



**Copenhagen
Business School**
HANDELSHØJSKOLEN

Department of Business
and Politics
Steen Blichers Vej 22
DK-2000 Frederiksberg
Tel. +45 3815 3585
e-mail dbp@cbs.dk

A Typology of Power in Global Value Chains

Mark Dallas, Stefano Ponte and Timothy J. Sturgeon

Working paper no, 2017
Editor: Joachim Lund

Department of Business and Politics
Copenhagen Business School
Steen Blichers Vej 22
DK-2000 Frederiksberg
Phone: +45 3815 3585
E-mail: dbp@cbs.dk
www.cbs.dk/dbp

ISBN 978-87-93571-00-6

A Typology of Power in Global Value Chains

Mark Dallas*, Stefano Ponte** and Timothy J. Sturgeon***

* Dept. of Political Science & Asian Studies, Union College, NY dallasm@union.edu

** Dept. of Business and Politics, Copenhagen Business School sp.dbp@cbs.dk

*** Industrial Performance Center, Massachusetts Institute of Technology sturgeon@mit.edu

Abstract

‘Power’ has been a foundational concept in examining global value chains and production networks for understanding patterns and dynamics in the global political economy. Yet, in most GVC scholarship, power is not explicitly defined and is applied as a unitary concept, rather than as having multiple dimensions. Clarifying the concept of power has become particularly urgent in recent years given the proliferation of new GVC frameworks, which extend beyond dyads of transacting firms or firm-state linkages, to incorporate other stakeholders and mechanisms – including NGOs, labor unions, standards and conventions. In this paper, we propose a typology for the varied meanings and usages of power in GVCs. We delineate two principal dimensions of power: transmission mechanisms – direct and diffuse; and arena of actors – dyads and collectives. Combined, these two dimensions yield four ideal types of power exercised in GVCs: bargaining, demonstrative, institutional and constitutive. We offer brief illustrations of these four types of power and provide an agenda for further research in the field.

1. Introduction

‘Power’ has been a foundational concept in examining global value chains and production networks (hereafter, GVCs). However, over time, its usage and meaning (both implicit and explicit) has become overstretched. In most GVC research (e.g. Gereffi et al 2005), power as a concept focuses on the uneven bargaining relationships between firms, especially between ‘lead’ firms and suppliers. In the broader theoretical literature on power, this is commonly thought of as ‘coercive’ power, in which one actor utilizes incentives or sanctions directly to compel another actor to act according to their wishes (Gereffi 1994). As such, coercive power has the characteristics of being highly intentional, conflict-oriented and resource-centric.

However, as the analytic lens of GVCs has expanded, different applications of the concept of power have come to the fore, running the gamut from formal to informal. For instance, firms and other actors increasingly come to agreement over explicit and formal industrial standards and certifications, and over more informal conventions, best practices and norms (Ponte and Gibbon 2005, Nadvi 2009). Likewise, consumer and social movements can shape GVCs, and also vary in their degree of formal organization (Bair and Palpacuer 2015). Various levels of state action and authority also have structuring effects on GVCs (Neilson and Pritchard 2009, Jespersen et al 2014). While these socioeconomic structures might include elements of cooperation and collective action, they can also be highly contentious, and when fully consolidated, embody and fix power relationships in ways that systematically create winners and losers. In other instances – such as in certain pathways of modularization, financialization, and network organization – power can be exerted in even more ‘diffuse’ ways, e.g. by example. Collective and emergent outcomes can be generated, as Hayek said, ‘by human action, but not by human design’ (Dallas 2014). Thus, GVC research does not always focus on the exertion of power by any clearly defined ‘lead firm’ or other powerful firm-level actors.

While concepts of power commonly appear (often implicitly) in GVC scholarship, the topic has not been systematically theorized. Power is not explicitly defined and it is most often applied as a unitary concept rather than having multiple dimensions. To begin to fill this gap, this paper reviews the varied usages of power in GVC and GVC-adjacent literatures and offers a framework to help systematize the concept. It also explores forms of power that have been less thoroughly considered, as well as more emergent forms (e.g. the ‘ecosystems’ surrounding successful technology platforms).

One difficulty in creating such a framework is that the concept of ‘power’ itself is malleable, and notoriously open to interpretation. It is a prime example of an ‘essentially contested concept,’ in which there are unresolvable definitional disputes over meaning (Gallie 1956). As a result, the meanings of power have proliferated: witness the extensive literature on the ‘faces’ of power (Dahl 1956, Lukes 1974, Digeser 1992),¹ or the debate over whether power should be thought of only as inhering within well-defined actors (Baldwin 1989, 2002), should be limited to ‘intentional’ actions (Guzzini 1993, 2000), whether forms of ‘persuasion’ should be considered power (Lindblom 1977), and whether instances of mutual benefit and agreement can embody power (Oppenheim 1981).

We focus on the concept of power as it applies to various understandings of governance, restructuring, and evolution in GVCs. We draw from broader theoretical discussions of power, but do so selectively because, in our view, not all forms of power are equally useful in GVC analysis. Even though more recent contributions (e.g., Jespersen et al 2014, Bair and Palpacuer 2015) do incorporate non-firm actors, the GVC literature primarily focuses on *voluntary exchanges* between transacting firms – an area less commonly theorized in the broader literature on power. Yet, the concept of power in firms and industries is well developed. For example, the concept of market power is central to the industrial organization and market structure literatures (Chamberlin

¹ Very briefly, these are what might be referred to as resource power (Dahl 1956), agenda-setting power (Bachrach and Baratz 1962), ideological/structural power (Lukes 1974) and discursive power (Digeser 1992), though the authors do not necessarily use this exact jargon – in part because some understand their version as simply the embodiment of ‘power’ itself as a singular concept.

1933, Williamson 1975). Power resides in the Schumpeterian barriers to entry created by firm-level capabilities that are difficult, time consuming, or impossible for competitors to replicate (Penrose 1959, Teece et al 1997). The concepts of market power, barriers to entry, organizational learning, and asset specificity have all been utilized in GVC and GVC-related theory building (Ernst and O'Connor 1992, Sturgeon 2002, 2009, Gereffi et al 2005, Fujita 2010, Ponte and Sturgeon 2014). However, the expanding field of GVC research necessitates a look back at how power has been theorized, and a sustained consideration of its broader aspects, commonly analyzed in more general theories of power.

From this exercise, we construct a stylized typology of power in GVCs. We categorize power as possessing two-dimensions: an 'arena of actors' and 'transmission mechanisms'. Within the *arena of actors*, we specify how power is wielded in dyads and collectives. To date, much of the GVC literature has been concerned with dyadic relations between individual buyers (lead firms) and suppliers (e.g. Gereffi et al 2005); but more collective approaches to power and governance in GVCs have also emerged, looking at the role of, for instance, government, business associations and social movements.

The distinction between more institutionalized collectives (such as multi-stakeholder initiatives or the state) and looser social formations and groupings is embedded in our second dimension, the *transmission mechanisms* of power.² This concept is anchored by two ideal types: direct and diffuse. On the one end of the spectrum are circumstances in which GVC actors (individually or collectively) seek to exert direct forms of influence over other actors or actor groups. This form of power is relatively unambiguous. Actors can clearly identify each other, their actions are intentional and goal-oriented, specific actors 'possess' power and the tools and methods of exerting it. Transmission mechanisms are more formal and explicit and can be quite specific in their detail (e.g. defined in contracts). The other end of the spectrum consists of more diffuse forms of power in which the actors or collectives and the objects of power may be less clearly identifiable, and actions less intentional. While diffuse power can sometimes result in unintended but substantively important outcomes, the locus of power may reside outside the organizational boundaries of any well-defined set of actors. The transmission mechanisms for diffuse power can be imprecise, such as those emerging from social movements or through the uncoded 'best practices' that tend to propagate with new managerial models (Bodrozic and Alder 2017), or the interplay of hegemonic and counter-hegemonic forces. Combining these two dimensions yields a four-category typology that incorporates many of the types of power observed in GVCs: *bargaining*, *demonstrative*, *institutional* and *constitutive* (see Figure 1)

The paper is structured as follows. First, we discuss how power has been approached in the GVC literature. Second, we further delineate the two principal dimensions of our typology of power in GVCs: the transmission mechanisms of power (direct and diffuse) and the arenas of actors (dyadic and collective), and then describe the four types of power that emerge from this typology. Third, we provide three brief examples of how the four types can be used and combined to analyze how power is exercised in a specific GVC. In the final section, we reflect on the methodological implications of examining power through different lenses and provide an agenda for further research and theory building.

² As we will explain, more institutionalized collectives tend to exert power directly, while looser collectives do so in a more diffuse manner.

2. A Genealogy of Power in Global Value Chains

In early GVC literature, Hopkins and Wallerstein (1994: 17) defined a Global Commodity Chain (GCC) as ‘a network of labour and production processes whose end result is a finished commodity’, and set out an agenda for analyzing how chains are structured by a set of ‘dominant agents.’ This approach examined the distribution of gains across GCCs, and stressed that high value, high rent-producing segments of the chain would tend to remain in the global ‘core’ while less profitable activities were dispersed to ‘peripheral’ countries. Despite the innovation of framing the global economy as an amalgam of (more or less) global industries, rather than only discrete national economies competing internationally on the basis of domestic factor endowments, the principal driver of the geography and structure of the chain was the power held by states to shape the chain as investment and goods crossed borders, and even more importantly by the direct and indirect actions of global hegemony to ensure that high value segments were retained in core countries, by force if necessary. All this precluded the possibility of ‘upgrading’ in peripheral countries and locked in global patterns of uneven development (Brewer 2011).

Gereffi (1994, 1999), however, saw power in GCCs as linked to the ability of lead firms to ‘drive’ the organization of international production networks, and also for states to craft industrial policies, especially for export-oriented industrialization, that allowed them to ‘upgrade’ their position to higher value activities over time. Gereffi especially emphasized the role of buyer-driven chains in the sustained export-led success of a handful of East Asian economies from the 1950s through the 1980s, including Japan, South Korea, Hong Kong, Taiwan, and Singapore. He noted that their exports were mainly in ‘labor-intensive consumer products such as apparel, footwear, toys, and sporting goods,’ and that upgrading took place from simple assembly to ‘full package’ supply, which included backward linkages to intermediate inputs, sub-coordination of the chain by intermediate actors (e.g. trading companies), and forward moves into design and in some cases branding (1999: 38). In the buyer-driven pattern of international production, the power of ‘high-capacity’ states (Evans 1995) to work in tandem with business elites to upgrade the position of their domestic companies in global industries dovetailed with the strategies of retailers and branded merchandisers, especially in the United States but also in Europe, to source lower cost consumer goods to feed the ‘retail revolution’ at home (Feenstra and Hamilton 2006). This set off a co-evolutionary dynamic between buyer and supplier strategies that Kimura (2007: 97-98) refers to as ‘dynamic external fit.’

In this context, GVC membership, especially for developing country firms, provides possibilities for accessing knowledge, markets and valuable competitive assets in the global economy (Taglioni and Winkler 2016). However, these advantages are seen as contingent on the terms of inclusion and exclusion imposed by lead firms. This further underlines the power of key agents and their capacity to outsource value-added activities to less powerful actors, or to exclude them either initially or in subsequent rounds of contracting (Gibbon and Ponte 2005, Neilson and Pritchard 2009). As GVCs and GVC research have matured, these contingencies have loosened – unleashing a robust stream of research and theory-building related to the sources of supplier competence (e.g. Kawakami 2011) and various upgrading paths travelled by suppliers and lead firms in developing countries (e.g. Brandt and Thun 2010, Fujita 2010). To sum up the discussion of buyer-driven governance, non-hegemonic agency (at the level of firms or developing country policies) was nowhere to be found in Hopkins and Wallerstein’s conception of GCCs, yet was everywhere in

Gereffi's: in upstart retailers seizing control over their own supply chains, in the developmental state, and even in the strategies of lowly suppliers seeking to upgrade their role in relation to global buyers.

The key to understanding how this is possible lies in the other form of governance highlighted by Gereffi (1994): the 'producer-driven' chain. These chains were found in industries such as electronics and automobiles where lead firms directly controlled production and internationalized through foreign direct investment and the formation of affiliated firms, creating the classic multinational corporation (MNC). This more traditional mode of internationalization was a tighter fit with Hopkins and Wallerstein's conception of GCCs, since the ownership and high value functions in MNCs remained firmly in the core (at headquarters), even as factories were set up overseas to jump over tariff walls. The ability of MNCs to dominate developing country markets, especially in technology-intensive goods such as automobiles, stemmed from a series of firm-specific advantages that offset any 'liability of foreignness' emerging from cultural, economic, institutional or geographic distance (Vernon 1971, Buckley and Casson 1976, Dunning 1988). The drive to continue to vertically integrate, even as (or especially when) production was set up abroad, stemmed from the need to source suitable intermediate inputs, which were generally unavailable from local firms. In producer-driven networks, the international production network was internalized within the giant multinational firm (Rugman et al 2011).

Gereffi's introduction of the buyer-driven model was novel, and – because of the very thinness, or even absence, of lead firms' international operational footprint – called a key source of power in international business theory into question: the 'international' advantage of cross-border operational scale and efficiency, and by extension the assumption that local suppliers could not meet requirements. Additionally, the assumption in international business scholarship that the purpose of the MNC was to supply international markets was also turned on its head. Attention shifted from the gradual replication of MNC's home operations abroad to a 'new international division of labor' (Fröbel et al 1980) where export-oriented, cost cutting 'maquiladora' plants and 'global factories' (Grunwald and Flamm 1985) concentrated labor-intensive slices of the value chain in places with lower labor costs such as Mexico, North Africa, and East and South-East Asia. The market focus of global buyers, at least initially, was to undercut domestic competition at home, and their success at doing so demonstrated that low-cost products could be supplied and even rapidly replenished through international outsourcing. And, as large market developmental states such as Brazil, India and China opened to large scale FDI in the 1990s (unlike South Korea or Japan), increasingly stringent local content requirements began to place MNCs under pressure to source more intermediate inputs locally.

Although Gereffi did not specify the sources of power in buyer-driven or producer-driven chains, Sturgeon (2009) pointed to technological intensity as the main differentiator. In producer-driven chains, manufacturing processes represent difficult-to-replicate set of competencies and intellectual property that renders outsourcing unwise, difficult, and even impossible. However, with global industries growing rapidly in scope and scale, and changing their character in the 1990s and 2000s – with formerly producer-driven industries taking on some of the characteristics of buyer-driven chains – a dynamic theory was needed rather than a static typology. The result was a GVC 'governance' theory focused on a few key conditions (transactional complexity, codifiability of information and supplier capability) that structured how lead firms linked to

suppliers (Dolan and Humphrey 2000, Sturgeon 2002, Humphrey and Schmitz 2008, Gereffi et al 2005). While this did not retain the highly intentional term of ‘driving’ from the GCC stream, and the focus of governance shifted from driving to linking (Gibbon et al 2008), the assumption was still that the main power dynamic in business relationships would be coercive in character, and that some level of power asymmetry would be required for lead firms to engage in the ‘explicit coordination’ of the chain that differentiated GVCs from regular arms-length trade. The degree of this power asymmetry was theorized to run from very high, in the ‘hierarchies’ of foreign affiliates and their headquarters, to very low in pure arms-length ‘markets,’ with ‘captive,’ ‘relational’ and ‘modular’ falling in between (Gereffi et al 2005).

To sum up, Gereffi (1994: 97), lists ‘governance structure’ as one of three dimensions of any GCC (along with its input-output structure and territoriality),³ defined as the ‘authority and power relationships that determine how financial, material, and human resources are allocated and flow within the chain.’ Subsequent work on GVCs started to explore varieties of power by highlighting the relative position of suppliers in the chain, and by specifying the expected degree of power asymmetry along the spectrum of GVC governance types. However, the move from GCC to GVC analysis did not carry with it an explicit analysis or theory of power. The rise of global suppliers and platform leaders such as Intel led some to speculate that a new era of supplier-led value chains was dawning (e.g. Borrus and Zysman 1997). But in the end, with a few exceptions, the ability of lead firms to determine the functional division of labor along a commodity/value chain through the exercise of buyer power has continued to appear as the central hypothesis, and empirical result, of most firm- and industry-level GVC research. The approach is actor-oriented, focused on identifying lead firms that exercise power in the chain (Gereffi 1994), characterizing how they do it (Gereffi et al 2005), and with what consequences (Milberg and Winkler 2013). Relations of power are seen as asymmetrically embedded in ‘make or buy’ decisions. The ability of lead firms to choose and switch between suppliers allows them to demand additional services and ever-lower real unit prices from suppliers. This also allows GVC researchers to associate different functional roles along a chain to specific allocations of resources and distribution of gains (Kaplinsky 2005). Despite this centrality, it seems clear enough that the concept of power in the mainstream literature on GVC governance was left under-theorized.

After the mid-2000s, a different approach to power in GVC developed, rooted in the concept of ‘governance as normalizing’ – the process of re-aligning a given practice to be compatible with a standard or norm (see Gibbon et al 2008). This process includes important elements of self-regulation. To highlight ideational processes and contestations in GVC governance processes, this work has drawn on convention theory (Ponte 2002, 2009, Ponte and Gibbon 2005, Ouma 2010), but also on governmentality (Gibbon and Ponte 2008, Ouma 2015, Raj-Reichert 2013) and on neo-Gramscian approaches (Levy 2008, Bair and Palpacuer 2015). It has shown how GVC governance can be shaped by standards and certifications on quality and sustainability, multi-stakeholder initiatives, corporate social responsibility (CSR) and social movements. Some of this work is focused on the negotiations, compromises and pedagogies of ‘quality’ (including the social and environmental traits of products and services) and has sought to explain how the shaping of ideas, content, measurement devices, and operationalization of quality is an essential part of how power relations are shaped and governance put in place (Nadvi 2008, Quark 2011). While this work

³ Gereffi and Tam (1998: 5) later added a fourth dimension, the ‘institutional setting that specifies local, national, and international conditions that shape each activity within the chain.’

highlights how control over the qualification of specific products can be a key source of power for ‘lead firms,’ it also reveals how counter-actions by other value chain actors can sometimes challenge the status quo. This literature provides windows into the micro-foundations of power, but also its meso-aspects, for example, how quality conventions are transmitted in space and along the value chain (Ponte 2009, Ponte and Sturgeon 2014). It has also broadened the possible set of governing actors beyond lead firms and suppliers, and how they exercise power in GVCs. The result is a more nuanced view of how buyer power is wielded, including instances where its expression can be disguised.

Another set of broadening contributions has highlighted processes of disarticulation and counter-action in governance. What brings these theoretically diverse approaches together is a general movement away from an interest in buyer-determined governance dynamics, and towards: a) highlighting the strategic logic of suppliers exiting from GVCs in specific situations; b) the processes of suppliers clawing back power from lead firms; and/or c) the increasingly important role of actors not directly involved in value adding activities. The disarticulation approach is formulated most coherently in Bair and Werner (2011, Bair et al 2013). Their implicit take on power shifts attention from the dynamics of integrative efforts (participation in value chains) to a more nuanced picture that includes the agency that allows less powerful actors to disarticulate and disentangle from uneven and exploitative GVCs relations, or exert the power of refusing to participate – leading to the consideration of alternative actors, non-actors, and anti-actors (see also Berndt and Boekler 2011, Havice and Campling 2013, Goger 2013).

As we can see, many GVC contributions have sought to tame some of the inevitability of ‘buyer power’ in the earlier literature by showing how key suppliers in some industries have been able to establish increasingly powerful positions (e.g. Sturgeon 2002, 2009, Tewari 2005, Kawakami 2011, Raj-Reichert 2015), or by highlighting paths and strategies that suppliers can follow to not only create value, but also to retain it (Kaplinsky 2005, Fujita 2011, Sako and Zylberberg 2016). Such possibilities can lead to reconfigurations of governance away from unipolarity, where most power is concentrated in one functional position in the value chain, towards multipolarity, where power is more equally distributed across different functional positions (Fold 2002, Ponte et al 2014). Multipolarity can also involve other actors outside the value chain, such as international NGOs, trade unions, governments, and multi-stakeholder initiatives (Nadvi and Raj-Reichert 2015). This stream of GVC literature also examines how firm-level GVC governance interacts with global governance – such as with transnational sustainability governance — where lead firms may not be the most important agents (Bair and Palpacuer 2015).

Finally, a cognate literature on Global Production Networks (GPNs) focuses on more complex configurations of economic activity than the linear ones used in the GVC literature, and highlights the complexity and variety of non-firm actors in shaping the organization of economic activity (Henderson et al 2002, Hess and Yeung 2006, Coe et al 2008, Coe and Yeung 2015). In an effort to break down power into different forms, the GPN literature proposed a three-way distinction between corporate, institutional (largely ‘state’ power), and collective (non-firm, non-state) power. Thus, this framework places primary emphasis on the different *types of actors*, which is similar to one of our two dimensions – the ‘arena of actors.’⁴ However, it only conceptualizes the exercise

⁴ While Henderson et al (2002) differentiate state and non-state actors into distinct categories (institutional and collective, respectively), in our framework, any situation involving more than the standard dyad (two actors, like

of power between actors in ways that we categorize as ‘direct’ transmission of power. In more recent work, GPN scholars have proposed a structural-cum-relational approach to how power in GPNs shapes economic organization (Coe and Yeung 2015: 65; see also the distinction between resource and bargaining power in Mahutga 2014). They argue that a structural approach to understanding power in a network is based not only on examining a firm’s position within the network (i.e., its network centrality), but also of the strength of association (network density); and that structural positions do not automatically lead to pre-ordained power balances since power is exercised in contingent and contextual situations. Actors thus ‘draw upon different forms of power in order to take on an advantageous position in GPNs that favor their value creation, retention, and capture’ (Coe and Yeung 2015: 66-67).

In a recent effort to update and clarify the concept of global production networks (GPN 2.0), Coe and Yeung (2015: 66) offer an explicit definition of power as: ‘the capacity of an actor to exercise and achieve control over a particular strategic outcome in its own interests’. This definition of power conceptualizes it as mainly embodied within well-defined ‘actors’ engaged in ‘intentional’ action (i.e. is ‘strategic’). As in earlier writing, power in ‘GPN 2.0’ is mainly focused on instances of *direct* control by specific actors over clearly defined outcomes. As such, it most closely resembles classic definitions of power, such as Robert Dahl’s (1956: 202-3) in which: ‘[Actor] A has power over B to the extent that he can get B to do something that B would not otherwise do’. While this form of power is certainly common and widely exerted in actor networks, researchers need a more expansive understanding of power, including power that is more *diffuse*, and power that is exerted by collectives of actors where the membership boundaries are permeable, and thus hard to conceptualize as an ‘actor’ exerting ‘intentional’ actions.

Furthermore, power need not always possess a ‘negative’ valence or necessarily be ‘conflict-oriented,’ even though conflict has been common in many of its conceptualizations, including Dahl’s (1956), as well as Weber’s (1947) classic ‘carrying out of one’s will despite resistance’ and Blau’s (1964) ‘influence over behavior through negative sanctions.’ Power underlies even voluntary transactions in which all parties mutually benefit from cooperation, or when there is absolute symmetry between transacting actors as in open market exchanges. However, in GPN 2.0, power in production networks is mainly conflict-oriented and seen as ‘the ability of one actor to affect the behavior of another actor in a manner *contrary to the second actor’s interests*, [and] can also reflect the ability of one actor to *resist an unwanted imposition* by another actor’ (Coe and Yeung 2015: 17, emphasis added). Here, Coe and Yeung seem to imply that power is a less relevant concept in more equal or balanced ‘relational’ inter-firm linkages. However, in literatures that address inter-firm power, such as the longstanding ‘power dependence theory’ (Pfeffer and Salancik 1978), ‘mutual dependence’ is one construct of inter-firm power and distinct from ‘power imbalance,’ each leading to different empirical outcomes (Casciaro and Piskorski 2005). For instance, bargaining power in negotiations between firms with ‘relational’ ties is important, even between equally co-dependent firms in which each possesses resources desired by the other firm and when the transaction is fully voluntary. In fact, except in the most extreme instances, nearly all transactions studied in the GVC and GPN literatures are voluntary and for the purpose of mutual

buyer-supplier or state-firm bargaining) is categorized as a ‘collective.’ This may include any combination of state agencies, non-government institutions, and even large collectives of individuals, even if they are not fully incorporated into a well-defined organization, such as in social movements, or when ideas, best practices and other conventions diffuse among actors.

(albeit often unequal) benefit. There may be imbalances in dependency and competency, but even symmetrical relationships are imbued with power. It is just that in relational linkages, the *balance* of power is more equal than in some other forms of governance (i.e. captive).

In the rest of this paper, we acknowledge that coercive power is certainly common and widely exerted, but argue that a more expansive understanding of power is needed, including power that is *diffuse*, and power that is possessed by specific actors as well as collectives. Following Dallas (2014), we cover both agentic-strategic and non-agentic power at different levels of analysis. In some cases, this can include self-organizing collectives that emerge as the unintended outcome of the aggregate actions of unrelated firms. Thus, rather than circumscribing the concept of power, we adopt a moderately expansive scope, in which the locus of power need not always inhere within specific power-wielding actors, need not always be exerted with full intentionality, and need not be exhibited in overt inter-actor conflicts (though, of course, all of these do exist in GVCs). At the same time, our conceptualization of power is not boundless, in that it steers clear of meanings of power that are less useful for GVC analysis.⁵

We begin by differentiating the two main dimensions of our typology of power – the ‘transmission mechanisms’ of power and the ‘arena of actors.’ We then explain the four typologies of power that emerge from these two dimensions: bargaining, demonstrative, institutional and constitutive.

3. Two Dimensions of Power in GVCs

3.1 The Transmission Mechanisms of Power: Direct and Diffuse

As we have seen, GVC and related literatures have started to differentiate (at least implicitly) between different kinds of power in GVCs by highlighting whether the transmission mechanisms of power are more direct (Gereffi 1994, Gereffi et al 2005, Coe and Yeung 2015) or more diffuse (Gibbon and Ponte 2005, Dallas 2014). This distinction is used in the broader theoretical literature on power and has been incorporated into other useful typologies (e.g. Barnett and Duvall 2005, Mann 2012). Mann differentiates ‘authoritative’ and ‘diffused’ power, with the former ‘involv[ing] commands by an individual or collective actor and conscious obedience by subordinates’ and the latter as ‘spread[ing] in a relatively spontaneous, unconscious and decentered way. People are constrained to act in definite ways, but not by command’ (2012: 6). While this distinction is common, there are different positions over whether power must always be intentional and explicit, in the sense that actors only exert power when they intentionally seek to fulfill goals that serve their interests. Despite this distinction, Mann is very clear that his four sources of power (military, political, economic, ideological) are exercised in intentional ways: ‘these [sources of power] are organizational means by which we can efficiently attain our varied goals, whatever these may be’ (ibid.). By contrast, Barnett and Duvall (2005: 44) incorporate into ‘diffuse’ power many types of unintended behaviors and outcomes, which ‘provides a systematic way of thinking about power in terms of both agency and structure’. Our framework falls into the latter category:

⁵ For instance, we exclude conceptualizations of power in which the preferences of actors are unconsciously formed that run counter to their ‘objective’ interests (Lukes 1974).

diffuse power includes lower degrees of intentionality – most commonly enacted through collective actions.

In *direct* forms of transmission, the actor or collective wielding power and those who are objects of it are relatively easy to identify by all parties. The exertion of direct power is most often intentional and the goals of powerful actors are well known. Direct power also generally inheres within actors or collectives (including the state) in the sense that they ‘possess’ power, for instance, by wielding material or ideational resources, or by leveraging their structural or network position within a GVC.⁶ The utilization of these resources and the mechanisms of transmission by influential actors are more likely to be explicit and precise, in the sense that the exercise of control includes specific, measurable and monitorable requirements. These attributes of direct power are often interactive. For instance, because the actors are clearly defined, act strategically and intentionally in relation to each other and are in possession of well-defined resources to exert or accommodate power, the exercise of power tends to be more transparent, precise, and usually includes measuring and monitoring the behavior of actors over whom influence is exerted. As elaborated in more detail in the next section, examples of the direct exertion of power include the relative bargaining power between two transacting firms, lead firm-specific production requirements and protocols for suppliers, specifications for use of technology platforms, government regulations, rules set by a business association for its members, or environmental protection standards set by third-party certifications.⁷

But power transmission can also be *diffuse*, where mechanisms are based on less direct and more demonstrative processes, follow broader societal trends, or are based on taken-for-granted or emergent ‘best practices’ (e.g. corporate conduct and organization) or dominant quality conventions (Gibbon and Ponte 2005). Power can also be diffuse when individual actors or collectives fail to realize the many unintended consequences of their actions, even when they have real and material impacts on their interests. The actions of powerful agents and collectives may have an influential demonstration effect on other actors, leading the latter to change their behavior in ways beneficial to the former even without the knowledge of the powerful, without their intention to have such an effect, or without a clear sense of who will or will not follow the ‘demonstrator.’⁸ Power is diffuse when groups of actors behave in a manner akin to social

⁶ Of course, positional power in a GVC is often a function of firm resources, such as the specialized technological knowledge that undergirds the power of producer-driven lead firms in the GCC framework. Furthermore, the notion of *inherency*, or *possession* of power is controversial. We agree with Allen (2003) that possession of power (like resources) and exercise of power should be differentiated, but we are not opposed to the idea that some forms of power can be thought of as ‘possessed’ by an actor. In fact, it is certainly possible for an actor in possession of resources to exert power without utilizing its resources, if other actors simply do not act in certain ways in anticipation of a counter action. Whether this is an exercise of power depends on how one imbues the meaning of ‘exercise.’ However, we are not arguing that all forms of power are possessed by actors (see our discussion below on more diffuse transmission mechanisms of power).

⁷ In developing this, and other categories of power as ideal types, we recognize that they are rarely so clear in practice. For example, the intention of specific regulations and requirements may be opaque to those who must follow them, and the actors setting them may be hidden or distant, especially with the spatial and cultural separation common in GVCs, making the specific authors difficult to identify.

⁸ One could argue that all actions have unintended consequences. We wish to differentiate unintended consequences which have little relevance to the wielders or objects of power in a particular situation (which can be safely ignored), and unintended consequences like unintended ‘demonstration effects’ which circle back and have an impact on the

movements. In the GVC literature, such dynamics can be present in diffusion mechanisms such as the creation or demise of standards, conventions, best practices, and in bandwagoning during the pre-paradigmatic stages of diffusion of new technologies. In these circumstances, actors wield little direct power by themselves, but when substantial numbers of actors alter their behavior in unison or in rapid succession, they exert increasing power through diffuse mechanisms, even though they do not belong to a formal organization or participate in a common network.

These forms of less controlled and less intentional power have been included in various theories, such as those concerning the mechanisms of collective action (e.g. Granovetter 1978), emergence (Miller and Page 2007, Mitchell 2011), and theories of organizational ecology (Hannan and Freeman 1977, 1984), among others. Collective or emergent orders are not projected outward from a single, identifiable locus of power, but arise from the behavioral regularities of actors that may be unintentional or weakly intentional in terms of the goals of their collective behaviors (Dallas 2014). In this case, agents may individually participate or defect in succession, perhaps through observations of the behavior of peers. This can create a chain of isomorphic reactions or herd mentality, and lead to sudden change in the dynamics of power. In these circumstances, power cannot always be said to be ‘possessed’ by any particular actor. Rather, the transmission of power is diffuse, and continues to be so as long as large numbers of actors behave in *relative* uniformity. Unlike precise contracts or detailed protocols, the exertion of diffuse power is not necessarily explicit, precise, or easy to monitor or enforce – especially when collective action flows from loosely organized groups.

Diffuse power from social movements and collectives of actors, and the emergence of conventions have been well documented (e.g. Gibbon and Ponte 2005, Bair and Palpacuer 2015). Other, less recognizable instances of diffuse power in GVCs can come with the sudden arrival of an enabling technology. While the agents introducing this technology are usually easily recognizable, the *process* by which technology is deployed is not always, or even usually, controlled by first-movers (though they certainly try to incentivize its adoption). Rather, it operates through a social movement-like adoption of technology – in which a certain threshold of (unorganized) defectors of a prior technology is required before a new technology can be considered truly disruptive (Christensen 1997),⁹ or when newer, ‘two-sided markets’ enabled by platforms propagate through network effects (Parker et al 2016).

Diffuse power is also at work when ‘best practices’ are propagated, for example by consulting firms or pressure from financial markets for companies to conform to normative modes of behavior in which agreement about best practices are collectively determined. For example, the idea of international ‘outsourcing’ and the mantra for firms to discover and focus on their ‘core competencies’ became a perceived best practice buzzword over the 1990s and 2000s. At the time, outsourcing was touted as a necessary cost reduction strategy and companies were pressured to conform or see their market valuation decline. By the late 2000s, the conversation over

actors engaged in an arena where power is being exerted, even when the set of actors is not perfectly defined.

⁹ In fact, in Christensen’s (1997) formulation, it is smaller and technologically weaker firms which are most likely to become industry disrupters. They operate within the shadow of the industry giants who often respond too late to the threat from below, in which underserved consumers have already bandwagoned onto the disruptive technological trajectory of the weaker, but rising firm. Christensen has had to clarify this point to correct the improper and excessive usage of the term ‘disruptive technology’ (Christensen et al 2015).

outsourcing had become more sober, with companies provided with more leeway to explore ‘optimal’ combinations of internal and external (and domestic and international) sourcing and to consider the ‘total cost’ of delivering product and services to customers rather than only the costs of goods or services sold. Nevertheless, the early normative dialogue generated a threshold level of behavioral mimesis such that sufficient initial demand and cognitive legitimation (Hannan et al 1995, Baum and Powell 1995) created the conditions for the emergence of larger, more competent (global) suppliers, logistics firms, and other specialized service providers; as well as infrastructure investments in places such as coastal China that influenced subsequent outsourcing and offshoring decisions. Thus, sunk costs and prior business decisions have a co-evolutionary effect on norms and conventions.

3.2 The Arena of Actors: Dyads and Collectives

A second dimension that differentiates power in the GVC literature is the ‘arena of actors.’ An ‘arena’ is where specific actors or collectives engage with other actors. We propose two categories of actor arenas – dyads and collectives. The dyadic arena is most often implicit in the broader literature on power. For instance, in some cases, a dyadic relationship of Actor A interacting with Actor B is built into the definition of power (e.g. Dahl 1956), but in other cases, the population of actors involved in power relationships can be hard to clearly identify (e.g. Lukes 1974, Digeser 1992). In GVC and some related literatures (e.g. theories of the firm, strategic management), the focus on the inter-firm dyad is well established. This was the arena studied in Gereffi’s (1994) research on ‘lead’ firms – whether buyer- or producer-driven – and their links to suppliers or ‘intermediaries’ that managed detailed contracting relationships and translated buyer requirements for factories. A dyadic arena is even more the focus in Gereffi et al’s (2005) governance theory, which argues that three underlying factors (transactional complexity, codifiability of information and supplier capability) generate five distinct forms of coordination: hierarchy, captive, relational, modular and market, where power asymmetry decreases as one moves from hierarchy toward market forms of linkages. This is because power exerted between the dyadic pair is shaped by relative bargaining positions rooted in purchasing power and competence power (Sturgeon 2009). There are also cases when the focal actor in a collective engages in dyadic relationships with individual actors, as in negotiations or lobbying between the state and individual companies. In this case, the state is still a collective, but acts dyadically in specific instances.

The second arena of actors in GVCs, less explicitly researched and theorized, involves ‘*collectives of actors*’. The locus of power in this case is a function of the collective behaviors of multiple players acting simultaneously (intentionally or not) and/or of more institutionalized collectives such as business associations, multi-stakeholder initiatives, or states. We avoid using the term ‘institutions’ here, because not all collective arenas have institutional or organizational traits. Therefore, we reserve the term ‘institutional power’ for cases where the collective arena is combined with direct power transmission (one of our four combinations in Figure 1). In an institutionalized collective, there is a focal organization (such as the state) that sets more or less transparent rules for all, or for specific groups of actors (e.g. in industrial policy), who experience the rules and their consequences along with others. Any bargaining by actors takes place in the context of the collective (e.g. through an industry association), and this distinguishes power dynamics in collectives from that operating through dyadic interactions –e.g. between the state and individual companies.

While a collective might appear to be a unitary actor with uniform and coherent rules, leadership or organization, it might also be more loosely organized and coordinated. There is variability within collectives, and some have developed a degree of formal organization or explicitly codified rules and may imbue certain actors with leadership – though not enough to consider them fully institutional actors – and be more likely to exert direct power. By contrast, collectives of actors in which no single or clear organization can be identified, few codified rules exist, and a sense of leadership is lacking are those more likely to exert diffuse power. This might be the case with informal conventions, social movements, and in looser networks that are not built around a central organization. Here, the boundaries of those ‘included’ and ‘excluded’ in the arena are not exactly knowable, perhaps even for the actors themselves.

4. Four Types of Power in GVCs

Combining the two types of transmission mechanisms and the two arenas of actors explained in the previous section yields four ideal types of power in GVCs: **bargaining**, **institutional**, **demonstrative** and **constitutive** (see Figure 1).

It is worth reiterating that both dimensions of the typology are not strict categories, and differ only by matters of degree. This is obvious for the direct-diffuse dimension, but is also the case for defining the arena of actors. For instance, collectives include looser networks as well as more fully institutionalized forms. It is also worth noting that these various types of power are *combinatory* in specific GVCs, meaning that they are not mutually exclusive and thus they can become mixed, layered and linked together in complex ways and in different combinations over time. For instance, the power of any GVC actor in a particular situation frequently combines more than one of these forms of power at a single point in time. This can happen because one type of power may be partly derived or dependent upon another form of power, such as when the (dyadic) bargaining power of one firm over another derives from its positional power in a collective, or when a supplier uses its dyadic competence power to encapsulate valuable assets formerly held by a collective (e.g. moves to make open source software proprietary). One type of power can transform into another type, for instance when vaguely defined best practices are codified as a *de facto* standard or even maintained and enforced as a *de jure* standard – representing a shift from diffuse to more direct power within collectives. This suggests that it is important to carry out evolutionary analyses of how different transmission mechanisms and areas of actors overlap and evolve over time.

Figure 1: A Typology of Power in Global Value Chains (GVCs)

	Direct	Diffuse
	<i>Bargaining Power</i>	<i>Demonstrative Power</i>
Dyadic	<ul style="list-style-type: none"> • Operates in firm to firm relations • Exhibits different degrees in hierarchy, captive, relational, modular, and market linkages • Is shaped by the relationship between lead firm/platform owner requirements and supplier competencies 	<ul style="list-style-type: none"> • Operates through informal ‘transmission’ mechanisms along value chains and/or competitive mimicry among suppliers and would-be platform owners • Is shaped by quality conventions implicitly accepted by the parties of a dyadic transaction
	<i>Institutional Power</i>	<i>Constitutive Power</i>
Collective	<ul style="list-style-type: none"> • Operates through government regulation and/or multi-stakeholder initiatives or other institutionalized forms • Can be leveraged through industrial standards and codified ‘best practices’ • Helps to build platforms and stimulates their network effects, extending to platform ecosystems 	<ul style="list-style-type: none"> • Is based on broadly accepted norms, conventions, expectations and best practices, e.g. financialization, ‘platform ideologies’ • Can be leveraged by social and consumer movements • Arises from user-induced platform adjustments, extensions, and fully open platforms that stretch them beyond established ecosystems and opens up space for new platform owners

Source: Authors

Note: examples are illustrative, not comprehensive

4.1 ‘Bargaining’ Power – Dyadic and Direct

Bargaining power is clearly the most common form of power found in GVC and related literatures. This is partly because of a focus on linkages between ‘lead’ firms in advanced economies and suppliers in developing countries (Gereffi 1994, Gereffi et al 2005). Lead firm power is based on production expertise, control over distribution channels, design, and customer relationships in end markets. In GVC governance theory, the arena of actors is specifically identified as being variable: internal to the firm in the hierarchical form, strongly dyadic in the captive form, less so in the relational form, and weakening rapidly across the modular and market forms, where the

codification of the inter-firm linkage both enables and necessitates suppliers serving multiple lead firms. In other words, it is the number of possible partners that in part drives the predicted level of power asymmetry in GVC governance theory. Still, the arena of actors is populated only by firms, and the analysis of power is based in a series of firm-to-firm (dyadic) bargaining snapshots. As attention shifted to various forms of supplier power, the dyadic relationship has remained central to the analysis of power, as supplier power is mainly judged in relation to lead firms.

Clearly, the category of bargaining power (where the arena of actors is dyadic and the transmission mechanism direct) is essential. However, it is important to remember that the four categories of power in our framework are not mutually exclusive, but rather are layered and combinatory. As mentioned above, dyadic power can also be exerted between individual firms and states.¹⁰ And even though bargaining power is exerted directly *between* dyads of firms, power that is *external* to the relationship sometimes undergirds the particular linkage (see below under different forms of collective power). For instance, even though ‘modular’ is a description of a type of dyadic linkage, this form of power often derives from collective diffusion processes — many firms bandwagon by adopting a particular standard, providing complementary assets, or selling products or services over platforms (Gawer and Cusumano 2002, 2008). Thus, modularity can be thought of as operating on more than one level of analysis (dyad and collective), and as a layered combination in which different types of power might be expressed.

4.2 ‘Demonstrative’ Power – Dyadic and Diffuse

Increasing requirements in a dyadic GVC relationship can shape more than the behavior and choices of suppliers. It can also create a demonstration effect among all suppliers or would-be suppliers of a particular good or service, in addition to second tier suppliers and beyond. This may occur through many mechanisms. For instance, a specific form of upgrading may induce adaptation among competing suppliers, or among suppliers wishing to compete in the future. If they cannot meet these elevated requirements, suppliers can be ‘excluded’ from GVCs, and may be forced to ‘downgrade’ to serve less demanding customers.

Transmission of new requirements can also occur in more formal ways such as when first tier or more downstream firms impose new standards or requirements upon other tiers of upstream suppliers. Depending on how explicit and interactive the coordination is between lead firms and first tier suppliers, this power may fall between the bargaining and demonstrative categories. In other words, the outcome of bargaining within particular dyads can subsequently spread along the value chain and in contiguous industries through demonstration effects. While this form of power

¹⁰ For example, in Vietnam in 2015, Samsung operated under a set of investment rules that included a requirement to spend 1% of revenues on R&D in Vietnam in order to take advantage of a series of incentives targeting companies in ‘high tech’ industries. Incentives included exemptions from land use levies, significant reductions in enterprise income tax, value-added tax and import and export duties; and eligibility to receive funding from the National Hi-Tech Development Program, a fund earmarked for high-tech enterprise development. However, Samsung had already invested US\$ 9 billion, had production topping 120 million units, and employed 75,000 (with projections to add another 25,000 by 2016). With revenues from exports growing accordingly, the company’s R&D spending commitment soon outgrew the capacity of its Vietnam Mobile R&D Center to spend it. The Ministry of Science and Technology suspended the R&D spending requirement, but only for Samsung (Sturgeon and Zylberberg 2016).

is acknowledged in existing literatures, there is less effort to precisely assess these adaptations and demonstration effects – a key criticism arising from the disarticulation literature (Bair and Werner 2011). More research is needed to explain dynamics external to (but nevertheless contiguous to) dyadic GVC activities, so that dynamic ‘strategic choices’ faced by suppliers and other less powerful firms in GVCs can be better understood (Sako and Zylberberg 2016).

4.3 ‘Institutional’ Power – Collective and Direct

Institutional power is a form of direct power that is exercised by collectives that are more formally organized (e.g. in business associations, multi-stakeholder initiatives, shared technological platforms, or within the state). While power in dyadic relationships stems from resources controlled by a single organization, such as technological or organizational know-how or financial and other material resources, in collective arenas it is at least partly external, in the sense of being dependent upon the strategic actions of groups of actors, or upon the rules set by formally organized collectives (e.g. industry associations or the state).

The state, when regulating the conduct of all actors or categories of actors, applies institutional power. Multi-stakeholder initiatives, collectives where stakeholders are clearly identified, and which provide voluntary tools for business conduct or the social and environmental conditions of production, also exercise institutional power. When these initiatives end up developing third-party certifications, they also indirectly shape dyadic relationships – as buyers can require specific certifications from suppliers to meet specific sustainability requirements. As a result, non-firm actors, and especially international NGOs, have been increasingly examined in the GVC literature. Unlike dyadic arenas in which one could say that actors exert power over other actors, in collective arenas, power is more likely to derive from the actions of multiple actors.

This does not mean that a collective of actors is likely to exist in perfect harmony. There can be, and usually is, substantial and even debilitating contention within any collective action, and conflicts may involve innumerable dyadic relationships. Moreover, collectives such as standard-setting bodies often provide arenas where powerful actors jockey for the inclusion of terms that are especially favorable, for example when powerful firms in the telecom sector lobby for inclusion of proprietary technologies in new generations of interconnect standards (e.g. 3G, 4G, 5G) as a way to lower costs of compliance and earn revenues from technology licensing. The same market power and firm-specific resources that would give these incumbent firms power in dyadic relationships can be leveraged in collectives as well.

A less intuitive form of institutional power is derived through network effects in the platform organizational form. Network effects describe the increase in the value of a product or service when more firms or consumers acquire or use it. For instance, this is the logic underlying ‘platform ownership,’ in which the focal firm partially opens up its technology and incentivizes other firms to provide products or services that are complementary to a platform or consumer to use the platform (Gawer and Cusumano 2002). Many of the largest and most powerful and profitable technology companies today, such as Microsoft, Intel, Qualcomm, Facebook, Google, Amazon, Uber, Tencent, and Alibaba, derive their power through platform ownership. While this type of power remains reliant on the continued participation of its user base, and power is partially external to the focal firm, the power of the platform owner can increase quickly and to very high levels if

platforms can provide services that users feel is indispensable and network effects remain strong (Gawer and Cusumano 2008).

What distinguishes institutional power from bargaining power is that it derives from the combined actions of actors that share a clear membership in an initiative or organization, use a particular standard, or link to a common platform. As the degree of formal institutionalization diminishes, 'institutional' power (collective and direct) gradually turns into 'constitutive' power (collective and diffuse), discussed next.

4.4 'Constitutive' Power – Collective and Diffuse

Constitutive power is often manifested when collective arenas do not exhibit clear or formal common membership or interest. In constitutive power, there is no institutionalized focal point directing influence or guiding diffusion and adoption. Furthermore, it may arise in situations where it is the *users'* creative utilization and adaptation of a platform that makes it dominant – not the platform leader itself. Examples of constitutive power also include the diffusion of outsourcing or financialization as general models against which firms come to progressively structure themselves, which in turn shape GVC structures and restructuring processes (Gibbon and Ponte 2005), the increasing importance of sustainability concerns in the governance of GVCs (Ponte 2014), and/or the normative role exerted by social movements on corporate conduct and transparency (Bair and Palpacuer 2015).

Constitutive power emerges when broad-based collective action involves far less formal institutionalization or less clear common identity or purpose. Constitutive power is less explicitly codified, is applied through less precise measurement techniques and standards, and requires less direct forms of enforcement. However, actors still know and agree when a general norm or convention has been violated and sanctions are often collectively imposed, though again enforcement is decentralized and often subtle and nuanced compared to the pre-ordained arbiters and judges that may be used in institutional power. On the one hand, constitutive power can become increasingly formalized and codified and thus re-emerge as institutional power. On the other hand, institutional power can be challenged, de-legitimized and de-codified, and practices and norms re-emerge in more informal ways as constitutive power.

The main difference between institutional and constitutive power is that in institutional power the transmission is direct, while in constitutive power it is diffuse. This does not mean that sanctions or rewards from constitutive power are less regular or certain, but that these are enforced upon each actor by everyone else in the arena, rather than being oriented and carried out by a focal actor (such as the state, an industry association or a certification agency). Many norms, broad conventions and best practices exist in this non-formalized state.

5. Empirical Applications

In this section, we apply our typology to three empirical examples and include stylized graphic representations of the actors, arenas of actors, power transmission mechanisms, and actor constellations for each case. Figure 2 provides a basis for the case-specific figures that follow. It includes symbols for three types of firm-level actors: lead firms, suppliers and 3rd party developers, and lead firms with more than one line of business — based on the assumption that sourcing requirements and relationships tend to be distinct from one line of business to the next. A few additional actors are specified, including states, organizations such as non-governmental organizations and industry associations, and individuals. The ‘arena of actors’ follows the framework provided in Figure 1, with direct power transmission represented by solid lines, with varying line thickness based on the degree of power asymmetry between actor dyads. Indirect power is represented by dotted lines — showing the diffuse influence of specific actors on others. Collectives are represented by circles that can accommodate any number of actors, with solid or dashed lines to represent direct and indirect power transmission.

In the ‘actor constellations’ section of Figure 2 we provide a few emblematic, highly stylized examples of power relationships in actor groupings. These include a lead firm with supplier relationships, where ‘bargaining power’ is transmitted directly in dyadic linkages that range from low power asymmetry with market linkages to very high with captive linkages following Gereffi et al (2005), and an example of a lead firm with two lines of business, each with its own supplier relationships with various levels of power asymmetry. We also include a representation of state-firm dyadic bargaining, since powerful firms commonly negotiate terms directly with governments and government agencies, either as one-off agreements or as exceptions to existing regulations. In the category of ‘demonstrative power’, we indicate how transmission mechanisms operate indirectly in dyadic linkages. In ‘institutional power’, collections of actors exert (stronger or weaker) power within groups: we provide an example of a platform owner and the suppliers and 3rd party developers that provide components or complementary products or services, as well as simple examples of a state regulating affected firms and other institutions. In the category of ‘constitutive power’, constellations of actors exert indirect power in collectives: we provide examples of an open platform, where loosely connected individuals and organizations contribute to a set of freely available yet inter-operable technologies, and of a social movement where more or less coordinated groups of individuals and organizations pursue a specific goal or set of goals.

These simple, highly stylized diagrams are by no means meant to represent an exhaustive set of actor constellations. Social movements can involve any type of actor and sometimes evolve to develop more structure, including centralized organizations with selective membership. Multi-stakeholder initiatives can also involve a range of actors, and exhibit both direct (institutional) and diffuse (constitutive) power relationships among actors. Most importantly for the three empirical examples that follow, firms, industries, organizations, technology platforms, and social movements both evolve over time and usually involve an interacting set of actors and actor constellations. With this in mind, we can see how the distinctions between the four forms of power developed in this paper can be used to trace how organizations and movements ‘borrow’ ideas from actors with demonstration power, organize more explicitly or more loosely, and experience spin-offs, extensions, and geographic transformations over time.

Figure 2. Power in GVCs: actors, arenas, transmission mechanisms & actor constellations

Actors:		Firms	● Lead firm	◐ Lead firm w 2 lines of business	○ Supplier / 3 rd party dev.
		Others	■ State	□ Other organization (e.g. NGO, Ind. Assn.)	△ Individual
		Transmission mechanism			
		Direct	Indirect		
Arena of Actors	Dyadic	Weaker, less asymmetric Stronger, more asymmetric			
	Collective				
Actor constellations (examples)	Dyadic	<p>Bargaining Power</p> <p>Lead firm & suppliers w/ various governance</p> <p>Lead firm w/ two lines of business & suppliers</p> <p>State-firm dyadic bargaining</p>	<p>Demonstrative Power</p> <p>Actor's indirect influence</p>		
	Collective	<p>State regulation with affected firms</p> <p>Closed platform with suppliers or 3rd party developers</p> <p>Institutional Power</p>	<p>Social movement with key activists, activist organizations, and no central organization</p> <p>Open platform with developers, key individuals, and no central organization</p> <p>Constitutive Power</p>		

Source: Authors

Our first example explores the power configurations at play in the wine GVC. This case lays out the complex dynamics of power as characterizations of ‘quality’ change in the industry. Our second example traces the institutionalization of labor standards in apparel. Here, we follow the development of labor standards from the initial formation of social movements to a set of multi-

stakeholder initiatives. In both examples, we specifically consider how actors outside of value chain intercede upon firm-level actors within the chain. Our third example compares mobile phones with different operating systems to highlight different types of ‘platform-based’ collectives (based on direct and indirect power). In all examples, we include a temporal dimension that depicts the power dynamics in shifting actor constellations over time.

5.1 Power in wine GVCs

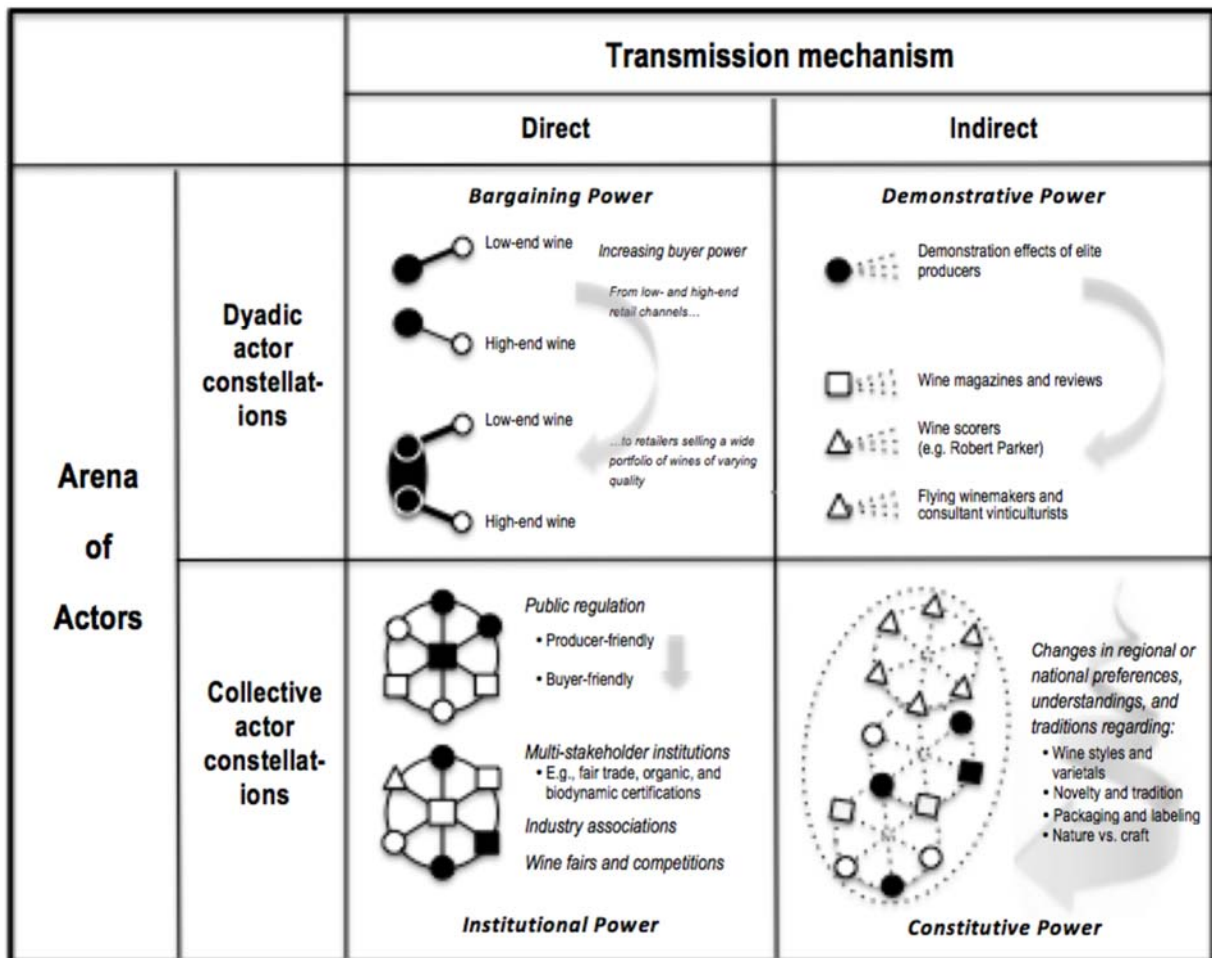
Power configurations in wine GVCs are graphically summarized in Figure 3. The wine GVC highlights the importance of power beyond dyadic bargaining and traditional top-down institutional processes. Of course, ‘coercive’ bargaining power is still important. In buyer-supplier relations, power is exercised through bargaining over product specifications (price, quantity, various quality traits, varietal, origin, certifications, packaging), product portfolios and logistics. Traditionally, depending on the quality segment, *bargaining power* (dyadic, direct) has been concentrated in buyers’ hands in lower end markets, while producers could exercise more power in higher end markets. However, with an increasing proportion of wine now sold through retailers carrying a wide portfolio of quality, rather than through specialist shops, bargaining power is now being consolidated in buyers’ hands.

Demonstrative power (dyadic, diffuse) in the wine GVC had traditionally been wielded by elite wine producers in some of the top regions of the ‘Old World’ (France, Italy, Spain, Portugal). This was both reinforced and challenged by journalists and professional tasters through their reviews. The ideational creation of the ‘new wine consumer’, however, has revolutionized the dynamics of demonstrative power (Itçaina et al 2016). The idea of the new consumer was developed by a relatively small number of marketing experts (supported by biochemists and economists) in ‘New World’ producing countries (the US, Australia, South Africa, Chile and Argentina) and facilitated by the growing sales of wine in supermarkets. The new consumer is portrayed as demanding more standardized and predictable wines, year after year – something that New World wine producers are better equipped to deliver given their less regulated wine industries (Ibid.). Demonstrative power has thus moved away from producers and shifted to other actors that are now shaping ‘new’ wine styles and aesthetic preferences of producers, such as wine tasters/scorers (e.g. Robert Parker), marketers, and ‘flying winemakers’ and other consultants (e.g. viticulturists, marketers) who move from one property or country to another to help wine producers achieve whatever wine styles are fashionable at the time. In other words, we have observed a movement from producer-driven demonstration effects to demand-driven demonstration effects – which itself consolidates the shift of bargaining power towards large-scale and diversified wine buyers.

While *institutional* power (collective, direct) in wine GVCs is most clearly exercised by the public sector through local, national and regional regulation (e.g. production quotas and planting registers, distillation subsidies, production rules dictated by *appellation d'origine contrôlée* systems), multi-stakeholder initiatives also play an important role, such as fair trade, organic and biodynamic certification bodies, industry associations and wine exhibitions, fairs and competitions (Ponte 2009). Regulatory interventions have been historically stronger in Old World countries – originating first in France and diffusing to other countries and eventually to the EU level. Regulation also provided a strong platform for producers and their associations to exercise relatively strong bargaining power vis à vis their buyers. However, pressure to adapt regulation to

the demands of the ‘new consumer’ and to recover market share from New World wines has led to major regulatory adjustments in Old World countries, especially following the 2008 EU wine market reform. This included a simplification of categories for geographic indication wines, the permission to sell ‘table wines’ under a brand name, the possibility to indicate grape varietal, and the abandonment of the main forms of ‘production’ support (Itçaina et al 2016). Most of these reforms have moved institutional power away from producers and their associations and towards marketers, merchants and retailers.

Figure 3. Illustration of power dynamics in wine GVCs



Source: Authors

Constitutive power (collective, indirect) emanates from local, national, regional and sometimes global understandings and valuations. It can help highlight important, yet more subtle manifestations of power in the wine GVC. These emanate from broadly accepted preferences for certain wine styles or varietals (which are often specific to local or national markets); understandings of novelty and tradition and their legitimacy; preferred packaging (e.g. screwcaps or bag-in-box are exclusively used for low price wine in some markets, but not in others) and labeling (preferences in relation to branding, grape varietal, appellation, terroir, sustainability certifications); dominant understandings of ‘best practice’ related to viticulture, winemaking

and/or labor relations; and acceptable relations between geo-physical properties and human intervention in winemaking (e.g. whether the winemaker is supposed to ‘shape’ the wine or let the *terroir* express itself). Constitutive power in wine GVCs also operates as a transmission mechanism for institutional reform (e.g. the 2008 EU wine reform) and as an amplifier of dyadic demonstration effects.

Overall, although changes in overall power dynamics tend to be geographically-specific, we can observe the following trends in the global wine GVC in general terms: more emphasis on demand-driven quality definitions; increased acceptance of non-traditional packaging solutions and use of brand names and grape varieties on labels; more emphasis on human and biochemical crafting of wine to the detriment of nature determinants; and broader acceptance of non-traditional techniques and additives. Overall, many of these trends are reinforcing the power of merchants and retailers at the expense of producers (especially small-scale ones), and the power of New World value chain actors at the expense of Old World actors. At the same time, a growing group of Old World actors are themselves adopting techniques and marketing tools developed by New World producers and merchants; and the EU has reformed its regulatory framework to be more nimble. These counter-measures are themselves reshaping power dynamics within Old World producing countries in favor of ‘more modern’, larger and more capitalized operators.

5.2 Power in apparel GVCs: multi-stakeholder initiatives in labor standards

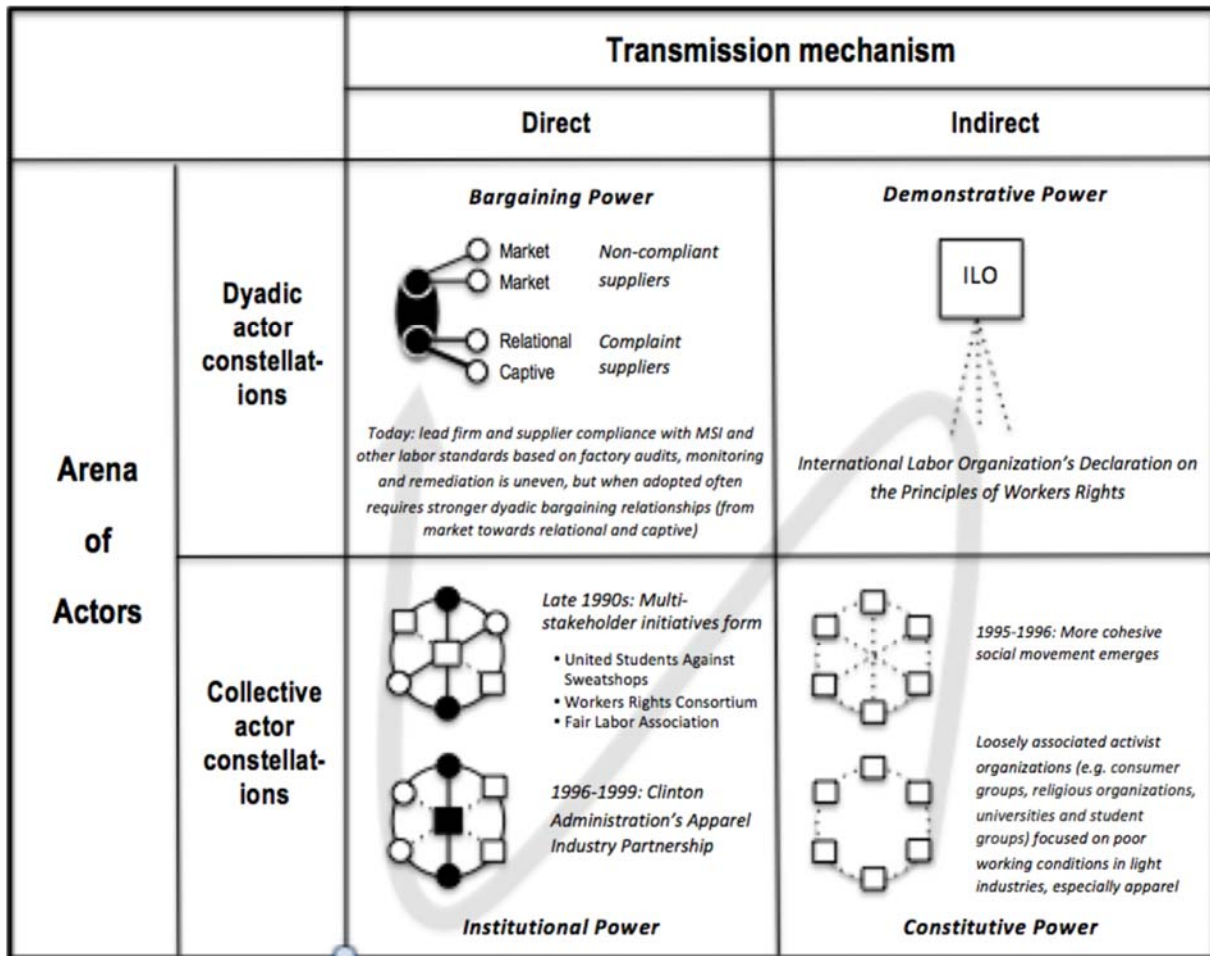
Actors external to a GVC also influence each other, leverage demonstration power, build institutional power, and eventually often exert direct power over firms within a chain. This is a slow, evolutionary process of change among a multitude of actors, so this example highlights how different forms of power become layered over time. A good illustration of these dynamics is the creation of multi-stakeholder initiatives (MSIs) that arose in the 1990s and 2000s to generate and diffuse labor standards in light industries, as depicted in Figure 4. Key MSIs were the Fair Labor Association (FLA) and the Worker Rights Consortium (WRC) in the United States, both of which monitor and audit factories and seek to enforce labor standards. While these two MSIs eventually developed institutional power, they evolved from a complex amalgam of constitutive, demonstrative and institutional forms of power, including government action under the Clinton administration.

Before the formalization of MSIs, global labor standards were promoted through consciousness raising among the general population and through loosely connected communities of various NGOs, including consumer groups, religious organizations, universities and student groups, human rights groups and labor organizations, including unions. During the late 1990s, they collectively raised consumer consciousness about ‘sweatshop’ working conditions in light industries, especially apparel. Over time, these loose organizations united together into an increasingly organized social movement wielding *constitutive* power.

Demonstrative power played a key role in the institutionalization of these loose alliances. Both the pre-MSI NGOs and the stakeholders creating the MSIs regularly utilized the International Labor Organization’s (ILO) long-standing ‘Declaration on the Principles and Rights of Workers’ and its published core labor standards in generating their mission statements, internal standards, monitoring and other organizational characteristics and goals. While the ILO is often criticized

for its lack of enforcement mechanisms (and inability to even get member states to ratify their conventions), it does exert demonstrative power in that it has established global standards and offers training sessions, information, and discussion forums, all within a framework of member states, which NGOs regularly appropriate when shaping their own objectives and organizations.

Figure 4. Illustration of power dynamics in multi-stakeholder initiatives for labor standards in apparel GVCs



Source: Authors

While it was active prior to the mid-1990s, the movement was suddenly energized in the United States by media revelations in 1995 and 1996 of poor working conditions in foreign factories supplying firms like Nike, The Gap, and Kathy Lee Gifford's private label garments (Mandle 2000). Jolted by the media coverage and under pressure by these social groups, the Clinton administration established a taskforce in 1996 and initiated meetings, which brought global apparel and sporting goods buyers and a collection of leading NGOs together into a loose organization, the Apparel Industry Partnership (AIP) – exerting *institutional* power. Although the AIP collapsed when key unions and NGOs withdrew their support, the multi-stakeholder talks continued for three years, after which a multi-stakeholder NGO called the Fair Labor Association (FLA) was formed.

Through this process, various US government agencies played key roles by providing momentum, credibility and media attention. However, the government also used more coercive forms of power, such as the threat of government regulation of global buyers to get them to the bargaining table, and later the US State Department and USAID provided grants to establish the FLA and develop its programs (MacDonald 2011).¹¹ At the same time, the collapse of the AIP led hundreds of universities and student groups to found the United Students Against Sweatshops (USAS) in 1998, and their own monitoring organization in 2000, the Worker Rights Consortium, which specializes on collegiate apparel and allows for less corporate participation (Featherstone and USAS 2002).

The power of the FLA and WRC is founded upon the credibility that they lend to compliant companies (both participating suppliers and suppliers of participating buyers and licensees) that have undergone their factory audits, ongoing monitoring, and corrective remediation. This has implications for *bargaining* power in apparel GVCs. The power of these organizations to enforce standards is largely based on excluding member companies that fail audits or refuse to undergo remediation. Whether or not the withdrawal of MSI certification has an effect depends partly on the reactions of supporting civil society groups in ‘naming and shaming’ or the effects decertification has on regulators, employees, partners, and consumers. Global buyers who become members use their bargaining power to insist that their suppliers undergo FLA audits and remediation (bargaining power), though enforcement is mixed. Suppliers themselves can be members of the FLA, which also can be used to gain competitive advantage over competitors.

When suppliers comply with these labor standards, dyadic governance often shifts from market-based linkages to stronger forms of direct power (toward relational linkages, for example). This pattern has also been observed in UK supermarket sourcing of fresh vegetables from Africa (Dolan and Humphrey 2001). Over time, these MSIs have expanded their functions from more strict ‘compliance’ activities (monitoring and corrections) to what Locke et al (2009) call a ‘commitment-oriented approach,’ in which the FLA provides factories with capacity-building resources, like technical assistance, ‘root cause analysis,’ joint problem solving and information on industry best practices. As such, the shifts from market linkages toward relational linkages driven by stricter labor standards can be seen to increase supplier competencies and foment upgrading.

5.3 Power in GVCs for smart phone operating systems

The development of the mobile phone industry has been extremely rapid and far-reaching, and has evolved in two distinct periods with very different power dynamics characterized by ‘feature phones’ and ‘smart phones.’ The feature phone period can be dated to the early 1990s, when the mass market for consumer handsets expanded rapidly with smaller handsets, falling prices and an expanding network infrastructure. *Bargaining power* in the GVC was mainly concentrated in a set of incumbent lead handset firms with a long presence in the telecommunications industry, most prominently including Nokia (Finland), Motorola (USA), Ericsson (Sweden), and Siemens (Germany). Together these four firms held about 60% share of the handset market through 2007. By the mid-2000s the market share of newcomers Samsung and LG (South Korea) had increased

¹¹ The FLA is a robust MSI in that companies, universities and NGOs each hold six voting seats on the Board, and some decisions require two-thirds of the vote from each group (MacDonald 2011).

to about 20% (Gartner Inc., various years), but the structure of the industry was relatively stable (Sturgeon and Linden 2010). While handsets were mainly used for making calls, they came to be known as ‘feature phones’ as they accumulated additional functions (features), escalating from simple contact lists and call logs to increasingly complex games, audio and video playback features, email, cameras, and browsers providing access to simplified websites on the ‘mobile internet.’

As in the broader electronics industry, high levels of modularity in product design and in the supply chain meant that lead firms could source a variety of components from external suppliers when designing their phones — from simple to complex. As in the personal computer (PC) industry, where Intel central processing chip sets provide a rising share of end-product functionality (Kawakami 2011), lead firms in the mobile handset industry mainly rely on ‘modem chip sets’ provided by suppliers with a great deal of competence-derived bargaining power (e.g. Qualcomm and Texas Instruments) to accomplish the complex task of connecting phones to compatible networks. However, in the feature phone period, integrative system-level design of each model of phone was generally carried out internally, and this represented a non-trivial set of competencies that allowed handset makers (lead firms) to retain bargaining power. However, as the number of features escalated, integrating them became an increasingly laborious and expensive process, raising the risks associated with failure (Thun and Sturgeon 2017). A few firms took the risk of weakening their bargaining position in the chain when they banded together to support a shared operating system for running feature applications, an effort that proved to be short-lived.¹²

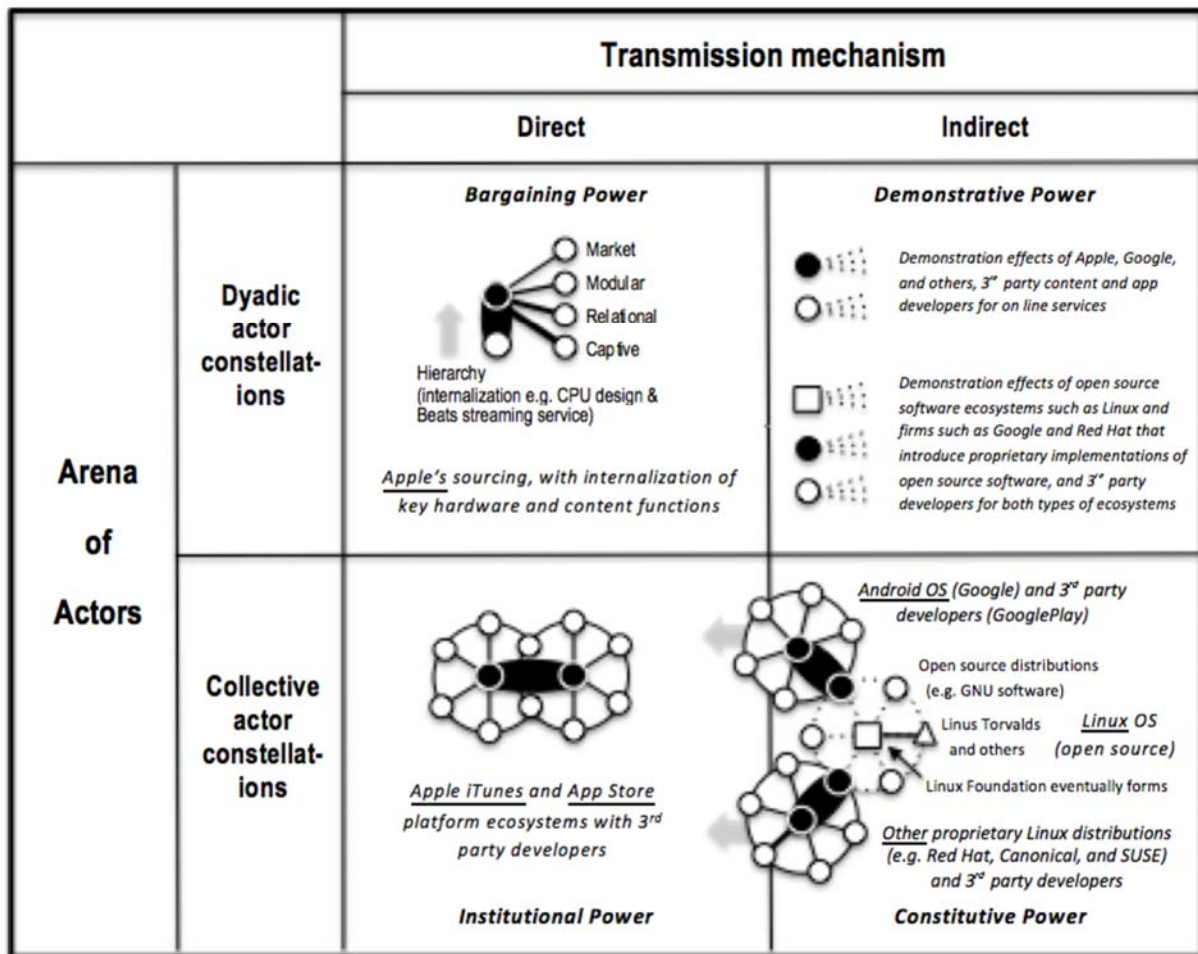
Figure 5 depicts a few of the power relationships in the smart phone phase of the mobile phone handset industry, which can be dated to January 2007 when Apple introduced the iPhone, a new type of keypadless handset based on a mobile version of Apple’s operating system called iOS. Like Mac and Windows-based PCs, the iPhone was set up from the beginning as a platform to run a suite of Apple-supplied and 3rd party applications, available on-line through Apple’s ‘App Store’. The iPhone also included a mobile version of Apple’s iTunes music playback software, providing easy access to Apple’s iTunes on-line store already popular with desktop PC users and users of Apple’s iPod portable music player.

These two platform ecosystems (iTunes and the App Store) attracted thousands of content providers (music licensors, podcast producers, and internet radio stations) and app developers, and through a classic network effects, this boosted the usefulness and attractiveness of the iPhone for new users. Apps included with the phone comprised a mobile version of Apple’s Safari internet browser, which allowed users to interact with regular (not only mobile) websites, Google Maps, and a YouTube mobile video player. After selling 1.4 million units in 2007, sales grew at an annual average rate of 90%, reaching 231 million units in 2015 (Dormehl 2015). Huge sales growth and a proprietary ecosystem allowed Apple to set handset prices high and capture a reported 94% of smartphone industry profits by 2015, up from 84% a few years earlier (Dilger 2015). *Bargaining power* is still important, given the strength of the company’s buyer power, and Apple’s dyadic and direct linkages to suppliers vary depending on the nature of the linkage (with the occasional internalization of key iOS-compatible inputs). However, the company also exerts

¹² The Symbian feature phone operating system, originally developed by a UK-based software company and compatible only with processors that used ARM technology, was promoted most aggressively by Nokia but also used in keyboard-based ‘smartphones’ made by Motorola and Sony-Ericsson (Thun and Sturgeon 2017: 8).

dyadic control in bargaining relationships with suppliers to its ecosystems, whose products must follow Apple’s application programming interface (API) specifications to be accepted on the App Store. Nevertheless, such platform constellations provide an arena for *institutional power* as 3rd parties increase the value of the platform, and 3rd parties can in turn be disciplined through user product reviews organized by the platform owner.

Figure 5. Illustration of power dynamics in mobile handset GVCs: Apple iOS handsets vs. Linux-based Google Android handsets



Source: Authors

The iPhone, running iOS, was closely followed in 2008 by Google’s Android operating system. While handsets running Android have features similar to the iPhone, including a platform ecosystem centered around the GooglePlay store, offering apps and content, Google provided Android to handset makers for free, with the strategy of driving mobile users to the internet where the company’s dominant position in search would mean rising revenues from advertising. Since the Android OS encapsulated many of the integrative functions previously carried out by handset makers, incumbents firms found their core system integration competencies (and bargaining power) cannibalized and most fell by the wayside in only a few years.¹³ This opened the field for

¹³ Only Samsung was able to make a successful transition to Android-based handsets.

a bevy of competitors offering Android-compatible phones. Low prices drove sales (but not profits) that far surpassed the iPhone. Sales of Android smartphones grew at an annual average rate of 175% per year through 2016, leveling out at about 80% of the market by 2013 when 761 million units were sold (Gartner Inc. various years). In May 2017, Google reported that devices running Android had reached two billion active monthly users (Dormehl 2015).

While the Android platform ecosystem shares many of the features of the iPhone ecosystem, a crucial difference is that it is a proprietary ‘distribution’ of Linux, an open source operating system.¹⁴ Linux and related code is freely available online through the Linux Foundation, and has an active community of software developers that makes improvements to Linux, offers new Linux ‘distributions’ for specific applications, and provides informal online technical support for engineers using Linux software. While the initial motivation for many software engineers was to undermine the near-monopoly-level bargaining power held by Microsoft on PC operating systems, Linux’s penetration in PCs has been modest. However, more than a third of internet servers run Linux, as do a host of consumer electronics devices. Thus, the *constitutive power* accumulated by the Linux software community remains strong. At the same time, companies such as Red Hat, Canonical, and SUSE, have developed for-profit business models by selling proprietary distributions of Linux, often tailored for specific purposes, and providing support for large companies using Linux to use in their products and run their IT systems. Like Android, these create adjacent platform ecosystems that in turn support a host of 3rd party developers (Opensource.com 2017). In Figure 5, these appear under *constitutive power* because they platforms are founded on the Linux “kernel”, remain deeply linked with the ongoing developments in the Linux open source community. Nevertheless, they mainly function as proprietary, closed platforms because they have clearly defined and monitored boundaries and rules for participation by 3rd parties, and thus can be seen to have re-emerged in the arena of institutional power.

In sum, we see power in the mobile telecommunications GVC shifting from dyadic to institutional as the industry made an abrupt transition from feature to smart phones after 2007. This is based in part on the co-option of constitutive power as proprietary distributions of Linux, such as Android, migrate into the institutional arena through the establishment of closed platforms. The *demonstrative power* of the platform model has also been very strong, not least because of the success of both iOS and Android, and this in turn has helped to spur the creation of a host of downstream platform-based mobile ecosystems such as Uber, AirBnB, and WeChat (Parker et al 2017, Thun and Sturgeon 2017)

6. Conclusion

Power has often been an unspoken companion in scholarly efforts to explain some of the key dynamics of the global economy. This is especially the case in GVC analyses, despite the fact that

¹⁴ Linux itself is based on Unix, a computer operating system developed at Bell Laboratories in 1969. In 1985 Richard Stallman, one of UNIX’s developers, then a professor at MIT, formed the Free Software Foundation to develop and distribute free operating system software. In 1991, Linus Torvalds, a Finnish college student, developed software code that was adopted as the system’s ‘kernel’ by engineers working on it (Linux is derived from a combination of Linux and UNIX). A central organization — the Linux Foundation — eventually emerged, which includes the continued involvement of Linus Torvalds as a key consultant (Bretthauer 2001).

power is an explicit element in GVC theory and scholarship. Power, like finance and gender dynamics, tends to be both everywhere and nowhere in GVC literature. In this paper, we examine the various ways in which power has been conceptualized and applied in the GVC literature and provide an analytical typology to provide guidance for future research. Our typology has two dimensions: the arena of actors (dyads and collectives) and the precision of power (direct and diffuse). This yields four main forms of power: bargaining (dyadic and direct), demonstrative (dyadic and diffuse), institutional (collective and direct) and constitutive (collective and indirect).

This framework can help isolate various forms of power, and provide a starting point for understanding how they mix and transform over time. As our empirical examples show, GVCs' power dynamics layer, evolve, consolidate and diffuse through distinct mechanisms and trajectories. Our assumption is that researchers in this field may find it useful to first dissect and theorize these different forms of power as separate layers, before re-unifying them into holistic narratives, and engage in analysis of how these layers and combinations change over time.

Each type of power may require distinct research methods and data collection techniques. For instance, the early period of constitutive power may require archival research or content analysis of previous or current media sources to understand the origins and diffusion of fundamental norms, conventions, practices or the early formation of nascent organizations. Institutional power may require the application of detailed process tracing techniques of company and other stakeholder organizational records or contracts to understand the conflict over the birth of more formal agreements and initiatives. Interviews may be useful for understand the alternating contention and consent between firms and their suppliers and other stakeholders, whether directly (through bargaining power) or more diffusely (through demonstration power). Ultimately, our hope is that differentiating the micro-foundations of distinct types of power and how they intermix in particular situations and over time will lead to a deeper understanding of how GVCs operate, including who benefits and who does not.

References

- Allen, J. (2003). *Lost Geographies of Power*. Malden, MA: Blackwell.
- Bachrach, P. and Baratz, M.S. (1962) 'Two faces of power', *American Political Science Review*, 56(4): 947-52.
- Bair, J. and Palpacuer, F. (2015) 'CSR beyond the corporation: Contested governance in global value chains', *Global Networks* 15: S1-S19.
- Bair, J. and Werner, M. (2011) 'Commodity chains and the uneven geographies of global capitalism: A disarticulations perspective', *Environment and Planning A*, 43: 988-997.
- Bair, J., C. Berndt, M. Boeckler and M. Werner (2013) 'Dis/articulating producers, markets, and regions: new directions in critical studies of commodity chains', *Environment and Planning A*, 45 (11): 2544-2552.
- Baldwin, C. and Clark, K. (2000) *Design Rules: Unleashing the Power of Modularity*. Cambridge, MA: MIT Press.
- Baldwin, D. (1989) *Paradoxes of Power*. London: Basil Blackwell.

- Baldwin, D. (2002) 'Power and international relations', in W. Carlsnaes, T. Risse and B.A. Simmons (eds.) *Handbook of International Relations*. Thousand Oaks, CA: Sage.
- Barnett, M. and Duvall, R. (2005). 'Power in international politics', *International Organization*, 59(1): 39-75.
- Baum, J.A.C. and Powell, W. W. (1995). 'Cultivating an institutional ecology of organizations: Comment on Hannan, Carroll, Dundon, and Torres', *American sociological review*, 60(4): 529-538.
- Berndt, C. and M. Boeckler (2011) 'Performative regional (dis) integration: transnational markets, mobile commodities, and bordered North–South differences', *Environment and Planning A*, 43 (5):1057-1078.
- Blau, P. (1964) *Exchange and Power in Social Life*. New York: J. Wiley.
- Bodrozic, Z. and Adler, P. (2017) 'The evolution of management models: A neo-Schumpeterian theory,' in press, *Administrative Science Quarterly*, 1–45.
- Borras, M. and Zysman, J. (1997) 'Wintelism and the changing terms of global competition: Prototype of the future?' *Working Paper 96B*, Berkeley Roundtable the International Economy.
- Brandt, L. and Thun, E. (2010) 'The fight for the middle: upgrading, competition, and industrial development in China,' *World Development* 38(11): 1555–1574.
- Bretthauer, D. (2001) 'Open Source Software: A History' Published Works, 7. University of Connecticut. Available at http://digitalcommons.uconn.edu/libr_pubs/7
- Brewer, B. (2011) 'Global commodity chains and world income inequalities: The missing link of inequality and the 'up grading' paradox,' *American Sociological Association*, XVII(2): 308-327.
- Buckley, P. and Casson, M. (1976) *The Future of the Multinational Enterprise*. Basingstoke and London: Macmillan.
- Casciaro, T. and Piskorski, M. J. (2005) 'Power imbalance, mutual dependence, and constraint absorption: A closer look at resource dependence theory', *Administrative science quarterly*, 50(2): 167-199.
- Chamberlin, E. (1933) *The Theory of Monopolistic Competition*. Cambridge: Harvard University Press.
- Christensen, C. M. (2013). *The innovator's dilemma: when new technologies cause great firms to fail*. Harvard Business Review Press.
- Christensen, C. M., Raynor, M. E. and McDonald, R. (2015) Disruptive innovation. *Harvard Business Review*, 93(12): 44-53.
- Coe, N., Dicken, P. and Hess, M. (2008) 'Global production networks: Realizing the potential,' *Journal of Economic Geography*, 8: 271-295.
- Coe, N.M. and Yeung, H.W. (2015) *Global Production Networks: Theorizing Economic Development in an Interconnected World*. Oxford: Oxford University Press.

- Dahl, R.A. (1957) 'The concept of power', *Behavioral Science*, 2(3): 201-215.
- Dallas, M. (2014) 'Cloth without a weaver: Power, emergence and institutions across global value chains,' *Economy and Society*, 43(3): 315-345.
- Digester, P. (1992) 'The fourth face of power', *The Journal of Politics*, 54(4): 977-1007.
- Dilger, D. E. (2015) 'Apple now inhaling 94 percent of global smartphone profits, selling just 14.5 percent of total volumes.' *Apple Insider* (based on data from Canaccord Genuity), November 16. Available at <http://appleinsider.com/articles/15/11/16/apple-inc-now-inhaling-94-percent-of-global-smartphone-profits-selling-just-145-percent-of-total-volumes>
- Dolan, C. and Humphrey, J. (2000) 'Governance and trade in fresh vegetables: the impact of UK supermarkets on the African horticulture industry,' *Journal of Development Studies*, 37(2): 147-176.
- Dormehl, L. (2015) 'The astonishing rise of iPhone sales in one amazing chart,' *Cult of Mac*, November 17, 2015. Available at <http://www.cultofmac.com/397869/the-astonishing-rise-of-iphone-sales-in-one-amazing-chart/>
- Dunning, J.H. (1988) 'The eclectic paradigm of international production: A restatement and some possible extension,' *Journal of International Business Studies*, 19(1): 1-31.
- Ernst, D. and O'Connor, D. (1992). *Competing in the Electronics Industry: The Experience of Newly Industrialising Economies*. Paris: Organisation for Economic Co-operation and Development. Development Centre Studies, Technology & Engineering.
- Evans, P. (1995) *Embedded Autonomy: States and Industrial Transformation*. Princeton, N.J.: Princeton University Press.
- Featherstone, L. and USAS (2002) *Students Against Sweatshops*. Verso: London.
- Feenstra, R. and Hamilton, G. (2006) *Emergent Economies, Divergent Paths: Economic Organization and International Trade in South Korea and Taiwan*. Cambridge: Cambridge University Press.
- Fold, N. (2002) 'Lead firms and competition in 'bi-polar' commodity chains: Grinders and branders in the global cocoa-chocolate industry,' *Journal of Agrarian Change*, 2(2): 228-47.
- Fröbel, F., Heinrichs, J. and Kreye, O. (1980) *The New International Division of Labour: Structural Unemployment in Industrialised Countries and Industrialisation in Developing Countries*. Cambridge: Cambridge University Press.
- Fujimoto, T. (2007) 'Architecture-based comparative advantage: A design information view of manufacturing,' *Evolutionary and Institutional Economics Review*, 4(1): 55-112.
- Fujita, M. (2011) 'Value chain dynamics and local suppliers' capability building: An analysis of the Vietnamese motorcycle industry.' in M. Kawakami and T. Sturgeon (eds) *The Dynamics of Local Learning in Global Value Chains: Experiences from East Asia*. Basingstoke, UK: Palgrave Macmillan, pp. 68-99.
- Gallie, W.B. (1956) 'Essentially contested concepts', *Proceedings of the Aristotelian Society*, 56: 167-198.

- Gartner Inc. (various years) Press releases including 'Worldwide Mobile Terminal Sales to End-Users' and 'Worldwide Smartphone Sales to End Users by Operating System'.
- Gawer, A. and Cusumano, M. (2002) *Platform Leadership: How Intel, Microsoft and Cisco Drive Industry Innovation*. Cambridge, MA: Harvard Business School Press.
- Gawer, A. and Cusumano, M. A. (2008) 'How companies become platform leaders,' *MIT Sloan Management Review*, 49(2): 28-35.
- Gereffi, G. (1994) 'The organization of buyer-driven global commodity chains: How US retailers shape overseas production networks,' in G. Gereffi and M. Korzeniewicz (eds.) *Commodity Chains and Global Capitalism*. Westport: Greenwood Press, pp. 95-133.
- Gereffi, G. (1999) 'International trade and industrial upgrading in the apparel commodity chain,' *Journal of International Economics* 48(1): 37-70.
- Gereffi, G. and Tam, T. (1998) 'Industrial upgrading through organizational chains: Dynamics of rent, learning, and mobility in the global economy,' paper presented at the 93rd annual meeting of the American Sociological Association, San Francisco, CA, August 21-25. 1998.
- Gereffi, G., Humphrey, J. and Sturgeon, T. (2005), 'The governance of global value chains', *Review of International Political Economy*, 12(1): 78-104.
- Gibbon, P. and Ponte, S. (2005) *Trading Down: Africa, Value Chains and the Global Economy*, Philadelphia: Temple University Press.
- Gibbon, P. and Ponte, S. (2008) 'Global value chains: From governance to governmentality?' *Economy and Society*, 37(3): 365-392.
- Gibbon, P., Bair, J. and Ponte, S. (2008) 'Governing global value chains: An introduction', *Economy and Society*, 37(3): 315-338.
- Goger, A. (2013) 'From disposable to empowered: Rearticulating labor in Sri Lankan apparel factories', *Environment and Planning A*, 45 (11): 2628-2645.
- Granovetter, M. (1978) 'Threshold models of collective behavior', *American Journal of Sociology*, 83(6): 1420-1443.
- Grunwald, J. and Flamm, K. (1985) *The Global Factory: Foreign Assembly and International Trade*. Washington DC: The Brookings Institution.
- Guzzini, S. (1993) 'Structural power: The limits of neorealist power analysis', *International Organization*, 47(3): 443-78.
- Guzzini, S. (2000) 'The use and misuse of power analysis in international theory', in R. Palan (ed.) *Global Political Economy: Contemporary Theories*. London: Routledge, pp. 53-66.
- Hannan, M.T. and Freeman, J. (1977) 'The population ecology of organizations', *American Journal of Sociology*, 82(5): 929-964.
- Hannan, M. T. and Freeman, J. (1984) 'Structural inertia and organizational change,' *American Sociological Review*, 49(2): 149-164.

- Hannan, M.T., Carroll, G.R., Dundon, E.A. and Torres, J.C. (1995) 'Organizational evolution in a multinational context: Entries of automobile manufacturers in Belgium, Britain, France, Germany, and Italy,' *American Sociological Review* 60(4): 509-528.
- Havice, E. and Campling, L. (2013) 'Articulating upgrading: Island developing states and canned tuna production,' *Environment and Planning A*, 45 (11): 2610-2627.
- Henderson J., Dicken, P., Hess, M., Coe, N. and Yeung, H.W-C. (2002) 'Global production networks and the analysis of economic development,' *Review of International Political Economy*, 9(3): 436-464.
- Hess, M. and Yeung H. W-C. (2006) 'Whither Global Production Networks in economic geography? Past, present and future', *Environment and Planning A*, 38: 1193-1204.
- Hopkins, T. K. and Wallerstein, I. (1994) 'Commodity chains: construct and research', in G. Gereffi and M. Korzeniewicz (eds.), *Commodity Chains and Global Capitalism*. Westport: Greenwood Press.
- Humphrey, J. and Schmitz, H. (2008) *Developing Country Firms in the World Economy: Governance and Upgrading in Global Value Chains*. Institut für Entwicklung und Frieden der Gerhard-Mercator-Universität Duisburg (INEF) report, Volkswagen Foundation.
- Itçaina, X., Roger, A. and Smith, A. (2016). *Varietals of Capitalism: A Political Economy of the Changing Wine Industry*. Ithica, NY: Cornell University Press.
- Jespersen, K.S., Kelling, I., Ponte, S. and Kruijssen, F. (2014) 'What shapes food value chains? Lessons from aquaculture in Asia,' *Food Policy*, 49: 228-240.
- Kaplinsky, R. (2005) *Globalization, Poverty and Inequality*. London: Polity.
- Kaplinsky, R., and Morris, M. (2016). 'Thinning and thickening: Productive sector policies in the era of global value chains', *European Journal of Development Research*, 28(4): 625-645.
- Kawakami, M. (2011) 'Inter-chain dynamics in Notebook PC value chains and the rise of Taiwanese original design manufacturing firms,' in M. Kawakami and T. Sturgeon (eds.) *The Dynamics of Local Learning in Global Value Chains: Experiences from East Asia*. Basingstoke, UK: Palgrave Macmillan, pp. 16-42.
- Kimura, S. (2007) *The Challenges of Late Industrialization: The Global Economy and the Japanese Commercial Aircraft Industry*. London: Palgrave Macmillan.
- Levy, D. (2008) 'Political contestations in global production networks,' *Academy of Management Review*, 33(4): 943-963.
- Lindblom, C. (1977) *Politics and Markets*. New York: Basic.
- Locke, R., Amengual, M. and Mangla, A. (2009) 'Virtue out of necessity? Compliance, commitment, and the improvement of labor conditions in global supply chains', *Politics & Society*, 37(3): 319-351.
- Lukes, S. (1974) *Power: A Radical View*. London, New York: Macmillan.
- MacDonald, K. (2011) 'The Fair Labor Association,' in David Held and Thomas Hale (eds.), *Handbook of Transnational Governance Innovation*, Cambridge: Polity Press, pp. 243-251.

- Mahutga, M.C. (2014) 'Global models of networked organization, the positional power of nations and economic development,' *Review of International Political Economy*, 21(1): 157-194.
- Mann, M. (2012) *The sources of social power: Global empires and revolution, 1890-1945* (Vol. 3). Cambridge: Cambridge University Press.
- Milberg, W. and Winkler, D. (2013) *Outsourcing Economics: Global Value Chains in Capitalist Development*. Cambridge: Cambridge University Press.
- Miller, J.H. and Page, S. (2007) *Complex Adaptive Systems: An Introduction to Computational Models of Social Life*. Princeton, NJ: Princeton University Press.
- Mitchell, M. (2011) *Complexity: A Guided Tour*. New York: Oxford University Press.
- Nadvi, K. (2008) 'Global standards, global governance and the organization of global value chains,' *Journal of Economic Geography*, 8(3): 323-343.
- Nadvi, K. and Raj-Reichert, G. (2015) 'Governing health and safety at lower tiers of the computer industry global value chain,' *Regulation & Governance*, 9(3): 243-258.
- Neilson, J. and Pritchard, B. (2009) *Value Chain Struggles: Institutions and Governance in the Plantation Districts of South India*. Malden, MA and Oxford: Wiley-Blackwell.
- Opensource.com. (2017) 'What is Linux?' Available at <https://opensource.com/resources/what-is-linux>
- Oppenheim, F. (1981) *Political Concepts: A Reconstruction*. Chicago: University of Chicago Press.
- Ouma, S. (2010) 'Global standards, local realities: Private agrifood governance and the restructuring of the Kenyan horticulture industry,' *Economic Geography* 86(2): 197-222.
- Ouma, S. (2015) *Assembling Export Markets: The Making and Unmaking of Global Food Connections in West Africa*. Oxford: Wiley-Blackwell.
- Parker, G., Van Alstyne, M. and Choudary, S. (2016) *Platform Revolution: How Networked Markets Are Transforming the Economy – And How to Make Them Work for You*. New York: W. W. Norton & Company.
- Penrose, E. (1959) *The theory of the growth of the firm*. Oxford: Basil Blackwell.
- Pfeffer, J. and Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Palo Alto: Stanford University Press.
- Ponte, S. (2002) 'The 'Latte Revolution'? Regulation, Markets and Consumption in the Global Coffee Chain,' *World Development* 30(7): 1099-1122.
- Ponte, S. (2009) 'Governing through Quality: Conventions and Supply Relations in the Value Chain for South African Wine,' *Sociologia Ruralis* 39(3): 236-257
- Ponte, S. and Gibbon, P. (2005) 'Quality standards, conventions and the governance of global value chains,' *Economy and Society*, 34(1): 1- 31.
- Ponte, S. (2014) 'The evolutionary dynamics of biofuel value chains: from unipolar and government-driven to multipolar governance.' *Environment and Planning A* 46(2): 353-372.

- Ponte, S. and Sturgeon, T. (2014) 'Explaining governance in global value chains: A modular theory building effort,' *Review of International Political Economy*, 21(1): 195-223.
- Ponte, S., Kelling, I., Jespersen, K.S. and Kruijssen, F. (2014) 'The blue revolution in Asia: upgrading and governance in aquaculture value chains', *World Development*, 64: 52-64.
- Quark, A.A. (2013) *Global Rivalries: Standards Wars & the Transnational Cotton Trade*. Chicago: University of Chicago Press.
- Raj-Reichert, G. (2013) 'Safeguarding labour in distant factories: Health and safety governance in an electronics global production network', *Geoforum*, 44: 23-31.
- Raj-Reichert, G. (2015) 'Exercising power over labour governance in the electronics industry', *Geoforum*, 67: 89-92.
- Rugman, A., Verbeke, A. and Nguyen, Q. (2011) 'Fifty years of international business theory and beyond.' *John H. Dunning Centre for International Business Discussion Paper No. 2011-001*, June.
- Sako, M. and Zylberberg, E. (2016) 'From governance to strategy: Injecting management studies into global value chains,' available at SSRN 2630066.
- Sturgeon, T. (2002) 'Modular production networks: A new American model of industrial organization,' *Industrial and Corporate Change*, 11(3): 451-496.
- Sturgeon, T. (2009) 'From commodity chains to value chains: Interdisciplinary theory building in an age of globalization,' in J. Bair (ed.) *Frontiers of Commodity Chain Research*, Stanford: Stanford University Press, pp. 110-135.
- Sturgeon, T. and Linden, G. (2011). 'Learning and earning in Global Value Chains: Lessons in Supplier Upgrading in East Asia,' in M. Kawakami and T. Sturgeon (eds), *The Dynamics of Local Learning in Global Value Chains: Experiences from East Asia*. Basingstoke, UK: Palgrave Macmillan, pp. 207-226.
- Sturgeon, T., and Zylberber, Z. 2016. 'The global information and communications technology industry: where Vietnam fits in global value chains.' *World Bank Policy Research Working Paper 7916*. Washington: World Bank. Available at: <http://documents.worldbank.org/curated/en/619331481728681176/The-global-information-and-communications-technology-industry-where-Vietnam-fits-in-global-value-chains>
- Taglioni, D., and Winkler, D. (2016) *Making Global Value Chains Work for Development*. Washington: World Bank.
- Teece, D. J., Pisano, G., and Shuen, A. (1997) 'Dynamic capabilities and strategic management.' *Strategic Management Journal*, 18(7): 509-533.
- Tewari, M. (2005) 'Foreign direct investment and the transformation of Tamil Nadu's automotive supply base,' in F. Yves- André, L. Kennedy and P. Labazée (eds), *Local Production Systems and Global Markets in Emerging Economies: Brazil, India, Mexico*. Paris: IRD/Karthala.

Thun, E. and Sturgeon, T. (2017) 'when global technology meets local standards: Reassessing the china's mobile telecom policy in the age of platform innovation.' *MIT Industrial Performance Center Working Paper* 17-001.

Vernon, R. (1971) *Sovereignty at Bay: The multinational spread of U.S. enterprises*. New York: Basic Books

Weber, M. (1947) *The Theory of Social and Economic Organization*. New York: Free Press.

Williamson, O. (1975) *Markets and Hierarchies*. New York: The Free Press.