

## Global Production Networks and Labour

## **Abstract**

Commodity chains that are global in extent have increasingly come to be seen as the defining element of the contemporary globalised world economy. Since the 1990s a body of theory – evolving from Global Commodity Chain analysis to Global Value Chain analysis to Global Production Network analysis – has focused upon understanding how such commodity chains function. However, despite providing many important insights, these bodies of literature have generally suffered from a major deficiency, in that they have failed to consider labour as an active agent capable of shaping such chains' structure and geographical organisation. Here, then, we present a case for locating more centrally labour, both in and of itself, in production network analysis.

**Keywords:** Commodity chains, global production networks, labour process, labour, value chains.

## INTRODUCTION

For many, during the past two decades or so the concept of the network has come to be seen as the *primus inter pares* analytical key to explaining the machinations of the supposedly new, non-hierarchical ‘world of flows’ augured by globalisation and neoliberal capitalism. However, by the late 1990s networks and network theory appeared to have become so ubiquitous in analyses of the contemporary state of social and economic life that Markusen (1999) felt compelled to point to the fuzziness of the central concept ‘network’, suggesting that it was threatening to become chaotic.

Whilst these authors have contended that the term ‘network’ is often applied in too imprecise a fashion to have much analytical purchase, others have taken a slightly different tack. For example, Joseph (2010) has maintained that we should not deny that networks exist, nor that they might be playing an increasingly significant role in contemporary life. Rather, for him the problem is that of the ontological assumptions behind much network theory. In particular, he argues that the work of people like Lash (2002) and Castells (2000) presents a flat ontology which, in effect, denies the reality of underlying social structures, hierarchies of power and causal processes. In opposition to such approaches, and of particular importance for what follows, Joseph made a case for the continued saliency of ‘class analysis, feminism, the focus on the sovereignty of power politics, state and place and...the idea of social structure’ (Joseph 2010: 128) and argued against the conclusions of new network theorists who suggest that the rise of ‘the network society’ is resulting in the decline of collective struggle, and other forms of mass politics, in the face of individualisation and fragmentation.

Nevertheless, despite the lack of precision with which the term appears to be being deployed analytically and the apparent denial of hierarchy, the concept of the network, fuzzy or otherwise, has remained central to much recent analysis of the current economic scene, not least with regard to its use within analyses of Global Commodity Chains (GCCs), Global Value Chains (GVCs) and Global Production Networks (GPNs). This is largely because network theory is viewed by many as a more productive (and perhaps less ‘political’) analytical lens than are ‘old fashioned’ and ‘traditional’ ways of theorising like class analysis, feminism or state theory. Although we would disagree with such a dismissal of these other modes of analysis, in light of the network meme’s popularity we here want to explore the growing literature on GPNs and its origins in, and relation to, analyses of GCCs and GVCs. We argue that recent GPN literature represents a significant advance on earlier GCC and GVC forms of analysis. Furthermore, we believe that, in amended form, GPN analysis has an important contribution to make to the study of work and employment but that it has been largely overlooked or ignored outside of organisational studies and (labour) geography (for an exception see Taylor 2010). Although we prefer the GPN approach, we would nevertheless argue that the GPN, the GCC and the GVC approaches to work and workers have all nonetheless exhibited similar shortcomings. In brief, in all three, workers have tended to be seen as passive victims of current restructuring processes: workers are typically viewed simply as being on the receiving end of a new international division of labour.

In this article, then, we want to move beyond the, by now, standard criticism of GCC and GVC approaches and give qualified support for the GPN approach. However, we also argue that, amongst other problems (like those identified by Joseph), the treatment of labour, in and of itself, is inadequate. In this regard, Coe et al. (2008) have recently made an impassioned plea for GPN analysis to focus more explicitly upon labour and its geographical condition and, in particular, to treat working class people as sentient social beings who both

intentionally and unintentionally produce economic geographies through their actions. We would wholeheartedly agree. But we want to argue that even this rallying call does not go far enough. Specifically, we want to make a case not just for an approach that takes labour agency more seriously but one that actually incorporates labour process analysis at the very heart of a GPN approach. The case laid out below, then, is a continuation of arguments we have previously made elsewhere concerning the need to locate workers as sentient social and geographical actors more centrally in explanations of the unfolding economic geography of the global economy (Author C et al. 2007; Author C et al. 2010; Author A et al. 2010; Author A et al. 2010a; and Author A et al. 2010b).

#### OF GCCS, GVNS, AND GPNS

Beginning in the 1990s, a body of literature based upon the analysis of Global Commodity Chains (GCCs) began to be developed as a means to better understand the contemporary global economy. These scholars saw a GCC as consisting 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 (Gereffi et al., 1994: 2)

For Gereffi et al., then, a commodity chain begins with raw materials and ends with a final product available for purchase in the marketplace. As they move along the chain between these two end-points, the materials that make up the commodity are refashioned by various processes operating at different times and in different places. Within such an analytical framework, every point along the chain at which a commodity's physical form is transformed is viewed as a node, and these nodes are linked together to form broader networks.

In further outlining the GCC framework, Gereffi (1994: 96-97) suggested that GCCs have three main dimensions:

- i) an input-output structure (that is to say, various products and services are linked together and sequentially add value to the commodity as it moves through the chain from point of origin to point of final consumption);
- ii) a territoriality (in other words, production and distribution networks have particular spatialities to them); and
- iii) a governance structure (there are authority and power relationships which dictate how financial, material and human resources are allocated within the chain and flow through it).

Gereffi then identified two principal types of governance structures: those that are producer-driven and those that are buyer-driven. In assessing this formulation some years later, Gereffi et al. (2005: 82) suggested that the benefits of the GCC framework were that it ‘drew attention to the role of networks in driving the co-evolution of cross-border industrial organization.’

Despite the insights the GCC framework provided, before long a number of authors began to argue that the concept of Global Value Chains (GVCs) was probably a better one. Kaplinsky (1998: 37), for instance, suggested that the ‘problem with the use of the phrase “global *commodity* chain” is that it implicitly negates the idea of [value] upgrading’ when individuals engage in commodity production. Equally, the GCC framework did not fully capture the variety of network forms that had begun to become more common since the early 1990s, particularly given that ever greater numbers of firms were increasingly outsourcing not just non-core functions but complete ranges of services (especially in producer-driven chains, with such outsourcing facilitated by more widespread application of information technology in design and inventory management). Nor did it really take into account the

initiation by growing numbers of TNCs of strategic alliances with some of their competitors, which meant that they had become more networked in their organisation and less vertically integrated than they had been just a few scant years previously when the GCC approach was first unveiled. The GCC approach also fetishised the tangible object produced within such chains and in large measure failed to focus upon the social relations within which it is produced and how it transfers value from one location to another as it crosses space. As a result of such problems, even Gereffi eventually adopted the term GVC instead of GCC (e.g., see Gereffi et al. 2005).

In the early GVC formulation, the chain from raw materials to finished commodity was viewed as constituted by a set of intersectoral linkages between the firms and other actors who are engaged in the contemporary geographical and organisational reconfiguration of global production, as was largely the case in the GCC approach. What is significant about the GVC approach, though, is that it had a much more sophisticated view of governance. Specifically, whereas in both the GCC and GVC approaches the idea of governance largely rested on the assumption that both disintegration of production and its reintegration through inter-firm trade have recognisable dynamics, in the GVC approach there was a much greater recognition that disintegration and reintegration do not happen spontaneously, automatically or even systematically (Gibbon et al. 2008: 319). Rather, these processes are initiated and institutionalised in particular forms as a result of decision-making and strategising by (usually) large firms. Consequently, the GVC framework sought to develop a more elaborate array of governance forms than the GCC framework had presented, as well as to offer a means of explaining historical modifications in these governance forms. In response, Gereffi et al. (2005) reworked the initial bipolar GCC governance configuration of buyer- and producer-driven structures, in which governance is a function of lead firm type, into a continuum, one that includes modular value chains based on networks between lead firms and

turnkey suppliers who provide goods and services without a great deal of assistance from, or dependence on, lead firms – as often occurs, for instance, in sectors where common industry standards allow the complex information content of transactions to be exchanged between pairs of buyers and suppliers in a relatively finalised, hands-off manner.

As a result of this, five possible categories of governance were identified, these being: market, modular, relational, captive and hierarchical. Perhaps most importantly in all of this, the level of coordination and power asymmetry between actors was seen to change dramatically as one moves across this spectrum, from hierarchy to market (Taylor 2010; Starosta 2010). This has significant implications for the nature of the labour process (although this has not really been explored in approaches using the GVC form of analysis except in a very simplistic level – more on which below).

Nevertheless, in some writers' eyes such theoretical advancements still left significant conceptual holes. For instance, GVC analysis had little to say about territorial or institutional context and so remained relatively 'placeless' (Bair 2008). It also has had a tendency to treat governance solely in terms of the relationship between lead firms and their immediate suppliers in a relatively static framework. Henderson et al. (2002) suggested that a major weakness of the GCC/GVC approach was that it conceptualized production and distribution processes as being essentially vertical and linear. By way of contrast, they gave preference to viewing these processes as complex network structures that can be both multi-dimensional and non-linear. Equally, they focused on the concept of production rather than on the commodity per se, because doing so places the analytical emphasis on the social processes involved in producing goods and services – in other words, it prevents reifying commodities. Consequently, they favored a Global Production Network (GPN) approach to understanding the contemporary global economy over either a GCC or a GVC one. Within this approach, they identified three principal elements upon which, they argued, the GPN framework is



based, these being value (in both the Marxist sense and that of economic rents), power and embeddedness. Thus, drawing on Ernst and Kim (2001: 1), Henderson et al. (2002: 443) defined a GPN as something that

combine[s] concentrated dispersion of the value chain across firm and national boundaries, with a parallel process of integration of hierarchical layers of network participants.

The outcome of their reworking of the extant theory, the authors claimed, was a conceptual framework that focuses upon how companies organise and control their global operations, including the ways that these can be influenced by states, trade unions, NGOs and other institutions in particular localities, together with what are the implications of this for industrial upgrading, adding value, poverty reduction and encouragement of a generalised prosperity in these localities (Henderson et al. 2002: 458). Fleshing these points out, Taylor (2010) has contended that one of the advantages of such GPN approaches is that they provide a means by which to grasp the dialectics of global-local relations, for firm-centred production networks are deeply influenced by the concrete socio-political contexts within which they are embedded. GPN analysis, then, he insisted, restores the territoriality of institutional and regulatory contexts and the state as an actor, matters which are abstracted out of much GCC and GVC analysis. Finally, and somewhat ironically, Taylor (2010) maintained that GPN analysis actually places a greater emphasis on value creation than does GVC analysis itself.

Writing in 2006, two members of the ‘Manchester School’ (Hess and Yeung) further argued that the GPN approach was superior because it emphasised:

- a. the complex and non-linear network of firms involved in R&D, design, production, marketing and consumption of goods and services and how these are structured organisationally and geographically, at a variety of spatial levels;
- b. the distribution and dynamics of power within these networks;

- c. the importance of the processes of value creation, enhancement and capture within these networks;
- d. the embeddedness of production networks and how they are constituted and reconstituted by the economic, social and political arrangements of the places they inhabit; and
- e. the influence of non-firm institutions – e.g., unions, government agencies, etc.

Finally, Hess (2008), concluded that, despite its advancements over the GCC approach, GVC analysis still ignored the inside of the firm. By way of contrast, he suggested, the GPN approach's networked conception of power was more analytically useful when it came to understanding the activities of various economic actors like firms because it

opens up ways of thinking about embedding and dis-embedding processes in global value chains and networks as a matter of (temporal) coalitions between actors, without neglecting the power asymmetries between the actors involved, whether they are firms, states or any other non-firm institutions.

In summary, then, its proponents have averred that the advantage of the GPN framework over the GCC/GVC approach is that it seems to have addressed two readily identifiable deficiencies. First, the geography of GCCs/GVCs was weakly developed and under theorized. Second, the focus on firms in governance structures had led to a relative underplaying of the role of the state, policies and institutional conditions in shaping regional outcomes (Hess and Yeung 2006: 1196). By contrast, the GPN approach, it is argued, has a greater focus upon territoriality and also draws attention to the issue of power in relation to the state and its capacity to influence the unevenness of value capture, on both the firm and the territorial level. In this latter regard, though, it is significant – given the turn away from

Maxism by many networkphiles – that many GPN approaches actually derive their view of the state from the neo-Marxist work of Jessop (e.g., 2010), wherein the nation-state is seen as being engaged in a process of reinventing itself in response to globalisation as new bases of power have emerged from the capacity to broker market relationships and mediate interactions between various levels of governance (Lobao et al. 2009: 6). In such a view, the state shifts from a relatively simple governmental structure to constructing a more complex and multiscalar governance structure. What is important in this, though, is that far from heralding the demise of the nation-state, it heralds the birth of a more geographically ‘supple’ state. This concentration on the role of the state within GPN analysis, we would suggest, is a distinct strength compared to the GCC/GVC approaches.

Despite these developments, though, a raft of criticisms remains. One of the principal ones is that GPN analysis simply sees labour (usually trade unions) as one amongst many institutions that figure in the relationship between structure and agency, institution and context. Certainly, labour, organised or otherwise, was conceived of as playing a limited role in the GCC/GVC approaches, but it was not theorised in a particularly sophisticated manner. Unfortunately, to date the GPN approach has not made any significant moves to correct this deficiency. This is true even of those literatures which look at the changing nature of work and employment within emerging (networked) organisational structures. In what follows, then, we suggest a strategy for more fully incorporating labour into GPN analysis, focusing upon how workers in GPNs are active shapers of such networks.

#### LABOUR IN THEORY AND PRACTICE

In a 2002 article, Smith et al. argued that treating labour simply as one of many institutions to be considered within commodity/value chain analyses is conceptually unsatisfactory, as labour process dynamics within each node of a chain are crucial for

understanding its structure and functioning. Although they recognised that GCC/GVC frameworks had touched on workers, Smith et al. contended that these frameworks had done so largely in terms which left workers simply as the passive victims of capital's restless search for ever cheaper labour. This is largely because GCC/GVC analysis is a firm-centred form of analysis, one that focuses principally on what are taken to be lead firms in the relevant chains, rather than an analysis of capitalism *per se* (Gibbon et al. 2008: 316). To counter this, Smith et al. suggested (p. 47-48) 'the need for a more systematic analysis of the relations between capital, the state and labour in the production, circulation and realization of commodities.' We would certainly agree with such a need. But we would also like to push the argument quite a bit further. Specifically, we would suggest that if commodity chain analysis is about value creation, capture and enhancement, then labour, as the ultimate source of value, logically must lie at its heart and the dynamics of a labour process's *modus operandi*, with its contested and contradictory practices relating to the extraction (and realisation) of surplus value, need to be central to any explanation. Echoing Cumbers et al. (2008), though, we argue that, in analysing the role of labour in GCCs/GVCs/GPNs, it is important to distinguish between, on the one hand, abstract labour as the origin of surplus value and, on the other, trade unions, other forms of worker organisation and individual workers as sentient actors who make decisions within such chains, with such decisions deeply affecting how these chains operate and their geographical organisation. This analytical division is necessary because workers' sentience makes labour not a real commodity but a pseudo-commodity, one which is 'idiosyncratic and *spatially differentiated*' (Storper and Walker, 1983: 4, emphasis added). Consequently, labour must be treated both as the ultimate source of value *but also* as a subjective agent in both individual and collective terms.

Certainly, it is true that there have been other efforts to develop an approach which locates labour at its core (see, for example, Starosta 2010). However, the focus in such

efforts has tended to remain upon the relationships between individual capitals, rather than on the detailed types of analysis of the labour process *per se* that we are here advocating. Perhaps most significantly, though, such efforts have tended to be somewhat aspatial. This is a little bizarre, because the fact that networks are bound up with the human production of goods and services means that, whatever else they may be, GCCs/GVCs/GPNs are ultimately networks of *embodied labour* which lives within particular communities and is embroiled within particular geographies of work, employment and life in general – i.e., networks are made up of real, living people who are more than simply abstract economic categories, people whose lives are shaped by the spatial contexts within which they live. Furthermore, chains are about the transfer across space of commodities/value/products and workers play a role in shaping the geography of such transfers (for more on workers moulding the geography of the global economy, see Author C 2001 and many of the essays in Author B et al. 2010). As a result, the social relations of production, class, conflict and resistance – which, because they all vary considerably by location, are also spatial relations – must be at the heart of any analysis of such networks. Moreover, it should be recognised that, given the spatially structured nature of their lives (Author B et al. 2010), workers will have a vested interest in shaping the topology (Castree et al. 2008) of such networks as they develop in a highly geographically uneven manner across increasingly integrated macro-economic regions. But how are we to connect GPNs to localities and regions, to spatiality?

### **On Workers' Spatial Embeddedness and the Geography of GPNs**

One means by which GPNs can be connected conceptually to the spatial embeddedness of workers is through an exploration of the new spatial divisions of labour (Massey 1984) that are emerging across the planet. Perrons (2004: 103) has explored such matters through her analysis of women in food, ICT and care value chains, focusing

especially upon the gender dynamics within these sectors. As she observes, the emerging global spatial division of labour has led to myriad factories, call centres and packing plants being established in poorer countries and regions. In the process it has encouraged the migration of millions of people seeking work and a better life. Within this context, structural adjustment programmes have reduced the proportion of paid regular employment for male workers, whilst the feminization of employment in both rich and poor countries has generated gaps in childcare and domestic work, with such gaps increasingly being filled by people from the Global South. Such groups are creating a global care chain, one based on wealthy but time-poor people in the Global North creating a demand for marketised personal and domestic services, which are typically low-paid and in which women from the Global South are generally over-represented. This has been facilitated by state actions relating to labour (de/re) regulation, immigration laws and welfare restructuring, amongst other things (Yeates 2004). For Perrons (2004: 105), however, there is a crucial difference between this global care chain and other value chains, for here value is not unequally appropriated at different points in the chain. Rather, care chains ‘take a directly hierarchical form on the basis of gender, race and generation as poorer people, usually women from poor regions of the world, care for the children and elderly relatives of people in richer regions’. This leads her to conclude that, within the context of globalisation, geographically uneven development, ‘together with the undervaluation or non-recognition of qualifications from poorer countries[,] can create a spatial dislocation by social class’. These chains, then, constituted by the geographical relocation of workers from the Global South to the Global North, are intimately shaped by the uneven spatiality of global capitalist development but they also contribute to such uneven development.

For their part, Riisgaard and Hammer (2009) stress the importance of an analysis of the geographical and institutional embeddedness of labour as an actor in emergent networks

of global production. Specifically, they invoke the notion of local labour control regimes (LLCRs, following Peck 1996), which are, according to Jonas (1996: 325), the ‘historically contingent and territorially embedded sets of mechanisms that coordinate the reciprocities between production, work, consumption and labour reproduction within a local labour market’. This is important, for the governance of interfirm linkages is mediated by the specific social relations of local production, as well as by the histories and geographical orientations of the actors involved (i.e., how local firms are spatially connected into the broader global economy. As a result, both production and labour control regimes will vary enormously across space. Likewise, different forms of governance provide both firms and labour different degrees of freedom to develop labour relations practices. Furthermore, as we argued in Author A et al. (2010a), whilst there may be distinctive regulatory milieux in particular localities, this does not mean that a local labour market’s regulation is necessarily conducted solely at the local scale – the actions of the International Monetary Fund or World Bank, for example, can have significant impacts on how a community’s labour relations unfold.

The importance of place and how it both shapes workers’ praxis and is shaped by it has also been explored by Hudson (2001: 257, 260). For him, places should not be viewed simply as the locations on a map at which things literally ‘take place’ but as arenas within which local and non-local (national and international) rules, norms, customs, legal structures and regulatory mechanisms interconnect to mould workers’ and employers’ behaviour, with such workers’ and employers’ behaviour in turn moulding the character of place. He suggests, following Allen et al. (1998: 143, emphasis added), that places must therefore be theorised as ‘open, discontinuous, *relational* and internally diverse’. As a result of such relationality, what happens within any locality over time will partially result from the changing roles it plays within the broader spatial divisions of labour within which it is

emplaced. Hence, the intersection of these local and non-local processes and practices will produce and reproduce unevenness within and between localities (Author B et al. 2010). As a result, any pattern of regional development will be ‘a dynamic outcome of the complex interaction between territorialized relational networks and global production networks within the context of changing regional governance structures’ (Coe et al. 2004: 469), and workers’ spatial praxis plays a central role in this.

A fourth way in which to understand place as a social construction that has real impacts upon labour markets and workers is that outlined by Strangleman (2001), who highlights four sets of networks that affect the character of the labour relations which are practised in particular places: networks based upon occupation/work; networks based upon connections to particular places; networks shaped by class background and experience; and networks which are the result of family and kinship ties. Although these four are often conceived of as separate, for Strangleman it is their interlapping that is significant in shaping the particularities of place. Strangleman, however, tends to take a historical look at such interlapping, exploring how it develops over time. We would suggest, though, that it is important also to recognise that such overlapping occurs differently in different spatial contexts. This approach has echoes of Bourdieu’s (1977) notion of *habitus*, wherein particular places may become reservoirs of particular ways of being in the world – Darlington (2005), for instance, demonstrates how traditions of militancy often linger in certain places long after the ‘objective’ conditions which initiated them have disappeared.

#### SO WHAT DOES ALL THIS MEAN?

Having explored some of the weaknesses concerning how labour is conceptualised within commodity chain analysis, in what follows we ponder some of the ways in which workers and their organisations can shape such chains’ operation and structure and how this



is shaped by their spatial embeddedness. However, the situation is complex politically and geographically for, as Holtgrewe et al. (2009: 1) argue, the effects of supply chain restructuring on work and workers 'are contingent upon the competition in the respective sector's product or service markets, on customers' or client companies' demands, on power relations in the value chain, demands by shareholders to increase returns on investment or on public policies.' Nevertheless, in general the greatest growth in job precariousness is to be found in the public sector, a finding which suggests that public sector workers – given their different relationship to their employer than those in the private sector – may have to develop different kinds of strategies to deal with such changes than do private sector workers.

Applebaum (2008) added a further dimension to the dynamic and complex picture of supply chain restructuring. Specifically, he argued that consolidation in consumer goods industries with increasingly integrated production systems between giant retailers and giant Chinese contractors may be increasing the degree of vertical integration in global supply chains. Applebaum (2008) argues that although little attention has been paid to the rise of giant contractors in East Asia that are producing much of the world's consumer goods, the growth of these contractors may partly address power asymmetries between big buyers and suppliers. Furthermore, these suppliers could also move up to higher value added activities. Crucially, Applebaum argues that the emergence of these giant factories may also encourage labour militancy, both because of what they offer for coordinated action amongst workers and because worker activities can be more disruptive of global supply chains. Indeed, the question of labour costs and growing militancy within giant factories in global chains has recently emerged as an issue in the business media (e.g., see *New York Times* 2010b). Initially driven by the exposé of a number of suicides at Foxconn factories, which make most of Apple's iphones and ipads, the interest widened to examine the issue of labour costs and organisation in China more generally. Employing about 800,000 people in China, including

300,000 at its plant in Shenzhen, which suffered more than ten suicides in the early part of 2010, Foxconn management initially responded by erecting nets to stop workers jumping off the roofs. However, Foxconn eventually ended up giving massive pay rises and examining working conditions to alleviate the stress that had caused the outbreak of suicides. This was accompanied by reports of strikes in Honda car plants in China over wage issues. More generally, there have been growing reports of labour shortages, rising wages and demands from workers that they be represented by more authentic unions than those under the aegis of the All-China Federation of Trade Unions. Such developments have led economists to argue that 'soaring labor costs in China could change the cost structure of global supply chains' (*New York Times* 2010a).

In this regard, in recent years unions have begun to recognise the importance of analysing GPNs and value chains as part of an emerging strategy to confront increasingly integrated and internationalised transnational capital. Juravich (2007) points to the importance of Strategic Corporate Research directed at understanding how power flows in firms and at identifying vulnerabilities and potential points of leverage. Likewise, the first edition of the International Labour Organisation's *International Journal of Labour Research* was entirely devoted to trade union strategies towards global production systems and looked at GPNs in sectors as diverse as forestry, electronics and clothing, with issues of financialisation and the new logic of restructuring, the role of the state and EPZs in GPNs, and the shift from vertical integration to horizontal coordination being addressed. However strategies discussed tended to be top-down and included the role of International Framework Agreements, Global Union Federations and entities like the ILO – the future for workers is seen to be one in which ostensibly 'global' institutions impinge upon 'local' institutions (though see Author C (2008) for more on the problematic nature of these geographical terms). There are, though, serious questions regarding the efficacy of such top-down

strategies. Miller (2009), for instance, reviewed the experience of the ILO factory-monitoring project in Cambodia ('Better Factories Cambodia'), which is possibly the most comprehensive and systematic monitoring effort governing any national garment supply-base in the world. However, despite the unprecedented nature of this model, Miller concludes that the garment sector in Cambodia remains essentially no different from the industry in many other parts of the Global South.

Nevertheless, despite the image of companies like Wal-Mart and other such large globally organised firms as unchallengeable, there are weaknesses in their distribution systems that can be exploited (Bonacich and Wilson 2005). Thus, Just-In-Time distribution is highly vulnerable to disruption by relatively small groups of geographically strategically placed workers, a fact that General Motors discovered in 1998 and again in 2008 when strikes by relatively few United Auto Workers members shut down myriad GM assembly plants (Author C 2001; Feeley 2008). The key for the workers, of course, is to know something about the geography of the supply chain so that they may identify 'choke points' which can be easily struck to great effect. As Bonacich and Wilson (2005) argue, then, although global logistics may be a point of strength for firms, allowing them to network various places across the planet into a highly integrated production and distribution system, they can also be the weak-point of such global production systems. However, to be fully sensitive to the strengths and weaknesses of global value chains for car workers or migrant care workers or anyone else, both we as analysts and workers as activists have to understand the geographical role of a particular node in a global value chain. As Turnbull (2007, pp. 117-18) has demonstrated in his analysis of port labour (a group that are central players in the logistics sector), such an approach results in a much more sophisticated form of analysis, particularly as it can show how workers and unions may generate intended and unintended spatial outcomes by their

actions (such as changed geographies of work and parts supply), outcomes which themselves then serve as the focal points for new rounds of struggle and compromise.

For her part, Quan (2008) has argued that workers are often unaware of their position in value chains and that a first task for unions is to locate workers and their firms in these structures. Analysis of the chains' geographical structure can reveal possible strengths and weaknesses in it, identify possible worker allies and reveal necessary steps in the organising process. As it happens, such research has been a goal of several groups of activists, including the International Research Network on Autowork in the Americas through its "Mapping Supplier Chains" project, which has sought to analyse the emerging structure of the automobile industry in various countries (Author C 2001). Likewise, the International Union of Food and Allied Workers' Associations (IUF) has explored organising workers along commodity chains, linking cocoa plantation workers in West Africa with chocolate manufacturing workers and shop workers in Europe. Despite facing the problem that plantation workers' and factory workers' employment conditions are hugely different, this approach has presented educational opportunities to workers about the industry as a whole and helped stimulate member unions' efforts to combat child slavery in the cocoa-producing regions of West Africa through the 2001 'International Cocoa Initiative' signed by industry, government, consumer and labour representatives (Author C 2007).

In similar fashion, Riisgaard and Hammer (2009) look at how the differences in intra- and inter-GVC patterns affect labour positioning and organising in the cut flower and banana industries, whilst Cumbers et al. (2008) show how union strategies within the International Federation of Chemical, Energy, Mine and General Workers' Unions (ICEM) evolved through contested socio-spatial relationships between various social actors and, crucially, within the union itself. Their study of the ICEM showed the 'old scalar dilemmas' of representing local and national interests, as against more internationalist strategies (p. 384).

Crucially, they conclude that developing independent labour organisation at the local level is generally crucial when seeking to develop effective global networks capable of countering the growing power of TNCs. Why this is important relates to what Selwyn (2008) calls the Bullwhip Effect, whereby a small disturbance at one node in the supply chain leads to increasingly large disruptions further down the chain. Drawing on Wright's (2000) distinction between workers' associational and structural power, wherein associational power derives from collective organisation and structural power accrues simply from workers' position/location in the system, with this latter being further subdivided into marketplace bargaining power (derived from changes in supply and demand) and workplace power (derived from workers' strategic location in the production process), Selwyn examines the distribution, automobile and export horticulture sectors to argue that labour's political or associational disorganisation does not necessarily weaken it structurally. This is because the growth of ever-shorter lead times and lean production offers workers new sources of structural power that may not have been present in quite the same way in previous epochs.

In sum, then, and following Joseph (2010), our argument has been that we do not deny the significance of networks, but we do deny that networks have replaced social structures and other significant social relations. We do not deny the existence or importance of 'flows' but we do reject the idea that flows can overcome space so as to operate in completely non-embedded, aspatial fashion, as if geography were irrelevant to chains' operations. Finally, we do not reject the fact that there are significant forces pushing in the direction of individualisation but we do reject the idea that collective organisation either does not work or has been radically altered. We have argued this latter through an exploration of GPNs, suggesting that the work on them represents an advance on both GCC and GVC formulations but that there are still vital limitations when it comes to issues of labour. We have sought to ameliorate GPN analysis through suggesting that workers can have significant

impacts on commodity chains' structure and geographical organisation – a fact explored in Taylor's (2010) investigation of the global call centre industry, wherein he suggests that integrating labour process analysis with GCC/GVC precepts and elements of GPN analysis's more expansive relational perspective may provide invaluable analytical purchase on concrete global production and servicing chains. However, we would also argue that the reverse is also true, in that labour process analysis can benefit from attempts to engage with a more sophisticated form of analysis of inter-firm relationships, value creating and capture, the nature of regions, regional development and governance and the coordination of globally dispersed economic activities (Author A, Author B, and Author C 2010b). In this way we might more successfully analyse the nature of particular forms of geographical organisation of both production networks and workers, the politics of production and the relationship between fluidity and fixity of both capital and labour.

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