis on the *social processes* involved in producing goods and services and reproducing knowledge, capital and labour power. Notwithstanding Marx's definitive deconstruction and interrogation of the commodity (in the first chapter of the first volume of *Capital*), the discourse of commodities has long been captured by orthodox economics of whatever paradigm. As a consequence, it has transmuted into a reified language shorn of its social content. There is a need, therefore, to re-focus attention on the social circumstances under which commodities are produced and thus avoid the ever-present danger of slipping into a perception of commodities as de-humanised building blocks involved in the making of other commodities.

With regard to the second issue, the metaphor of the chain gives the impression of an essentially linear process of activities that ultimately result in a final commodity rather than one in which the flows of materials, semi-finished products, design,

production, financial, and marketing services are organised vertically, horizontally, and diagonally in complex and dynamic configurations. Additionally, the chain metaphor – consistent with a commodity discourse – seems to have difficulties incorporating due attention to the issues of the reproduction of labour power etc. Furthermore, the chain metaphor works against the possibility of conceiving of the individual firms incorporated into a production system as having room for autonomous action within that system, in spite of the fact that such autonomy is central to the possibilities for industrial upgrading and thus sustained economic development. As a consequence of these difficulties, we find a discourse of networks to be more inclusive, empirically adequate and thus more analytically fertile.

Finally, while it is now fashionable to term ‘global’, phenomena and practices that until recently would have been more likely to be termed ‘international’ or ‘transnational’, our adoption of the former term is driven by our concerns with analytical precision. Specifically, the terms ‘international’ and ‘transnational’ derive from essentially state-centric discourses. Thus while they incorporate notions of cross-border activity of many sorts, they do not adequately express the way in which non place-specific processes penetrate and transform place-specific ones, and vice versa. They do not, therefore, help to deliver the imaginative sensibilities necessary to grasp the dialectics of global-local relations that are now a pre-condition for the analysis of economic globalisation and its asymmetric consequences.

The global production network is proposed as a conceptual framework that is capable of grasping the global, regional and local economic and social dimensions of the processes involved in many forms of economic globalisation. Production networks – the nexus of interconnected functions and operations through which goods and services are produced and distributed – have become both organisationally more complex and also increasingly global in their geographical extent. Such networks not only integrate firms (and parts of firms) into structures which blur traditional organisational boundaries, through the development of diverse forms of equity and non-equity relationships, but also integrate national economies (or parts of such economies) in ways which have enormous implications for such economies’ well-being. At the same time, the precise nature and articulation of such firm-centred production networks are deeply influenced by the concrete socio-political contexts within which they are embedded, produced and reproduced. The process is especially complex because while the latter are essentially territorially specific (primarily, though not exclusively, at the level of the nation-state) the production networks themselves are not. They ‘cut through’ state boundaries in highly differentiated ways,

influenced in part by regulatory and non-regulatory barriers and local socio-cultural conditions, to create structures which are 'discontinuously territorial'.²⁰

The GPN framework distances itself from the GCC perspective by explicitly recognising that:

- firms, governments and other economic actors from different societies sometimes have different priorities vis-à-vis profitability, growth, economic development etc (as was made clear, for instance, in the commentary surrounding the East Asian crisis e.g. Chang 1998, Haggard 2000, Henderson 1999, Higgott 1998, Olds et al 1999) and consequently the production chain's implications for firm and economic development at each nodal point cannot be 'read-off' from the logic of the chain's organisation and the distribution of corporate power within it (Czaban and Henderson 1998, Appelbaum and Kessler 1997). The GPN perspective, in other words, accords a degree of relative autonomy to domestic firms, governments and other economic actors (e.g. trade unions, where relevant) whose actions potentially have significant implications for influencing the economic and social outcomes of the chains for the locations they incorporate.
- input-output structures within the chains are centrally important, not least because it is these that constitute the sites where value is generated and where the enormous variations in working conditions that exist around the world, are delivered. Consequently any work on intra and inter-firm networks must pay significant attention to these structures and their consequences.
- an understanding of the 'territoriality' of production networks – namely, how they constitute and are re-constituted by, the economic, social and political arrangements of the places they inhabit – is central to an analysis of the prospects for development at the local level.
- the distinction between 'producer-driven' and 'buyer-driven' chains is more fluid than Gereffi's work allows for, with combinations of both in the same product areas, and indeed in some cases (e.g. auto components and consumer electronics) the same sector.
- in some sectors (pharmaceuticals and some electronics for example) technological alliances and licensing agreements are forms of inter-firm association that may

²⁰ For a discussion of regional politics and production networks, see Cabus and Hess (2000).

have significant developmental implications. Consequently they require attention in their own right.

Methodologically, then, the GPN perspective directs attention to:

- the networks of firms involved in R&D, design, production and marketing of a given product, and how these are organised globally and regionally;
- the distribution of corporate power within those networks, and changes therein;
- the institutions – and particularly government agencies, but also in some cases trade unions, employer associations and NGOs – that influence firm strategy in the particular locations absorbed into the production chain;
- the implications of all of these for technological upgrading, value-adding and capturing, economic prosperity etc. for the various firms and societies absorbed into the chains.

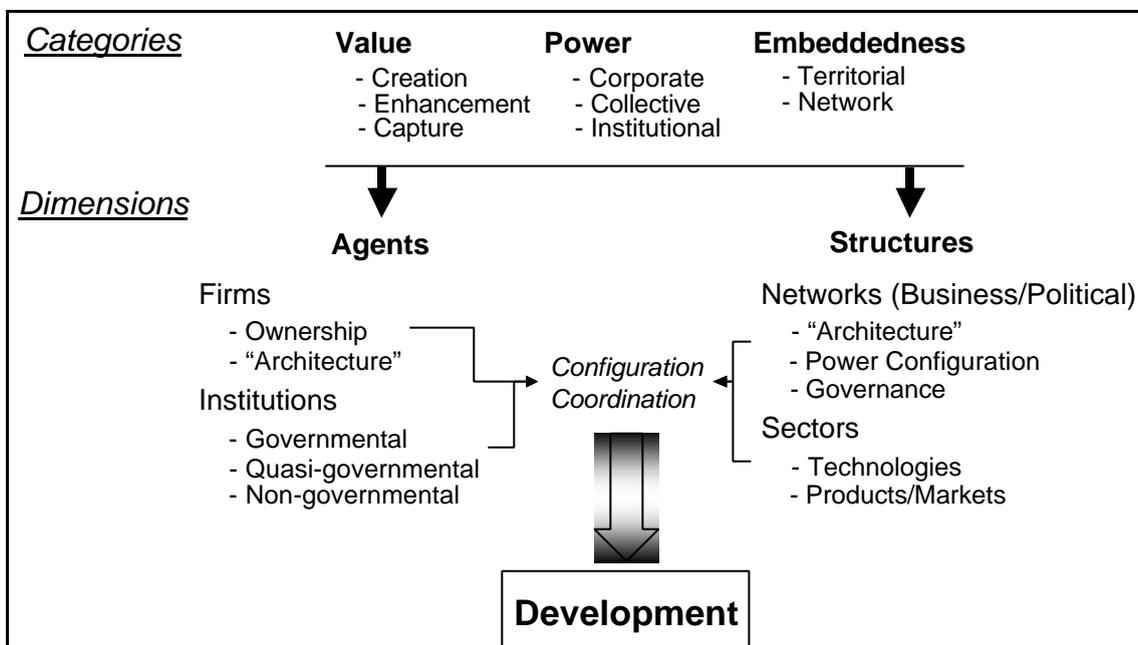
More specifically the components of the GPN framework can be disaggregated – for purposes of elaboration – by reference to Figure 3. While we elaborate these components below, it is worth noting here our view of 'technology' in the schema. While some of the components recognise the central role of technological change and information and communication technology (ICT) in shaping and transforming global networks (see, Ernst 2000a, 2001), we exclude 'technology' as a separate category. Instead, ICT is rather seen as an inherent element of GPN, underlying the development and maintenance of network connections. Technology, as one of globalisation's drivers, influences the processes of value creation in different places, as well as transforming the means by which power is exercised. Additionally, it affects the agents' possibilities of embedding in and disembedding from particular networks and territories.

A similar view is taken of the notion of spatiality. Specific spatial configurations are an inherent characteristic of all networks; each GPN can be mapped by 'placing' its agents and sketching their mutual connections. By the same token, every form of embeddedness always has an intrinsic spatial character.

There are, however, other aspects of spatiality to be considered. Firstly there is the issue of scalarity. All GPNs have to be regarded as multi-scalar, ranging from the

local and regional to the national and global and back again.²¹ Such multi-scalar networks are built-up and transformed over time by a multiplicity of agents with asymmetrical influence and power. This leads to another important facet of spatiality; namely the boundedness of network-based activities, for instance within the political space of the national (or in federal contexts, sub-national) state. Whereas business agents are able to transcend political or other borders (cultural, for instance) between territories, most of the non-business institutions are bounded – and thus restricted – by their spatial contexts at different geographic scales. This, of course, has various implications for development, especially in terms of the distribution of power, value creation and capture.

Figure 3: A Framework for GPN Analysis



3.1 Conceptual Categories

There are three principal elements on which the architecture of the GPN framework is raised. The first of these is:

Value: By ‘value’ we mean a combination of the Marxian notion of surplus value with more orthodox notions of economic rent. Thus we are interested in the following matters.

²¹ In other words, a continuum of scales (see Swyngedouw 1997, Dicken and Malmberg 2001).

- The initial *creation* of value within each of the firms incorporated into a given GPN. The significant issues here include the conditions under which labour power is converted into actual labour through the labour process; and the possibilities for generating various forms of rent. In the former the issues of employment, skill, working conditions and production technology are important as well as the circumstances under which they are reproduced (hence connecting these issues to broader social and institutional questions). In the latter (see Kaplinsky 1998, Gereffi 1999b) the issues are whether a given firm can generate rents from (a) an asymmetric access to key product and process technologies ('technological rents'); (b) from particular organisational and managerial skills such as 'just-in-time' production techniques and 'total quality control' etc. ('organisational rents'); (c) various inter-firm relationships that may involve the management of production linkages with other firms, the development of strategic alliances, or the management of relations with clusters of small and medium sized enterprises ('relational rents'); or (d) from establishing brand-name prominence in major markets ('brand rents'). In certain sectors and circumstances (e) additional rents may accrue to some firms as a consequence of the product scarcities created by protectionist trade policies ('trade-policy rents'), though this is another issue that connects questions of value creation to the institutional contexts (national and international in this case) within which firms operate.
- The circumstances under which value can be *enhanced*. The issues involved here include: (a) the nature and extent of technology transfers both from within and without the given production network; (b) the extent to which lead and other major firms within the network engage with supplier and subcontractors to improve the quality and technological sophistication of their products; (c) as a consequence, whether demands for skill in given labour processes increase over time; (d) whether local firms can begin to create organisational, relational and brand rents of their own. In all of these cases, the national institutional influences to which the firms are subject (governments agencies, trade unions, employer associations, for instance) may be decisive for the possibilities of value enhancement.²²

²² There is a growing literature that addresses these concerns with respect to differing 'qualities' of foreign direct investment (FDI). For example, Turok (1993) contrasts 'developmental' and 'dependent' modes of FDI-led growth, and at the level of the individual firm/plant, Amin et al. (1994) outline the characteristics of investments that foster value enhancement in their host economies. Young et al. (1994), among others, have considered the possibilities for effective institutional involvement in enhancement processes.

- The possibilities that exist for value to be *captured*. It is one thing for value to be created and enhanced in given locations, but it may be quite another for it to be captured for the benefit of those locations. The pertinent issues here partly involve (a) matters of government policy, but they also involve (b) questions of firm ownership and (c) the nature of corporate governance in given national contexts. In the first case, the nature of property rights and thus laws governing ownership structures and the repatriation of profits can be important, while in the second the extent to which firms are totally foreign owned, totally domestically owned, or involve shared equity as in joint-venture arrangements, continues to be decisive as a long tradition in the political economy of development has argued and recent experience in Britain, for instance,²³ has underlined. In the third case, the extent to which corporate governance is founded on stakeholder principles, rather than on shareholder dominance (and required by legal statute) can have important consequences for whether value generated in a given location is retained there and indeed used to be benefit of the common weal.²⁴ The issue of value capture, then, underlines the significance of the national form of capitalism – and thus matters of expectations, rights and obligations – for questions of economic and social development.

Power: The source of power within the GPNs and the ways in which it is exercised is decisive for value enhancement and capture and thus for the prospects for development and prosperity. There are three forms of power that are significant here.

- *Corporate* power. Here we have in mind the extent to which the lead firm in the GPN has the capacity to influence decisions and resource allocations – vis-à-vis other firms in the network – decisively and consistently in its own interests. Our adoption of a network discourse implies a rejection of a zero-sum conception of power in that lead firms rarely, if ever, have a monopoly on corporate power. Rather, while power is always asymmetrically distributed in production networks, lesser firms sometimes (and for contingent reasons) have sufficient autonomy to develop and exercise their own strategies for upgrading their operations etc. Additionally, and at least in principle, lesser firms incorporated into networks

²³ We have in mind the continuing dis-investment in British subsidiaries (with knock-on effects for local suppliers) by foreign companies. Since 1998 these have included at a minimum: Siemens, Samsung, LG and Motorola (in electronics), BMW, Ford and General Motors (in automobiles) and Corus (steel).

²⁴ Germany on the one hand and Britain and the USA, on the other, constitute polar opposites in this sense. In the latter, shareholders have supreme power over the disposal of profits and assets, while in the former (and in the European Union more generally, with the exception of Britain) owners are obliged to consider the interests of other stakeholders and the workforce in particular (Lane 1989, Hyman 2001). Indeed in Germany, property holders have a constitutional obligation to exercise their rights in the interests of the public good (Hutton 2001).

have the possibility of combining with other lesser firms to improve their collective situation within the GPN (as when SME clusters constituted as industrial districts are incorporated into GPNs).²⁵

- *Institutional* power. Our reference here is to the exercise of power by (a) the national and local state (in the latter case where the national state is constituted as a federal polity); (b) international inter-state agencies ranging from the increasingly integrated European Union on the one hand through to looser confederations such as ASEAN or NAFTA on the other; (c) the ‘Bretton Woods’ institutions (International Monetary Fund, World Bank) and the World Trade Organisation; (d) the various UN agencies (particularly the ILO); and (e) the international credit rating agencies (Moody’s, Standard and Poor etc) which exercise a unique form of private institutional power. The capacity to exercise power to influence the investment and other decisions of lead companies and other firms integrated into GPNs is inevitably asymmetric and varies both within and between these five categories. Thus with regard to national states, some of those in East Asia (particularly South Korea and Taiwan, but more recently China) have been perceived in recent decades as being amongst the most capable of influencing private companies in the interests of industrialisation and development (among an enormous literature see Wade 1990 and Henderson 1999) while states as disparate as those of Britain and Indonesia have been far less able to do so.²⁶ The power of the inter-state agencies is potentially considerable – particularly in the case of the EU – though elsewhere it remains weakly developed. The power of the Bretton Woods institutions, while it can be considerable, is exercised indirectly and impacts on companies, workforces and communities via the economic and social policies that national governments are obliged to implement. The power of the UN agencies is of much less significance than any of the other in that its influence on firms is not merely indirect, but it is also only moral and advisory. The significance of the credit rating agencies is potentially considerable, both directly for many lead companies and indirectly via their credit risk assessments of national governments. However, we as yet know little of the ways in which their influence is exercised (but see Sassen 1996, 1999).

²⁵ Castells develops ideas similar to these with regard to the exercise of economic and foreign policy by national states absorbed into ‘network states’ (of which the European Union is the prototype). See Castells (2000b: Chapter 5) and also Carnoy and Castells (2001).

²⁶ This is obviously not the place to explain such discrepancies except to mark that the answers seem to lie in a combination of political will (or its absence) and differing institutional capacities for economic governance. For the British and Indonesian cases see Hutton (1995) and Hill (1996) respectively. For more general and theoretical accounts of the relation between state capacities and economic development see Evans (1995) and Evans and Rauch (1999).

- *Collective power.* By this form of power we understand the actions of collective agents who seek to influence companies at particular locations in GPNs, their respective governments and sometimes international agencies (most recently the IMF and WTO in particular). Examples of such collective agents include trade unions, employers associations, and organisations that advance particular economic interests (e.g. of small businesses), NGOs concerned with human rights, environmental issues etc. These agencies may be nationally or locally specific, or they may be internationally organised as with some trade unions (e.g. the International Metal Workers) or human rights organisations (e.g. Amnesty International). In most circumstances where such agencies are engaged, they attempt to exercise countervailing power either directly on particular firms or groups of firms within given networks or indirectly on national governments or international agencies.

Embeddedness: GPNs do not only connect firms functionally and territorially but also they connect aspects of the social and spatial arrangements in which those firms are embedded and which influence their strategies and the values, priorities and expectations of managers, workers and communities alike. The ways in which the different agents establish and perform their connections to others and the specifics of embedding and disembedding processes are to a certain extent based upon the ‘heritage’ and origin of these agents. Firms – be they TNCs or smaller local enterprises – arise from, and continue to be influenced by, the institutional fabrics and social and cultural contexts of particular forms of capitalism (or in the case of Eastern Europe, China etc prior to the 1980s, particular forms of state socialism) in their countries of origin. While the nature of education, training and labour systems and the sources and organisation of corporate finance are important, of particular significance for firm development, priorities and strategies are the nature of state policy and the legal framework (cf. Zysman 1983, Hutton 1995, Herrigel 1996, Czaban and Whitley 1998, Whitley 1999).

Local companies that have emerged from particular social and institutional contexts evolve over time on the bases of trajectories that are in part a reflection of these contexts. As many scholars have pointed out with regard to the former state socialist societies of Eastern Europe, these trajectories are ‘path dependent’ and thus to some extent historically constrained (for instance, Stark 1992, Hausner et al 1995, Elster et al 1998, Czaban and Henderson 1998). While it is important to recognise that such constraints are not immutable and that their influence may be waning – not least because of globalisation – it is also important to acknowledge that some lead firms

when investing overseas may carry the institutional ‘baggage’ of their home bases with them. But others might also tend to operate at or near the lowest common denominator that domestic policies and legal frameworks will allow.²⁷

Amongst the different dimensions and aspects of embeddedness,²⁸ there are two related forms of firm and network embeddedness that are of interest here. The first form, *territorial*, deals with the various GPN firms’ ‘anchoring’ in different places (from the nation state to the local level), which affects the prospects for the development of these locations. The second form, *network* embeddedness, refers to the network structure, the degree of connectivity within a GPN, the stability of its agents’ relations and the importance of the network for the participants. Both forms, of course, are the result of essentially social and spatial processes of ‘embedding’.

- *Territorial* embeddedness. GPNs do not merely locate in particular places. They may become embedded there in the sense that they absorb, and in some cases become constrained, by the economic activities and social dynamics that already exist in those places. One example here is the way in which the GPNs of particular lead firms may take advantage of clusters of small and medium enterprises (with their decisively important social networks and local labour markets) that pre-date the establishment of subcontracting or subsidiary operations by such firms. Moreover, the location of lead firms in particular places might generate a new local or regional network of economic and social relations, involving existing firms as well as attracting new ones. Embeddedness, then, becomes a key element in regional economic growth and in capturing global opportunities (Harrison 1992; Amin and Thrift 1994).²⁹ The effects in terms of value creation etc may result in spatial ‘lock-in’ for those firms with knock-on implications for other parts of that firm’s GPN (see Grabher 1993 and Scott 1998). Similarly, national and local government policies (training programmes, tax advantages etc.) may function to embed particular parts of the GPN in particular cities or regions, in order to support the

²⁷ Japanese companies, for instance, have never offered ‘permanent employment’ contracts to employees in their foreign subsidiaries. Similarly German companies, though required by German and EU legislation to consult extensively with employees before instituting redundancy programmes, have never done so in countries where such laws do not apply. Recent disinvestments in Britain by Siemens and BMW are cases in point.

²⁸ As Oinas (1997, 1999), Pike et al. (2000) and others have correctly pointed out, the notion of embeddedness, based on Granovetter’s (1985) seminal work and often stressed in recent literature on socio-economic networks, still remains rather vague and therefore needs conceptual improvement (see also Markusen 1999 on fuzzy concepts). However, its importance for the understanding of economic organisation is widely acknowledged, even by critical voices (see for example, Sayer 2000).

²⁹ There is also a downside. The nature of local networks and socio-economic relations may under certain circumstances generate an inability to capture global opportunities and lead to regional economic downturn (Oinas 1997: 26). Strong embeddedness, therefore, is not necessarily a ‘good’ or positive quality of networks or its agents.

formation of new nodes in global networks, or what Hein (2000) describes as ‘new islands of an archipelago economy’. But the positive effects of embeddedness in a particular place cannot be taken for granted over time. For example, once a lead firm cuts its ties within a region (for instance, by disinvestment or plant closure), a process of disembedding takes place (Pike et al. 2000: 60-1), potentially undermining the previous base for economic growth and value capture. From a development point of view, then, the mode of territorial embeddedness or the degree of a GPN firm’s commitment to a particular location is an important factor for value creation, enhancement and capture.

- *Network embeddedness.* GPNs are characterised not only by their territorial embeddedness, but also by the connections between network members regardless of their country of origin or local anchoring in particular places. It is most notably the ‘architecture’, durability and stability of these relations, both formal and informal, which determines the agents’ individual network embeddedness (actor-network embeddedness) as well as the structure and evolution of the GPN as a whole (‘micro-net’-‘macro-net’ embeddedness: cf. Halinen and Törnroos 1998). While the former refers to an individual’s or firm’s relationships with other actors, the latter consists not only of business agents involved in the production of a particular good or service, but also takes the broader institutional networks including non-business agents (e.g. government and non-government organisations) into account. Network embeddedness can be regarded as the product of a process of trust building between network agents, which is important for successful and stable relationships (Dyer and Chu 2000). Even within intra-firm networks, where the relationships are structured by ownership integration and control, trust between the different firm units and the different stakeholders involved might be a crucial factor, such as in the case of joint ventures (Yeung 1998).

3.2 Conceptual Dimensions

The categories sketched above are ‘energised’ and ‘live’ through a number of conceptual dimensions. These constitute the frameworks through which value is created, power exercised or institutional embeddedness etc. given concrete effect in terms of particular initiatives and policies. There are four broad dimensions that are of significance.

Firms

One firm is clearly not the same as another. Firms, even within the same sector, differ in terms of their strategic priorities, their attitudes to labour relations, the nature of their relations with suppliers etc. As a consequence one would expect that while there may be similarities between the ways in which firms in the same sector operate (generate value, exercise their power over suppliers etc.), there will still be important firm-specific differences, not least in terms of the locations where lead firms decide to invest or establish supplier and subcontractor connections. These differences may stem from the nature of ownership (equity arrangements, and/or ‘nationality’), managerial whim [examples?] or they may derive from values embodied in the firm’s evolution.³⁰ Whatever the source of these differences it is likely that they have implications for the ways in which their GPNs are constructed (if they are lead firms) or for the ways in which they participate (seek to develop and exercise autonomy, for instance) in other firm’s GPNs (if they are suppliers and subcontractors).

Sectors

While GPNs have characteristics that are firm-specific, firms that operate in the same sector are likely to create GPNs that have some degree of similarity. The reasons for this are that similar technologies, products and market constraints are likely to lead to similar ways of creating competitive advantage and thus broadly similar GPN architectures. Although it is possible that the pressures of globalisation, working through the sectoral dimension, are eroding many firm-specific characteristics, empirically this must remain an open question.

Networks

It is within the various networks that particular issues of governance arise. As the ways in which power is mobilised and exercised is likely to vary for a combination of firm and sector-specific reasons, it is reasonable to expect that the architecture of governance is likely to exhibit considerable variation. As a consequence there is likely to be significant variation, for instance, in the extent to which secondary firms in a given network are capable of exercising a degree of autonomy that would allow them to move into higher value-added activities with their more positive implications for economic development. Pending much more research that is open to such variations, it is premature to move towards a conceptual closure of network governance structures.

³⁰ Examples in Britain, for instance, include the ethical stance of such companies as the Co-operative

Institutions

In principle the institutional arrangements impact both locally and globally on the GPNs. They can be of considerable importance in the generation of value locally, in its enhancement and in its capture. Additionally they can be of utmost significance in setting standards (including the moral tone) for labour relations, working conditions and wage levels. They are, in other words, central to the question of whether GPNs can deliver sustained economic and social development in the locations they incorporate. It is important to recognise, of course, that the consequences which institutions have for GPNs and their local and international operations and implications, can be positive or negative. In the latter sense the institutional fabric of post-socialist Russia, for instance, seems to be a case in point for all but criminal networks (see Castells 2000b: Chapters 1 and 3) as are some of the recent policy decisions of the IMF and WTO.³¹

3.3 GPN categories and dimensions: a stylised example

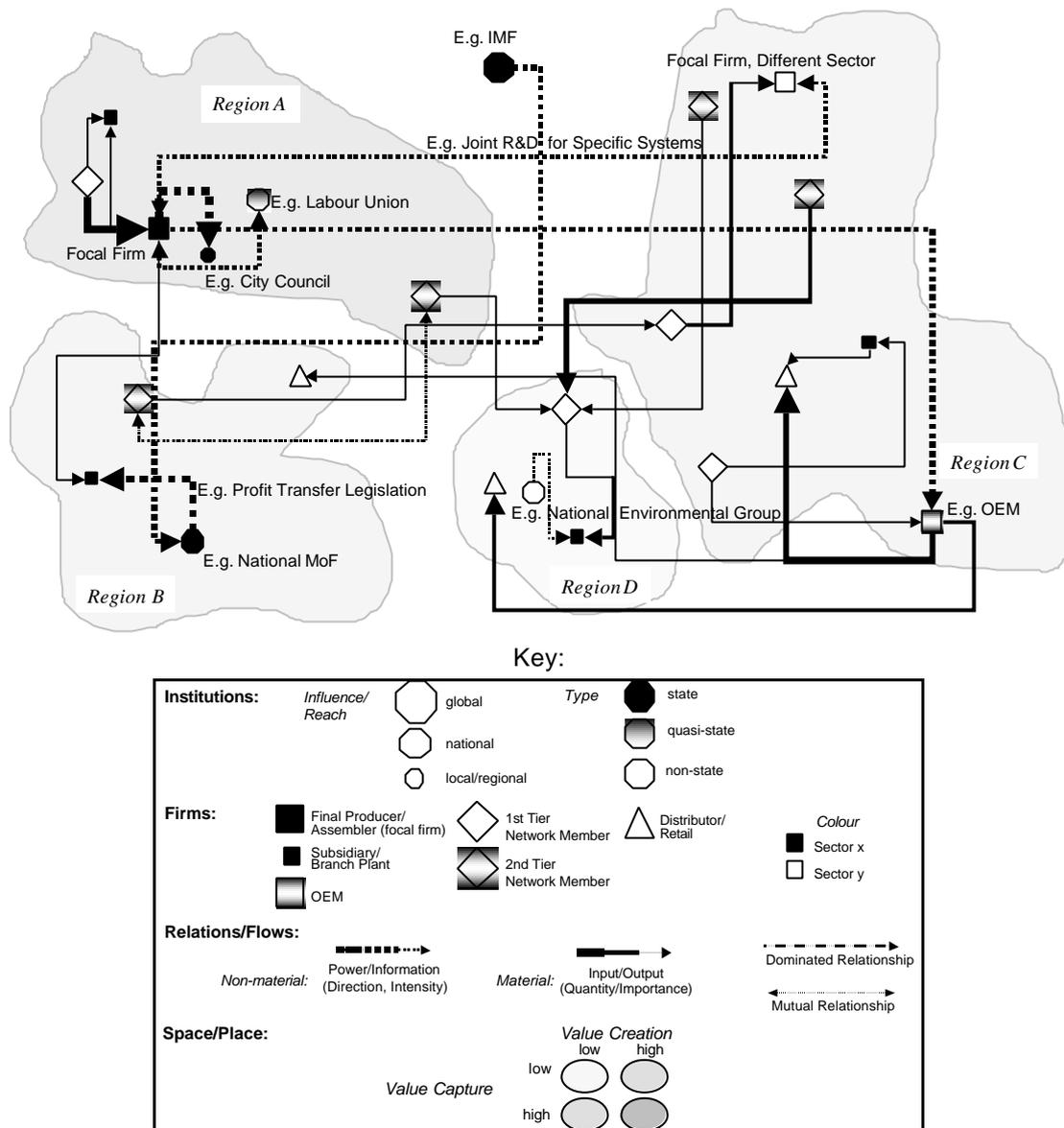
As an indication of how GPNs might be visualised and analysed, we develop below a mapping technique that allows us to highlight and compare their main elements and linkages. We apply this to a stylised example³² in order to underline the potential significance of the GPN framework for the analysis of inter-firm connections and their relation to economic development.

Bank and the Body Shop.

³¹ On IMF responses to the East Asian crisis and some of their consequences for affected companies and economies see Wade and Veneroso (1998).

³² This example is generalised and by no means comprehensive; real GPNs, of course, have far more linkages and agents than could be sketched here. For instance, due to graphic restrictions, the intra-firm network flows of the lead company are not shown in this Figure.

Figure 4: Mapping Global Production Networks: a stylised example



In Figure 4, we have sketched a GPN operating in four regions, composed of different types of firms and involving institutions of various scopes, from local influence to global power. In each of the regions, be they economic blocs, nation states or regions of a sub-national scale, *value* is created and captured, but to a varying extent. Region A, for example, shows high degrees of value generation and capture without containing much of the network's material flows. This could be the case for a lead firm with strong R&D activities, design, marketing and other services retained in its home country, while dispersing its lower value-added production processes to other countries. In contrast, Region C creates value but is not able to capture much of it, for example as a result of external ownership of many first and second tier suppliers and the related profit transfer to the respective corporate headquarters outside of Region C.

The *power* exercised within the GPN can be shown as non-material flows between different agents (firms as well as institutions). The value generation and capture process in Region B, for instance, is heavily determined by the power of global institutions (IMF) and national government agencies, here represented as the (national) ministry of finance (MoF) influencing the profit transfer of foreign owned subsidiaries. The corporate power of some firms over their regional environment is exemplified by Region A's lead firm affecting the local administration, while collective power is exercised by the labour union. The territorial *embeddedness* of our network is not immediately educible, but can be read off from the density and intensity of local/regional or national connections between the agents. Firms and institutions in Region D, for instance, have only few and rather weak relations with each other. There, then, territorial embeddedness is limited. Linkages to other agents outside the region, on the other hand, are comparatively strong, indicating a high degree of network embeddedness. Simultaneously, this is an expression of the network's spatiality and scope.

In sum, the technique of mapping the GPN demonstrated here provides the possibility of visualising the economic and social agents as well as highlighting the structural and spatial dimension of networks, sectors, and the linkages between them. What cannot be shown, of course, is the evolution of the GPN over time (path dependency) and structural preconditions shaping them (such as different capitalisms, national modes of regulation etc.). Nevertheless, what we have here is a scale-transcending model of global production networks and sense of their likely implications for economic and social development.

3.4 Research Programmes

While recognising that not all economic activities that contribute to development are organised on the basis of networks apprehensible via the GPN framework, it seems that many of the industries that are the source of much of the prosperity – or potential prosperity – in developing and developed worlds alike, clearly are. Our contention is that programmes designed to grasp the global and local dynamics of these industries (and both are required simultaneously) and their contributions to development, could benefit from being 'thought' in relation to the GPN framework or some version of it. The sorts of questions that would orient such programmes are (at a minimum) as follows.

- The basic starting point would be that production networks in different sectors are differentiated according to both firm and sector-specific characteristics (in the former case partly determined by the social-institutional context of the firm's country of origin) and in the ways in which the economies of different places are incorporated into the networks.
- That said, in what ways are the production networks established by lead firms in given sectors and of given 'nationalities' and into which other firms of given 'nationalities' are absorbed as subcontractors etc., beneficial to particular national and local economies.
- More specifically, what are the consequences – with respect to technological upgrading, adding value, employment, skill development, working conditions etc – of particular lead firms developing particular network architectures and governance structures and thus of their subsidiaries, subcontractors etc. particular functions in particular locations.
- To what extent are national and/or local institutions – especially government agencies, but also trade unions, employer associations, NGOs of various sorts – capable of exerting influence on the strategic development of firms (domestic and foreign) absorbed into particular GPNs?
- Alternatively, to what extent are the global priorities of the firms driving the respective networks, as well as the organisation of corporate power within them, constraining the upgrading of domestic companies and the capacities of government policy to assist them.

4. CONCLUSION

In this paper we have outlined a conceptual framework for mapping and analysing economic globalisation and its developmental consequences. In so doing we have foregrounded the ways in which companies organise and control their global operations, the ways in which they are (or can be) influenced by states, trade unions, NGOs and other institutions in particular locations and the implications that the resulting combinations of agents and processes might have for industrial upgrading, higher valued added etc., and ultimately for the prospects of poverty reduction and/or generalised prosperity in those locations.

The framework we have proposed – that of the global production network – is an explicit attempt to break with state-centric conceptualisations on the one hand and significantly extend the analytical and policy utility of cognate formulations on the other. The proof of success, however, will depend on whether the GPN framework stimulates research that delivers analyses that are both empirically and theoretically richer than at present. More importantly, however, it will depend on whether the framework helps to produce research that contributes more effectively to the task of improving the human condition in the age of economic and geo-political turbulence in which we now exist.

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