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## FROM COMMODITY CHAINS TO VALUE CHAINS: INTERDISCIPLINARY THEORY BUILDING IN AN AGE OF GLOBALIZATION

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**From Commodity Chains to Value Chains:  
Interdisciplinary Theory Building in an Age of Globalization**

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**Abstract:**

This chapter situates, elaborates, and further explains the theory of global value chain (GVC) governance developed by Gereffi, Humphrey and Sturgeon (2005). The theory of GVC governance at the center of the paper is part of a long-term effort to generalize from accumulated comparative observational research on a range of global industries. First, I discuss the motivations for supplementing the “buyer-driven” and “producer-driven” modes of global commodity chain governance developed by Gary Gereffi in the 1990s with an industry-neutral, non-empirical framework. Second, I briefly present the features of the GVC governance framework as they appear in the 2005 article. Third, I discuss its interdisciplinary theoretical underpinnings of the framework in more detail than was possible in the original article. Fourth, I discuss the problem of variation in GVC governance. Fifth, I situate the GVC governance framework in a larger field of GVC-related theory, including but not limited to power and institutions.

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## Chapter 6

# **From Commodity Chains to Value Chains: Interdisciplinary Theory Building in an Age of Globalization**

Timothy J. Sturgeon

Recent changes in the global economy, especially the rise of East Asia as an economic force, have rendered static notions of permanent dependency and underdevelopment obsolete.<sup>1</sup> Regions, countries, and individual localities *can* improve their relative position in the global economy. The much-debated question is: how? Sound macroeconomic policy, sector-specific industrial development policies, technological borrowing, and firm-level responses to the demands of overseas buyers have all been put forward as explanations and prescriptions for rapid industrial upgrading and economic development in East Asia and elsewhere. Proponents of these different views have debated each other to a standstill, or have simply chosen to talk past each other. Could it be that there is no single explanation for why places advance, or fail to advance in the global economy, and that unitary explanations will always fall short?

The specificities of technology, industry, society, and historical moment all have the potential of being decisive in shaping individual and aggregate outcomes for places, firms, and workers. As a result, the variety that can be observed in the global economy is effectively infinite. Given the great complexity that exists in economic systems, any theory that is meant to explain and predict outcomes for entire industries, countries, regions, or the

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global economy as a whole should be treated as highly suspect, at best. Because multiple forces of change are always at play, theory, if used in a totalizing manner, can obscure as much as it reveals. But complexity should not lead to the abandonment of theory, or to the development of theories that are so inclusive and flexible that they fail to provide any traction.

It is better, in my view, to develop discrete theoretical areas to deal with specific questions. A theory with a modest and clearly defined explanatory scope, one that identifies one or a few important causal mechanisms that can be used to *partially* explain and predict outcomes, can have great utility. What is important is to recognize the limits inherent in such partial theories and to actively seek compatibility and linkages with complimentary frameworks. Not least, this “modular” approach to theory building is useful for researchers because it directs them to a manageable set of questions that can be tested in the field or applied to specific policy problems. But because of the great variety of causal forces at work in the global economy, it is incumbent upon those who develop and apply fractional theories to policy and strategy to be cautious, and to actively consider alternative explanations and approaches.

The need for serviceable theory is great. The global economy has entered a new phase of deeper, more immediate integration that is exposing national and local economies to the winds of economic change as never before. These winds can fill the sails of domestic firms and industries, blow them away, or perhaps even worse, bypass them entirely. The geographer Peter Dicken (1992) argues that it is the *functional integration* of internationally dispersed activities that differentiates the current era of ‘globalization’ from an earlier era of ‘internationalization,’ which was characterized by the simple geographic spread of economic activities across national boundaries. Functional integration has come with tighter coordination within an expanding set of multinational firms (Zanfei, 2000), but also with the rise of firms in the West — retailers and branded merchandisers with little or no internal production (Gereffi, 1994; Feenstra and Hamilton, 2006) and de-verticalizing “manufacturers” that have shed internal capacity — that have come to rely on an emergent

set of global and East Asian regional contract manufacturers for production (Borras et al, 2000; Sturgeon, 2002).

Nor is the situation static. It is worth highlighting two recent developments that are enabling even greater functional integration in the global economy: 1) rapidly increasing industrial capabilities in developing countries, especially in China and India, and 2) new computer-mediated approaches to real-time integration of distant activities. These new features facilitate international trade in many intermediate goods and services that have not previously been sent across borders. As a result, opportunities have opened up for firms to engage with the global economy — as buyers, suppliers, sellers, distributors, contractors, and service providers — in ways that were impossible even a few years ago. These changes have created new challenges and risks, as well as opportunities. Because activities are being integrated in the global economy at a very granular level, pressure has increased for firms and individual workers that may have been insulated from global competition in the past. The result is accelerating change and an increased sense of economic insecurity, even among the “winners” in the global economy.

Policymakers responsible for responding to the pressures of global integration are desperate for conceptual frameworks and theoretical constructs that can help to guide their work, which often includes making difficult trade-offs in the context of extremely complex and rapidly changing situations. The so-called “Washington Consensus,” the view that countries simply need to get their macroeconomic house in order and be open to international trade and investment to advance in the global economy, provides little guidance to policy-makers and non-governmental activists dealing with the concerns of workers, communities, and industries that are in the midst of wrenching change or which remain completely severed from the global economy. The need for pragmatism motivates theories characterized by simplicity, easy applicability in the face of variety, and resonance with real world situations.

In the fall of 2000, a group of academic researchers with deep experience in field-based observation of cross-border production in a range of industries began to meet in a series of

workshops to develop a theory of governance for what we eventually chose to call ‘global value chains’ (GVCs).<sup>2</sup> The participants hailed from a variety of countries and disciplines, including sociology, economics, geography, regional planning, political science, management, and development studies. This joint work continued to be developed through 2004 in the context of four multi-day workshops, several smaller meetings, and an ongoing dialogue and collaborative writing effort by core members of the group.

An important goal was to develop a theory that could help policymakers explain and predict governance patterns in cross-border production networks. With such tools in hand, our thinking went, interventions aimed at upgrading the position of local workers, firms and industries within global-scale production systems could be more finely crafted and effective. Each workshop included policy-makers and activists from non-governmental organizations who voiced their concerns and provided feedback on the utility of our ideas as they developed in various iterations. Because of the policy orientation of this work, our goal was to create a relatively simple theoretical model that was robust, relevant, and easily applicable to real-world situations. At the same time, we recognized the need to ground the theory in the existing academic literature to help build consensus among researchers. Our strategy was to set a virtuous cycle in motion where a growing, relatively coherent body of scholarly research would build academic legitimacy that would in turn embolden practitioners to apply non-standard concepts in the field to help solve real-world policy problems.

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<sup>2</sup> This group met under the auspices of the “Global Value Chains Initiative,” sponsored largely by the Rockefeller Foundation (a meeting held in Rockport, Massachusetts in April 2004 was sponsored by the Alfred P. Sloan Foundation). The participants in the first workshop, a seven-day event held at the Rockefeller conference center in Bellagio, Italy, were Catherine Dolan (UK), Peter Gibbon (Denmark), Gary Gereffi (USA), Afonso Fleury (Brazil), John Humphrey (UK), Raphie Kaplinsky (UK), Ji-Ren Lee (Taiwan), Dorothy McCormick (Kenya), Katherine McFate (USA), Mike Morris (South Africa), Florence Palpaceur (France), Hubert Schmitz (UK), and Meenu Tewari (USA). Subsequent workshops included many of these core participants, additional academics researchers, as well as policymakers and NGO activists from United Nations Industrial Development Organization, the United Nations Conference on Trade and Development, World Trade Organization’s International Trade Centre, the World Bank’s Development Economics Research Group, the International Labour Organization’s World Commission on the Social Dimension of Globalization, the International Centre for Trade and Sustainable Development, the AFL-CIO, Oxfam, India’s National Council of Applied Economic Research, the Merrimack Valley (Massachusetts) Workforce Investment Board, and the Maquila Solidarity Network/Ethical Trading Action Group.



The first output from this work was contained in a special issue of the *Institute for Development Studies Bulletin* (32:2) entitled “The Value of Value Chains: Spreading the Gains from Globalisation,” which appeared in July 2001. This volume is comprised of articles written by several of the core participants of what came to be known as the “Global Value Chains Initiative.” The articles summarize the nascent ideas developed by the group in the areas of GVC terminology, chain governance, and industrial upgrading. The volume also includes several articles that applied some of the new thinking to case studies. The work on firm-level governance was our initial focus, but other strands of work developed, and continue to be developed today, including theoretical work on standards, industrial upgrading, labor, the development of GVC metrics, and a robust stream of field research. Out of this work has come a stream of peer-reviewed publications, a large body of policy-related consulting reports, the development of methodological handbooks for policy practitioners, and a website to provide a single point of access to GVC-related work.<sup>3</sup> One strand of this initial theoretical work, on firm-level network governance, culminated in an article that I wrote with Gary Gereffi and John Humphrey entitled, “The Governance of Global Value Chains,” which appeared in the *Review of International Political Economy* in March 2005.

The limits of space in our original 2005 article, and the insights gained from subsequent reactions we have had to it, motivate this effort to situate, elaborate, and further explain the theoretical framework we developed. First, I discuss the motivations for supplementing the “buyer-driven” and “producer-driven” modes of global commodity chain governance developed by Gary Gereffi in the 1990s with an industry-neutral, non-empirical framework. Second, I briefly present the features of the GVC governance framework as they appear in the 2005 article, and discuss its interdisciplinary theoretical underpinnings in more detail than was possible in the original article. Third, I discuss the problem of variation in GVC governance. Fourth, I situate the GVC governance framework in a larger field of GVC-related theory, including but not limited to power and institutions.

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<sup>3</sup> A list of more than 300 GVC-related publications can be found at [www.globalvaluechains.org](http://www.globalvaluechains.org).

## **From Global Commodity Chains to Global Value Chains**

In developing our theory of GVC governance we drew on a variety of previous work that we felt was relevant to our project. I will discuss these various theoretical influences later in the chapter, but first I will explain how the concepts evolved from its most direct progenitor, the “global commodity chains” (GCC) framework as developed by Gary Gereffi (1994, 1999). Gereffi’s framework lays out four key structures that shape GCCs (input-output, geographic, governance, and institutional) but one, the governance structure, has received the most attention, both from Gereffi and his immediate co-authors and from the many others that have made use of his framework.

The GCC concept was first developed by Hopkins and Wallerstein (1977, 1986) who highlighted the power of the state in shaping global production systems, exercised in large part in the form of tariffs and local content rules affected at the point where goods crossed borders (see also Wallerstein in this volume). Gereffi (1994) revived the GCC concept by refocusing it on the strategies and actions of firms, in part because of the restricted ability of states to set tariffs and local content rules in the context of trade liberalization. But trade openness does not in itself create industrial capabilities. Liberalization has enabled the growth of international trade, but without the push from advanced-economy firms seeking to tap capabilities and markets in developing countries, the cross-border flows of goods and services would surely be more modest, in terms of both total volume and technological content, than they are today. Because firms from advanced economies have done so much to create capabilities in developing countries, they continue to control and guide many of the key industrial resources in the global economy, even those they do not own.

The “governance” function within Gereffi’s GCC framework captured variation in the way that firms organized their cross-border production arrangements. Specifically, the GCC framework contained a key distinction between global chains that are “driven” by two kinds of lead firms: buyers and producers. Gereffi’s producer-driven variant can be equated with the internal and external networks emanating from large multinational manufacturing firms, such as General Motors and IBM. Multinational firms have long been a focus of research

and debate among scholars of the global economy (e.g., Vernon, 1966, 1971, 1979; Caves 1996). This work examined and debated the methods, timing, and motivations of multinational firms and the degree that they acted as conduits for the transfer of capabilities from developed to developing countries. Gereffi's framework focused attention on a new set of Western-based actors, and the roles they play in driving capability development, especially in East Asia. The "buyer-driven" GCC variant focused attention on the powerful role that large retailers, such as JC Penny, Sears, and later, Wal-Mart, as well as highly successful branded merchandisers, such as Nike and Liz Claiborne, have come to play in the governance of global production and distribution.

"Global buyers" do more than place orders; they actively help to create, shape, and coordinate the global value chains that supply their products, sometimes directly from "overseas buying offices" and sometimes through intermediaries, which include a wide range of actors, most notably trading companies based in Hong Kong, Korea, and Japan. While they typically own few, if any, of their own factories, the volume of their purchases affords global buyers a huge amount of power over their suppliers, which they sometimes use to specify in great detail what, how, when, where, and by whom the goods they sell are produced. But even when explicit coordination is not present, extreme market power has allowed global buyers to extract price concessions from their main suppliers. Suppliers have responded by locating more of their factories in low-cost locations and working hard to extract price concessions from their own workers and upstream suppliers.<sup>4</sup>

Why are commodity chains buyer- or producer-driven? Gereffi did not explore this question in detail, but instead let the empirical evidence speak for itself: capital and technology intensive industries such as electronics and autos tend to be governed by producers, while

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<sup>4</sup> Feenstra and Hamilton (2006) describe, in detail, the ways in which retailers gained power relative to manufacturers, beginning in the United States in the 1960s, a trend that continues to the present day. On one hand this 'retail revolution' has been a major factor in de-industrialization within the United States, as retailers increased overseas sourcing of apparel, electronics and consumer goods, in turn forcing manufacturers to move their own facilities offshore and increase sourcing in low cost locations in East Asia. The other side of this coin was the spurring of "late" industrialization and industrial upgrading, first in Japan, and later in Korea and Taiwan (Amsden, 1989; Wade, 1990; Evans, 1995).

labor intensive industries such as apparel and consumer goods tend to be governed by buyers. But how is the level of capital intensity in an industry related to its governance form? Because innovation in buyer-driven GCCs lies more in product design and marketing than in manufacturing know-how, it is relatively easy for lead firms to outsource the manufacturing of labor-intensive products. In the more technology- and capital-intensive items made in producer-driven chains, technology and production expertise were core competencies that needed to be developed and deployed in-house, or in closely affiliated ‘captive’ suppliers that can be blocked from sharing them with competitors.

In our group, we discussed how these variables played out in the context of recent field research findings in both buyer- and producer-driven chains, and found it to be increasingly difficult to assign these characteristics to specific industries in a static way, as the GCC framework does. The intense interest in Gereffi’s framework, and especially the “buyer-driven” commodity chain type, underscored the appetite for an industry-independent, firm-level theory of production network governance. The shift in focus from the state to the actors in the chain, and their interrelationships, and especially to the relative power that some firms are able to exert on the actions and capabilities of their affiliates and trading partners, was immediately accepted and put to use by both practitioners and researchers because it reflected and helped to explain several of the most novel features of the global economy.

Nevertheless, as we discussed our own recent research findings, as well as the findings of others (Feenstra, 1998; Arndt and Kierzkowski, 2001), we detected a shift in the organization of global production toward external networks. An outsourcing wave was breaking over producer-driven chains, and as a result “manufacturers” in producer-driven chains were becoming more buyer-like. Deverticalization was being driven, not only by the rise of powerful retailers, but later, in the 1990s, by a broader effort on the part of branded manufacturing firms to increase shareholder value by shifting fixed assets (like factories) and risk to suppliers—both to an emergent set of “global suppliers” based in the US and Europe (Fold, 2001; Sturgeon, 2002; Humphrey, 2003) and to local suppliers in East Asia that could

meet, or be taught to meet the required specifications and use the right process technologies and procedures (Gereffi, 1999; Lee and Chen, 2000).

Furthermore, what could and could not be transferred to suppliers proved to be a moving target as better codification schemes developed and the capabilities in the supply-base improved over time. The new digital tools supporting global-scale functional integration were being deployed in a wide range of industries, labor- and capital-intensive alike. For us, it was clear that changes in the governance of cross-border production arrangements that were being observed in the field demanded more network types than buyer-driven. Specifically, we perceived four new features in the governance of global-scale economic activity that stimulated us to re-conceptualize the key variables in cross-border chain governance:

- 1) Improvements in information technology and industry-level standards that enable the codification of complex information, which were easing the way for network forms of organization in technology-intensive industries (Baldwin and Clark, 2000; Balconi, 2002).
- 2) Flexible capital equipment that was enabling technology- and capital-intensive production equipment to be pooled in the same way that labor intensive production can be pooled, again easing the way for network forms of organization in technology-intensive industries (Brusoni and Principe, 2001; Langlois, 2003).
- 3) Sophisticated supply-chain management tools that were pushing labor-intensive industries up the technology curve (Abernathy et al, 1999).
- 4) Increased outsourcing by manufacturing firms, and increased involvement in product definition by retailers (private label) were blurring any clear distinction between buyers and producers.

To sum up, the buyer- and producer-driven GCC typology was based on a static, empirically situated view of technology and barriers to entry, but both are dynamic because of technological change and firm- and industry-level learning (Henderson et al, 2002; Ponte and Gibbon, 2005). As we adopted a more dynamic view of chain governance two things

became clear: 1) there was a clear shift away from the vertically integrated, producer-driven variant in a range of industries, and 2) the buyer-driven type could not characterize all of the network types being observed in the field. We also chose to replace the term “commodity” with “value” because of popular connotations of the word “commodity” with undifferentiated products, especially primary products such as crude oil and bulk agricultural goods, and because the term “value” captured both the concept of “value added,” which fit well with the chain metaphor we were using, and focused attention on the main source of economic development: the application of human effort, often amplified by machines, to generate returns on invested capital.

### **The (firm-level) governance of global value chains**

In moving beyond the empirically based typology of chain governance developed in the GCC stream, our goal was to construct a dynamic, operational theory that could account for observed changes and anticipate future developments. Our first step was to ask three questions of case material collected from a range of global industries: 1) what activities are bundled in one node of the chain or split among various nodes; 2) how is knowledge, information, and material passed from one node to the next; and 3) where are the nodes located? One of our greatest challenges was to overcome the specific language that most case studies use to discuss these features (see Sturgeon, 2000, for an early attempt to develop industry-neutral terminology). From this comparison, we were able to identify five generic ways that firms coordinate, or ‘govern’ the linkages between value chain activities: 1) simple *market* linkages, governed by price; 2) *modular* linkages, where complex information regarding the transaction is codified and often digitized before being passed to highly competent suppliers; 3) *relational* linkages, where tacit information is exchanged between buyers and highly competent suppliers; 4) *captive* linkages, where less competent suppliers are provided with detailed instructions; and 5) linkages within the same firm, governed by management *hierarchy*. We found that these five linkage patterns could be associated with predictable combinations of three distinct variables: the *complexity* of information exchanged between value chain tasks; the *codifiability* of that information; and the *capabilities* resident in the supply base (see Figure 1).

**Figure 1. The Global Value Chains Framework**

Key Variable	Complexity of transactions	Ability to codify transactions	Capabilities in the supply-base	Degree of explicit coordination and power asymmetry
Market	Low	High	High	
Modular	High	High	High	
Relational	High	Low	High	
Captive	High	High	Low	
Hierarchy	High	Low	Low	

Note: There are eight possible combinations of the three variables. Five of them generate global value chain types. The combination of low complexity of transactions and low ability to codify is unlikely to occur. This excludes two combinations. If the complexity of the transaction is low and the ability to codify is high, then low supplier capability would lead to exclusion from the value chain. While this is an important outcome, it does not generate a governance type *per se*.

Source: Gereffi, Humphrey, and Sturgeon, 2005; as adapted by Dicken, 2007, p. 158.

This “GVC governance” framework helped us to explain why some value chain activities are firmly rooted in place and some are more easily relocated. Specifically, modular GVC linkages raise the potential for tight coordination of distant activities, even when complexity is high, while relational linkages typically require co-location to support the exchange of tacit information, driving co-location, agglomeration, and industrial clustering. Furthermore, we found that changes in one or more of the three variables altered value chain governance patterns in predictable ways. For example, if a new technology rendered an established codification scheme obsolete, or was overwhelmed by increasing complexity, modular value chains became more relational. If competent suppliers could not be found, then captive networks and even vertical integration became more prevalent. Conversely, rising supplier

competence tended to push captive governance more toward the relational type and better codification schemes prepared the ground for modular governance.

### **The theoretical underpinnings of the GVC governance framework**

As already mentioned, our approach to constructing a theory of GVC governance was to draw from the existing literature on inter-firm governance and industrial organization to the greatest extent possible. Several important categories of governance have been developed and debated in the literature over the course of many decades. The first question, asked by Ronald Coase (1937), was why the market did not govern all transactions? In other words, why are some business activities bundled within firms? Williamson (1975) built a theoretical framework around the answer provided by Coase, that there were sometimes costs to transacting that could be reduced when activities were brought inside of the firm to be governed, not by relative prices, but directly by the firm's internal management "hierarchy." The key variable in transaction costs economics is *asset specificity*: relationship-specific investments that tend to lock business partners into their relationships, creating opportunities for either party to take advantage of the other. The dynamic outcome is that the buying firm would eventually internalize the function, to avoid being taken advantage of, because asset specificity tends to increase over the life of an inter-firm relationship (Williamson, 1981). Williamson eventually noted the prevalence of network forms of organization where there is some form of explicit coordination beyond simple market transactions but which fall short of vertical integration, and acknowledged networks as an intermediate organizational form (Williamson, 1985).

Granovetter (1985) disagrees with the opportunistic view of human nature underpinning transaction cost economics. His view is that economic activity is embedded in social relationships, not the other way round, and that trust and even goodwill can and often does build up in the inter-personal relationships that inevitably underlie inter-firm relations. The "relational" view of economic life suggests that inter-firm relationships can be sustained in the face of asset specificity. The stream of work that explored this question (Johanson and Matsson, 1987, 1987; Lorenz, 1988; Jarillo, 1988; Powell, 1987, 1990) drew on the work of



Granovetter, as well as the example of Italian ‘industrial districts’ provided by Piore and Sabel (1984), to argue for a distinct “network” form of industrial organization, based on trust, long-term relationships, social and spatial proximity, and the desire for repeat business on the part of suppliers.

Geographers, for their part, have long argued that social and spatial proximity could substitute for vertical integration (Scott, 1988; Storper, 1995). For many, Adler (2001) provided the final word in this debate, mapping out three types of industrial organization: market, communitarian/trust, and hierarchy. As Bair points out in the introduction to this volume, the GVC framework, by internalizing the insights of economic sociologists such as Granovetter, in the “relational” GVC governance form, created a connection to economic sociology that the GCC literature has not. At the same time, the centrality of the concept of asset specificity links the GVC framework to the work of heterodox economists. While the relational and Hobbsian views of economic life have typically been framed in mutually exclusive terms, the GVC governance framework incorporates a range of solutions to the problem of asset specificity.

A stream of literature centered on the concept of firm capability and learning, largely from the field of strategic management, was also influential in our thinking about GVC governance. This literature assumes that firms compete on the basis of internal “resources” that take time to develop (Penrose, 1959). Because firm-level competencies can be scarce and difficult to replicate, it may be impossible for lead firms to internalize functions or find substitute suppliers in time to compete effectively. Related ideas have been developed by a series of scholars from the evolutionary economics school, launched by Nelson and Winter (1982), to the “resource view of the firm” developed by Barney (1991), to examinations of firm-level “dynamic capabilities” (Teece et al, 1997), to more recent work on “industry architectures,” meant to reconcile the transaction cost and capabilities explanations for industry organization (Jacobides and Winter, 2005). The capabilities literature identifies access to expertise and competencies as ample motivation for forging and maintaining external relationships, even when asset specificity is significant. This pragmatic view of

industry organization provides an antidote to the mechanistic, immediate, frictionless view of organizational change contained in the transactions cost framework.<sup>5</sup>

Our approach was to combine the key insights from these different streams of literature. First, we recognized asset specificity as a potential hazard in inter-firm relationships. This resonated with our field research, where we learned that managers commonly valued the ability to switch suppliers when conditions dictated. But we also found that many companies had developed a tolerance for sustained relationships with other firms in the face of asset specificity. Finally, we observed firms exchanging extremely complex information in codified form, often using advanced information technology, and learned that lead firms could choose among an elite but growing set of suppliers and contract manufacturers that had sufficient capability to receive the information and act on it appropriately. In all, we perceived three network forms situated between markets and hierarchies. The first, and most “hierarchy like,” was for lead firms to dominate their supplier’s business to the point where they were unlikely to act in opportunistic ways (the captive governance form). The second was for buyers and suppliers to maintain relationships in the face of asset specificity, either by building up mutual trust, or by simply tolerating it out of necessity because of the barriers to easy internalization created by learning or scale (the relational governance form). The third was for buyers and suppliers to reduce asset specificity by passing information in codified form, according to open standards, while keeping tacit knowledge contained within each firm (the modular form).

A view of where the “network” form of industrial organization resides in the industrial organization and GCC/GVC literatures is provided by Table 1, which shows the three GVC governance forms as a tripartite elaboration of the single inter-firm governance form variously described as intermediate, network, community/trust, and buyer-driven by different streams of literature. The variation in transaction costs economics is dynamic, but

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<sup>5</sup> Of course, a second variable in the transactions cost framework, frequency of transactions, acknowledges that asset specific activities tend to remain outsourced when minimum scale economies cannot be reached through internal consumption, a notion that was developed separately in a classic article by Richardson (1975).

unidirectional, tilted toward vertical integration because of the tendency for asset specificity to build up in inter-firm relationships over time (Williamson, 1981). Williamson's (1985) acknowledgement of an "intermediate" form between markets and hierarchies, along with subsequent literature on "network" and "communitarian/trust" forms of industrial organization (Powell, 1990; Adler, 2001) did much to establish a third, distinct mode of industrial organization<sup>6</sup>. In the GCC framework (Gereffi, 1994), producer-driven chains are comprised of vertically integrated firms and their captive suppliers, governed largely by management hierarchy, or something close to it, while buyer-driven GCCs are comprised of linkages between independent firms, a generic network form in which coordination mechanisms are not specified, where retailers and branded merchandisers happen to wield a great deal of power. The variation in the network and GCC literature is static: different forms of industry organization are assigned to specific industries but no mechanism is provided to explain the transformation of one form into another.

The GVC governance framework contained in our 2005 article, and outlined again here, is not a grand theory of globalization or economic development, but a more modest theory of linkages, or perhaps better, a theory that seeks to explain and predict how nodes of value-adding activity are linked in the spatial economy. These linkages may be within the same firm or between firms, although the element of direct managerial control that holds sway within firms imbues intra-firm linkages (hierarchy) with a distinct character. Linkages may be forged within the same building, across town, or across great distance. The word "global" in global value chains simply signals our interest in value chains that include an element of vast distance. Regional, national, and local value chains are nested firmly within global value chains, as we perceive them, and GVC governance theory operates equally well at any and all of these spatial scales.

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<sup>6</sup> Nevertheless, this distinction failed to penetrate the field of economics very far beyond the immediate debates just mentioned, and economic accounts of the globalization process still emphasize only two options: market or hierarchy (e.g., Arndt and Kierzkowski, 2001). Firms either invest offshore directly (hierarchy) or buy goods and services from firms located offshore (markets).

**Table 1. The evolution of the network organizational form**

	Transaction Costs	Networks	Global Commodity Chains	Global Value Chains	
	Market	Market/price	[Assumed]	Market	Market
		Intermediate/ network/ community/ trust	Buyer-driven	Modular	} Network organizational forms
				Relational	
			Producer-driven	Captive	
	Hierarchy	Hierarchy/ authority		Hierarchy	Hierarchy
<b>Variation in organizational form</b>	<i>Vertical integration as asset specificity increases</i>	<i>Static variation</i>	<i>Static variation</i>	<i>Predictable shifts in network form as complexity, codifiability, and supplier competence change</i>	
<b>Key references</b>	<i>Coase, 1937 Williamson, 1975, 1981</i>	<i>Williamson, 1985 Powell, 1990 Adler, 2001</i>	<i>Gereffi, 1994</i>	<i>Gereffi, Humphrey &amp; Sturgeon, 2005</i>	

## **Variation in GVC governance**

While the three variables in the GVC governance framework are drawn from case research, the five governance patterns are ideal types. We recognize that the organizational character and economic geography of entire industries, or even of a single value chain, cannot be read from the characteristics of value chain linkages. First, the characteristics of a single link in the value chain cannot substitute for an in-depth analysis of how governance patterns in different parts of the chain are variegated and mixed, or how they change over time. Any value chain, and the larger networks of production and consumption they contribute to, contain thousands, if not millions, of individual transactions, depending on the time period considered and, of course, because products and services typically contain inputs with very different technical characteristics, not all transactions in a chain have the same character (Ponte and Gibbon, 2005). Just as chains are comprised of multiple linkages, so too can they contain multiple governance forms. In other words, characterizing larger amalgams of transactions according to one of the five ideal GVC governance types requires an assumption that all linkages within a chain or industry have the same character. Such value chains do not exist in the real world.

Second, because firms can be slow to adjust, and because of institutional differences that structure the norms of buyer-supplier relations, value chains can retain old linkage mechanisms even as the variables of complexity, codifiability, and supplier competence change. As I will discuss in the following section, how fast and far firms and industries go in responding to changing GVC variables (to tap the potential for relocation and outsourcing contained in the modular form, for example) is influenced by institutional factors and relative firm power. Changes in the technical factors of GVC governance help to set the parameters of value chain coordination; they enable change but do not determine it.

As a result, what we observe in the field is a mixing of GVC governance forms within industries, value chains, firms, and even single establishments. For example, a lead firm will

typically forge market relationships for standardized goods, modular linkages in complex transactions when standards for exchanging codified information exist and are widely known, relational linkages with select partners when complex inputs are impossible to specify in advance and knowledge is not easily internalized, and captive relationships when smaller suppliers can be provided with sufficient knowledge to provide needed inputs and, at the same time, dominated in order to keep that knowledge from spreading to competitors. And, of course, firms must manage the value chain activities, and the linkages, that exist within their own organizations. How these ideal types are constructed, mixed, and managed in practice is a key element of corporate strategy. In the realm of policy, as in corporate strategy, the ideal types generated by theory must be held up against and applied in real-world situations. Given the complexity of industries, and wide variation in governance patterns in different stages of the value chain and geographic locations, it can often be misleading to characterize entire industries according to a single, empirically prevalent GVC governance type. While the problem of how to extrapolate the characteristics of individual transactions to the sectoral level is one that has yet to be solved, recent progress has been made.

Jacobides et al (2006: 1201) offer “industry architectures” as historical, path-dependent “templates that emerge in a sector and circumscribe the division of labor among a set of co-specialized firms.” Extrapolating from Teece’s (1986) model of capability development in dyadic inter-firm relationships, they argue convincingly that industry architectures evolve from the dynamic, co-evolutionary interplay between complementarity and factor mobility. For example, governance patterns established by early, successful movers can attain high levels of prevalence and stability through a combination of path dependence and network effects. But here, again, we are asked to define governance patterns in industries empirically, and while research on the evolutionary dynamics of value chain governance in specific industries remains a critical and necessary step, we are left with few generic reference points, no industry-neutral explanatory variables or descriptive terms that allow for easy comparability and aggregation of results, and therefore a weak pathway to any generic, first-pass solutions to common policy or strategy dilemmas.

Ponte and Gibbon (2005: 3) suggest dealing with the problem of defining industry-level GVC patterns by separating the concepts of “*chain coordination*,” to characterize the immediate coordination of linkages between specific segments of the chain, and “*chain governance*,” to denote the processes that structure the chain by limiting membership and establishing prevailing coordination mechanisms (e.g., rules, grading systems, standards). In this view chains can be “governed” according to a single set of rules yet contain a variety of coordination mechanisms. But the rules that “govern” industries are also myriad, variegated, and dynamic, and so require a concerted research effort to grasp in specific sectors. While Ponte and Gibbon provide no framework for describing and explaining such differences, this is an important area of GVC theory building that I would gather under the heading of “institutional effects” (see below).

A way to assign GVC governance characteristics to larger amalgams of transactions, albeit imperfectly, is to view the initial link between lead firms and their largest, first tier suppliers (if they exist) as structuring the governance of the chain as a whole. For example, if a lead firm has modular linkages with its first tier suppliers, which eases supplier switching even when transactions are complex, second and third tier suppliers will be forced to cope with the high degree of organizational and geographic flexibility that lead firms are able to extract from the system, even if they have relational or captive linkages with their immediate customers.<sup>7</sup> In other words, the linkages that powerful firms forge with the most important suppliers go a long way toward setting the governance character of the entire chain.

### **Three pillars of global value chain analysis: bringing power and institutions back in**

The broad thrust of GVC analysis contains more than the theory of firm-level governance just outlined. As I mentioned earlier, there are numerous ongoing streams of research and theory-building going on under the GVC or closely related rubrics. This includes work on

global value chains in the primary and agro-commodity sectors, theoretically focused on the role of public and private standards in determining the distribution of gains from trade among different actors in the chain (Fold, 2002; Gibbon, 2003; Gibbon and Ponte, 2005; Ponte and Gibbon, 2005). As the Talbot and Topik chapters in this volume show, the GCC stream remains very robust, focused largely on how institutions, especially standards and grading systems, tend to tilt power away from small producers in global chains producing agricultural products, where the traditional connotation of the word “commodity” is less problematic. Work is also continuing on how labor (especially female labor) is utilized differentially in GVCs (Barrientos et al, 2003; Barrientos and Kritzing, 2004), and on the prospects for small firms, and clusters of small firms, to leverage GVCs for industrial upgrading (Humphrey and Schmitz, 2003; Schmitz, 2004). Rafael Kaplinsky and his co-authors have examined determinants of upgrading and measurement issues in a variety of industries in an effort to understand how rents are distributed and appropriated in GVCs (Kaplinsky et al, 2002; Kaplinsky, 2005, 2006).

Despite differences in terminology and emphasis, recent scholarship on ‘global production networks’ (Henderson et al, 2002; Dicken, 2005, 2006; Yueng et al, 2006; Yueng, forthcoming), shares the GVC literature’s baseline assumption that various types of international, inter-firm networks have become central features of a wide range of contemporary industries, including agriculture, manufacturing, and services. In my view, the chain metaphor is simply a heuristic tool for focusing research on complex and dynamic global industries. It provides enough richness to ground our analysis of global industries, but not so much that the analysis gets bogged down in excessive difference and variation, or is forced into overly narrow spatial, analytic, or sectoral frames in response to the overwhelming complexity and variation that researchers inevitably encounter in the field. While debates over the relative merits of terms and metaphors, such as global commodity chains, global value chains, global production networks, and chain governance will certainly continue, it is safe to say that this work shares a focus on the organizational and spatial

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<sup>7</sup> I owe this observation to conversations with Jennifer Bair, Stefano Ponte, Peter Gibbon, and Florence Palpacuer.



structure and dynamics of industries, the strategies and behavior of major firms and their suppliers, and the need to identify scalable conceptual tools that help researchers move easily from local to global levels of analysis. These commonalities, in my view, define a core research agenda that cuts across these chain and network paradigms.

If theory building is best pursued in a segmented fashion, what are the main areas that deserve attention? A thoughtful and comprehensive list developed by Henderson et al (2002: 447) includes the spatial organization of firm-level networks, power-in-the-chain, institutions, labor, and the determinants of value capture. Going back to Gereffi's (1994) fourfold framework of input-output, geography, governance, and institutions, we can summarize recent progress, at least in part, as follows. The first two elements of Gereffi's framework, input-output and geography, are descriptive. They provide GVC researchers with their initial marching orders: to map the organizational and spatial division of labor in the chain that is under examination. This will inevitably include an overlapping set of discrete value chain activities contained within, or spread across organizations and locations. This is an extremely useful starting point for asking questions about the dynamic economic geography of industries.<sup>8</sup>

The last two elements of Gereffi's framework, governance and institutions, are causal. They contain explanations for observed organizational and spatial features of GVCs, and highlight the forces external to the chain that structure (enable and limit) what actors in the chain do. The notion of "drivenness" contained in Gereffi's original framework usefully focuses attention on power in the chain. Even if clear distinctions between buyers and producers, or the association of these forms with specific industries, have been superseded by events, the identification of powerful actors in the chain, and an examination of the sources of this power and the ways that it is used, remains a central project of GVC theory-building.

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<sup>8</sup> In fact, an accurate mapping of the chain can be all that is needed for activists and policy makers to identify leverage points for affecting change. For example, in this volume Schurman and Munro show how "anti-biotech" activists were able to usher in a multiyear moratorium on new genetically modified (GMO) food crop approvals in Europe by focusing pressure on the region's tenth-largest food retailer. When this firm increased its market share by labeling its stores "GMO free," its larger competitors soon followed suit.

If we split Gereffi's category of "governance" into two distinct areas of inquiry, power and the determinants of firm-level coordination, and include institutions as a third category, we are left with three "pillars" of GVC analysis, broadly defined: 1) the character of linkages between tasks, or stages, in the chain of value added activities (explained in part by a theory of GVC *governance*); 2) how power is distributed and exerted among firms and other actors in the chain; and 3) the role that institutions play in structuring business relationships and industrial location. These three elements, individually and even more so in combination, can contribute to robust explanations of why observed inter-firm relationships and geographic patterns have evolved in an industry, or part of an industry, and even provide insight into how they might evolve in the future. Since I have already summarized the GVC governance framework, I will touch briefly on power and institutions in the remainder of this section.

### **Power in the Chain**

As Perrow (1981) argues, power is an integral part of economic life. The effects of power, or lack of power, can be discerned at every level of analysis. Institutional actors, including states and multi-lateral institutions such as the World Trade Organization (WTO), shape GVCs through the enforcement, or lack of enforcement, of laws and the terms of international agreements. Consumers have power through the purchasing choices they make, when they turn the products and services they buy to unintended purposes (Leslie and Reimer, 1999), and even more so, when their wishes are amplified by advocacy groups and through class action litigation. Workers also have power, especially when they are represented by labor unions with the ability to call work stoppages at the level of the enterprise, industry, or broader economy.

At the firm level, power is accumulated, held, and wielded in different ways and in different amounts by various actors in the chain. GVC analysis commonly divides an industry into two broad types of firms: *lead firms* and *suppliers*. Lead firms, at the very least, set product strategy, place orders, and take financial responsibility for the goods and services that their supply chains churn out. As Gereffi envisioned, lead firms can be *buyers*, with little or no

production of their own, or *producers*. Lead firms, because they have the agency (within limits) to choose and replace suppliers, wield *purchasing power*. Although it is not always exercised, purchasing power allows a lead firm to explicitly coordinate the activities of its supply chain and to pressure suppliers to lower costs, increase quality, adopt specific equipment, employ specific business processes, purchase inputs from specific vendors, and invest in specific locations.

A second category of firm-level power in GVCs is *supplier power*. Extreme forms of supplier power have been variously referred to as “platform leadership” (Gower and Cusumano, 2002) and “Wintelism” (Borras and Zysman, 1997). Market and technological dominance affords platform leaders the power to set standards. True platform leadership in the supply-base is rare, but there are notable examples where suppliers either dominate the chain, or share power with lead firms, forming what Fold (2002) calls “bi-polar” GVCs.<sup>9</sup> Supplier power based on platform leadership, even if it is extremely strong, is typically not associated with explicit coordination of buyers or other “downstream” value chain actors. For example, Intel issues several thick specification books with each of its new microprocessors that allow its customers to incorporate Intel semiconductors in their product designs. But Intel does not dictate where those final products will be made, in what number, or among which firms work will be divided.

More typical is a softer form of supplier power, *competence power*, stemming from technical and service capabilities that are difficult to replace (Penrose, 1959; Palpacuer, 2000).

Suppliers wield competence power when their products and services are seen as nearly indispensable for the lead firms they serve. Lead firms can use their purchasing power to place limits on supplier power, often with a large measure of success, since even the most

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<sup>9</sup> To the well-known cases of the structuring role that Intel microprocessors and Microsoft’s operating system play in personal computer industry (Borras and Zysman, 1997) and that Shimano’s component systems play in the bicycle industry (Galvin and Morkel, 2001), I can add several others, including Applied Materials’ manufacturing equipment in the semiconductor and flat panel display industries (Murtha, Lenway, and Hart, 2001), Qualcomm’s chip sets for mobile phone technologies based on CDMA technologies, ARM’s chip technology for mobile phone systems based on the GSM standard, and grinders in the coffee industry (Fold, 2002).

competent and important suppliers base their success on winning future orders. Retaining the ability to switch suppliers, even among a very small group of two to four, appears to be adequate in most instances to keep supply power in check.<sup>10</sup>

While it is tempting to refer to platform leaders as “lead firms,” since even their customers have to accommodate to the standards they set, it is analytically useful to retain the distinction between lead firms and suppliers that are platform leaders, since the power that accrues to lead firms from placing orders (purchasing power) has a source (risk taking) that is distinct from the extreme technological competence required to set industry-level standards.

While an examination of power in GVCs is a distinct realm of analysis, a point of overlap with GVC governance theory relates to the relative power of firm-level actors in the chain. In modular value chains, suppliers take responsibility for their bundle of activities (e.g., purchasing, process development, production, etc.), and while their largest customers typically monitor them closely, the fact that their capacity is easily switched to other customers provides them with more freedom of action than suppliers that are more deeply embedded with their customers. When supplier capacity is generic, suppliers can and do spread risk across a large and diverse pool of buyers. In relational value chains, the tacit knowledge that suppliers bring to the table provides them with some leverage, but the thick linkages they must forge with buyers may be hard to replicate with other buyers in time to avoid severe hardship. If we view the power conferred on lead firms by their buying role as decisive, over time, this lock-in with customers creates a higher level of power asymmetry in GVCs with a high concentration of relational linkages than in GVCs with many modular and market linkages. Of course, as transaction costs theory stresses, the opposite scenario is also possible, where relational linkages, asset specificity, and the deep competencies of suppliers make it all but impossible for lead firms to replace them. The key point is that asset

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<sup>10</sup> Of course, all forms of firm-level power are related in some way to simple market power, and the notion that industry concentration is, to some degree, compatible with competition is quite venerable (Chamberlin, 1933:205).

specificity can shift power toward either party in the transaction. How these dynamics play out in specific situations is a central question of GVC research.

### **Institutions**

Institutions have been conceived of very broadly. On one side of the spectrum, we can think of institutions as bureaucratic organizations with payrolls and physical addresses, including government agencies and non-governmental organizations, such as multilateral agencies, industry trade groups, labor unions, and advocacy groups. On the other side, we can think of institutions as the rules that govern society, either bureaucratically, as codified in legal cannons and regulatory systems, or existing more amorphously, though perhaps no less powerfully, in the realm of societal norms and expectations (North, 1990). Firms and industries clearly adapt in response to institutional pressures (Meyer and Rowan, 1977). By setting the rules that firms must operate within, “institutions...[shape] the creation and functions of units in market and the relations between them” (Stinchcombe, 1977: p. 2). The rules set by institutions are derived, to a greater or lesser degree, by the beliefs, values, meanings, and priorities embedded in the societies that create them, fund them, and staff them. As a result, limits are placed on actions, and firms or managers that surpass those limits run the risk of sanction, creating pressure for firms to operate according to the norms and expectations of the societies in which they operate (Yeung, forthcoming).

The impact of institutions on the geography and character of GVCs can be profound, as Bair (2005) stresses. For example, the enlargement of the European Union, the establishment of the North American Free Trade Area (NAFTA), and China’s accession to the WTO, have had a large effect on economic geography of many industries, including the location of direct investment and the relationship between production systems and their target markets (Bair and Gereffi, 2001; Bair, 2002). At the firm-level, routines of interaction between suppliers and lead firms can be deeply rooted in domestic and even local institutions and culture, and often structure (enable or limit) firm-level GVC governance in an ongoing manner (Sturgeon, 2007). Because industries have developed within different institutional contexts, for example in Europe, Japan, and North America, it is not surprising that firms and industries respond to common pressures differently at home (Helper, 1991). It is more surprising, perhaps, that

these specificities continue to exert influence even as the largest firms have developed global operational footprints (Berger, 2005).

Again, there are major points of intersection between the three pillars of GVC-related theory. For example, the increasingly stringent standards (e.g. for product quality and consumer protection) and competitive differentiation in previously undifferentiated product categories, such as fresh fruit and vegetables, introduced new levels of explicit coordination (via modular linkages and vertical integration) in horticultural GVCs that had previously been market based (Dolan and Humphrey, 2000). Another example has to do with the standards for exchanging information, limiting behavior, and insuring quality in GVCs. Creating such institutions, or “conventions,” is almost always a contentious process (Ponte and Gibbon, 2005) with outcomes clearly related to power in the chain. Countries with large markets, such as China, can more easily set local content rules than smaller countries. Firms with a large market share or an unassailable technological advantage have the power to set standards and requirements for other value chain actors. For example, the process of developing industry-level codification schemes needed to support value chain modularity can be blocked in industries where power is concentrated in a handful of huge lead firms, such as the automotive and commercial aircraft industries (Sturgeon et al, 2007; Kimura, 2007).

## **Conclusions**

Because the stakes are so high, we must take global integration seriously, and develop ways of thinking that place novel and emergent features of the global economy in the foreground. In simpler times it made sense to focus on the roles of comparative advantage and the market- and capability-seeking activities of multinational corporations in motivating and structuring international trade and investment. While these concepts have proved to be extremely robust and are still valuable, they do not emphasize the fragmentation of the value chain or the fluid, real-time integration of capabilities in advanced economies with the rapidly rising capabilities in places that were all but outside of the capitalist global economy only two decades ago, such as China, India, Russia, and Vietnam. In fact, they emphasize the opposite: national export specialization in undifferentiated commodities, on one hand, and

finished products, on the other, and the extension of existing national advantage, via multinational affiliates, to places where industrial capabilities lag far behind. While the rise of GVCs do not render this view of global competition completely anachronistic, it is safe to say that the picture has grown much more complex.

In an attempt to bring some order to this complexity, the GVC governance framework revisits the terrain between markets and hierarchies, exploding the network form into three distinct modes of inter-firm governance: modular, relational, and captive. The framework identifies the problem of asset specificity as an important, but not sole or unidirectional driver of firm-level decision-making, and elevates three variables that dynamically shape the content and character of inter-firm linkages: complexity, codifiability, and supplier competence. The focus is not only on the organizational patterns and power dynamics that are generated by different variable combinations, but also on the geographic possibilities (e.g., clustering vs. dispersal of industries, rapid vs. gradual relocation of work) that are enabled by each governance form.

As a theory of linkages, the GVC governance framework is not intended to provide a complete theory of economic development, but a transaction-, firm- and industry-centric theory of governance among the firm- and establishment-level actors in the chain. As such it cannot provide a full accounting of the characteristics and consequences of GVCs. It can, however, provide a bottom-up, research-driven method that accounts for the governance characteristics that tend to arise in global value chains *absent other factor and influences*. As Peter Doeringer has suggested,<sup>11</sup> if the pattern of global value chain governance in an industry does not fit the theory, then an alternative force, such as a strong institutional mechanism or an extremely concentrated industry structure, is likely to be at work. In this way, GVC governance theory can provide researchers with a relatively simple set of baseline research questions and policy-makers with a first-pass tool for analysis. Moreover, the larger

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<sup>11</sup> These remarks were made at the conference “Organisational Configurations and Locational Choices of Firms: Responses to Globalisation in Different Industry and Institutional Environments. Centre for Research in the Arts, Social Sciences and Humanities, Cambridge University, Cambridge UK, on April 14, 2005.

GVC framework can provide a neutral conceptual space for comparing research results across industries and geography.

Our goal in developing a theory of GVC governance was to tidy up a relatively small corner of the theoretical room, with the hope that others would accept — and work to improve — our solution, and go on to build compatible frameworks dealing with other aspects of globalization. This theoretical partitioning is especially important if the goal is to develop dynamic frameworks that can predict and account for change because with moving parts, complexity increases. Together with the shaping power that institutions have on an industry's organization and geography, and the various forms of power that are exerted among firms and at the industry level, we can use GVC governance theory to begin to develop a relatively comprehensive view of the forces driving change in the organization and economic geography of specific sectors. But more work remains to be done, not only in the realm of power and institutions, but also in the more pragmatic and policy-oriented areas of GVC metrics, industrial upgrading, and work organization.

While it is important to develop various aspects of GVCs as distinct theoretical realms, it is equally important to actively nurture points of intersection. For example, the variables of complexity, codifiability, and competence all have powerful influence at the intersection of work organization and technological change (Levy and Murnane, 2004). How the influence of social and spatial proximity plays out in the face of ongoing efforts to codify complex information and knowledge will not only help to determine the prevalence of the relational and modular GVC governance forms, but also the prospects for location-specific industrial agglomerations (Scott, 2006), systems of innovation (Lundvall, 1992; Lundvall et al 2002), and varieties of capitalism (Hall and Soskice, 2001). In an age of globalization, theory building needs to be approached in an additive, modular fashion, with an eye toward compatibility with methods and frameworks that both broaden the scope of analysis and add detail in specific areas. In this way, the multiple streams of GVC-related theory can be built into a broad, cohesive framework for understanding global industries and responding to the risks and opportunities they pose.



It is important to bear in mind how nascent this theory-building project remains. Julia Lane has likened the current state of qualitative industry research to the study of the natural world in the 16<sup>th</sup> and 17<sup>th</sup> centuries.<sup>12</sup> In this era, curious researchers made detailed notes and drawings of what they could see of the vastness and variety around them, but there were few mechanisms for compiling the findings of individual researchers into larger pools of knowledge that could reveal broad patterns. Comparison of results came haphazardly with personal communication between scholars and in the few forums, such as the British Royal Society, where research could be presented and results debated and compared. In this way classification systems gradually came into being and some of the mechanisms at work in nature were revealed.

Similarly, scholars of global industries have now had several decades to present, publish, and debate their research results. These findings show that the process of global integration is expressed differently in different industries and places. The precise patterns and effects of global integration depend in some large part on the technical and business characteristics that prevail in specific industries, the relative power of firm and non-firm actors in the chain, and the social and institutional characteristics of the places in which the tendrils of GVCs are embedded. While field research on industry-specific GVCs remains as important as ever, the accumulation of case studies has created the conditions needed for the development of generic, industry-neutral theories to explain observed patterns and to predict outcomes associated with them. More effort is shifting to the construction of classification schemes and conceptual models that can stand in for the mechanisms that work to create the variety observed in the field. Yet we remain very close to the starting line. The field of GVC-related theory building is wide open.

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<sup>12</sup> These remarks were made at the MIT Working Group on Services Offshoring Workshop, held in Cambridge, Massachusetts on October 28, 2005.

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