

STRUCTURAL INEQUALITY IN GLOBAL TIMBER-BASED
COMMODITY CHAINS

By

Gary John Shurtz

A Thesis Presented to

The Faculty of Humboldt State University

In Partial Fulfillment of the Requirements for the Degree

Master of Arts in Sociology

Committee Membership

Dr. Sing C. Chew, Committee Chair

Dr. Elizabeth Watson, Committee Member

Dr. Joshua Meisel, Graduate Coordinator

May 2013

ABSTRACT

STRUCTURAL INEQUALITY IN GLOBAL TIMBER-BASED COMMODITY CHAINS

Gary John Shurtz

The current structure of the global political economy is based on a worldwide world- system which has and will continue to transform as history is written. Within this global economic system, understood as a world-system, capital accumulation is the dominant discourse and driving force of a system which simultaneously creates the rules while being regulated by them. Several integral and continual characteristics interact to create and reproduce this world-system, these characteristics include: a hierarchical global division of labor based on global zones, an inter-state system, anti-systemic movements, as well as cycles and rhythms of expansion and contraction. Commodities produced and consumed throughout the globe are products of a collection of processes which take place within this world-system, and are therefore impacted by the characteristics of the system.

By examining some of these production processes within the global timber industry, the structural inequality of the global system as a whole becomes apparent. This research addresses the inequality structurally inherent in the world-system through analysis of various regions of the globe as well as the range of processes which often take place in the production of a single timber/wood product. Based on location within a

global hierarchy, specific regions or zones of the world are beneficiaries of structural inequality whereas others bear the burden of continual consumption driven by the quest for endless accumulation. Rather than blaming the core regions of the world, the research hopes to draw attention to the system as a whole and raise consciousness of the environmental and social impacts that such a system generates.

ACKNOWLEDGEMENTS

There are several people that have been absolutely instrumental throughout the course of this project and therefore should be recognized. First of all I want thank both members of my thesis committee, Dr. Sing C. Chew and Dr. Elizabeth Watson, you have both been amazing. Sing I can't tell you how thankful I am for the endless support you have shown throughout this project as well as my entire time in the program. Your confidence in my ability means so much. Betsy your calming, confidence inspiring words at crucial times throughout this project were critical. At times of despair you said the perfect thing to help me regain perspective and continue. I'm truly grateful beyond measure to you both.

Also, there have been numerous students, friends and peers who have kept me focused and also provided a much needed escape. To our cohort, thank you all, you have all supported me in one way or another. To the forestry students and logging sports team, thanks for making me feel included and a part of something great. Bobby Howe, my thesis writing partner, the breaks for beer and food were essential as was your friendship throughout. Jerry I can't measure the importance of those times of laughter and great barbeque. Thanks for introducing me to Larrupin Mustard.

While last to mention, the most important people throughout this project have been my family. Mom, you have never done anything but fully support me and encourage me to continue even when things were a struggle. You are the best. Dad, you can always manage to put things in perspective for me. You are more of an inspiration to

me than you know. Rick, my brother and roommate, you dealt with my continual inability to wipe down a counter after making food but more importantly you introduced me to a great group of people who are now friends. I love you all so much and thank you dearly for years of support.

TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGEMENTS.....	iv
TABLE OF CONTENTS.....	vi
LIST OF FIGURES	viii
INTRODUCTION	1
Globalization.....	3
Wood in a Globalized World.....	7
CHAPTER 1: THEORETICAL FRAMEWORK.....	10
World-Systems.....	13
Capital Accumulation	16
Core-Periphery Relations and Global Division of Labor	18
Inter-State System.....	22
Cyclical Rhythms.....	27
Secular Trends	30
Commodity Chains	34
CHAPTER 2: INPUTS	42
Logging the Forests of the Periphery/Semi-Periphery	43
Certification	49
Buyer Power.....	51
Conclusion	53

CHAPTER 3: INTERMEDIATE PROCESSES	55
Primary and Secondary Manufacturing	57
China as a Checkpoint	59
Buyer Driven Timber Commodity Chains.....	63
Conclusion	65
CHAPTER 4: FINISHED GOODS	68
Paper and Paperboard	69
Retail.....	72
Externalizing the Costs of Core Consumption.....	75
CONCLUSION.....	79
REFERENCES	84

LIST OF FIGURES

Figure 2.1 General Timber Commodity Chain

Figure 3.1 Top Five Industrial Roundwood Producers of 1971

Figure 3.2 Top Five Industrial Roundwood Producers of 2011

Figure 3.3 Global Levels of Deforestation by Region

Figure 4.1 Top Two Producers of Plywood, Fiberboard, and Wood-based Panels of 2011

Figure 5.1 Top Five Paper & Paperboard Importers of 2011

INTRODUCTION

Timber and humans have historically been connected and they will continue to be. For over five thousand years of human history, wood has been a vital resource in the reproduction of social life (Chew 2012). From the earliest interactions in which people used wood as a source of heat and energy for cooking, or transformed timber into structures for shelter, trees were important to the human community. Over the course of thousands of years, the various ways humans have interacted with the forests have changed based on situational forces and along dominant ideological lines. Perceptions of timber as a resource both for industrial advancement and survival have and will continue to change: “while it has at times been a refuge, a home and a source of raw materials, it has also been feared and attacked as an obstacle to development and welfare” (Mather 1990:2). The industrial value of wood as a resource for production is understood and therefore millions of products used throughout the globe on a daily basis require wood as a primary material. The list of products which require wood in their production includes the obvious goods such as furniture, books, and packaging, but it also includes items such as diapers, hospital gowns, and even paint solvents (Dauvergne and Lister 2011).

The use of wood in the production of consumable goods is only one side of the discussion. On the other side, the environmental necessity of having standing trees has also been studied extensively and increasing environmental concerns around consequences of deforestation have become common public and political discourse. For many, the industrial usefulness of forest resources has resulted in short-sighted,

misguided exploitation of our global forests; "...the area of forest cover and the internal integrity of forest ecosystems are being lost as the result of excessive human demands and short-sighted use of the landscape" (Salim and Ullsten 1999:2). Concerns for the current situation of the global forest landscape are not off base as data show that nearly half of the original forest lands of the globe have been destroyed or converted to agricultural land, plantation forests, or the space has been used for other civilization based needs (Dauvergne and Lister 2011; Mather 1990). Much of this continued global deforestation has been the result of continual population growth and other human needs that led to the subsequent dependence on more and more forest resources. Our forests and our interaction with them are topics of importance and worthy of serious discussion.

The fact of the matter is that as a species, humans depend on the forests both to mitigate the negative environmental effects of development and industrialization, as well as to provide a range of necessary goods: "forests play an essential role in mitigating climate change and providing products and ecosystem services that are essential to the prosperity of humankind" (Graziano da Silva 2012:V). Also, if our history as a species provides any insight into the future of our interaction with our forests, it is clear that we will continue to interact with our forests and harvest the trees they produce: "across time and regardless of culture and civilization, wood consumption and deforestation are as old as the hills!" (Chew 2012). The question then becomes how and in what ways do we and will we continue to use the wood we harvest from our global forests, and what will be the environmental consequences of such actions?

The increasingly globalized way in which economic and socio-political life is currently organized lends itself useful in that it provides a framework through which to better understand human interaction with timber on a global scale. Where wood products were once produced in close geographic proximity to where the trees used in the process grew, a combination of technological advances have transformed transportation and the increased ease of communication have made products from various timber species from all over the globe readily available virtually everywhere. Specific characteristics make certain types of wood preferable for different products. However, prior to a set of fairly recent structural changes which transformed global commerce, rapid access to such a diverse collection of wood species, and ultimately products, was impossible.

Globalization

The process of globalization has dramatically altered the organization of social life over the past 500 years. The characteristics of globalization as a unique period of social transformation are debated amongst scholars and valid arguments have been made that the people of the world have been connected in some form or another for the past five thousand years (Frank and Gills 1993). While global connectedness can be dated back for millennia, there are characteristics of the current organization of social life that are unique to the past few decades. Robinson (2004) suggests that the current era of globalization is an epochal change; we have entered into and will continue within something entirely new in terms of the way social life is organized.

Globalization as a concept and the characteristics which define the term are contested with varying points of emphasis (Martell 2010). Definitions of globalization can be strictly focused on the economic, as the processes of globalization have increased the interconnectedness of firms and production processes around the world. But understanding can be more complex, taking into account other areas of social life, such as culture (Martell 2010). Giddens (1990:64) offers this definition to provide a more general understanding:

Globalization can...be defined as the intensification of world-wide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa. This is a dialectical process because such local happenings may move in an obverse direction from the very distanced relations that shape them. Local transformation is as much a part of globalization as the lateral extension of social connections across time and space.

While this definition may be a bit long winded, it speaks to connectedness of all areas of the globe and suggests the importance of understanding the local within the global.

Another important element of globalization that was originally put forth by scholar David Harvey (1999) is the idea of time and space being compressed. Technological advances which have eased once difficult or time consuming communications processes as well as transportation needs have, in a sense, reduced the distance and time between actors in a global system. This idea is mirrored by Robertson (1992:8), "Globalization as a concept refers both to the compression of the world and the intensification of the consciousness of the world as a whole..." No region of the globe is untouched by this compression of the world; every corner feels the impact of a more closely connected globe.

From an economic standpoint the processes of globalization have created possibilities for tremendous growth and prosperity based on the increasing ease of access to foreign markets and labor sources. However, the positive impacts of a globalized world have not been distributed evenly. As Martell (2010) explains, there are valid arguments that the processes of globalization have had uneven effects on the nations of the world, where some have gained and some have lost. While this is undoubtedly true, Robinson (2004) suggests that the power of nation states and national boundaries has diminished and given way to transnational economic power in which the major players are people or corporations with limited, if any, ties to a single nation state. In reality, a combination of both factors have created a global economy where transnational capital has increased power, yet nation states still exist and therefore their situation remains relevant. Globalization has indeed reduced the strength of national boundaries as commodities and ideas flow freer than ever around the world, yet those boundaries are still there and national governance does remain a factor in global commerce.

The ideological prevalence of neoliberalism has had a tremendous impact throughout the processes of globalization. Economic liberalization has been a dominant perspective over the past few decades and essential for continued capitalist expansion. Gellart (2007:247) addresses the importance and power of the neoliberal ideology, “In the past couple of decades, neoliberalism has spread throughout many nations and regions in the world. The extension of that economic and political perspective will continue to have an extensive and important impact on the global distribution of benefits and movements of capital, goods, and people.” The network which supports continued

economic expansion by incorporating all regions of the world is comprised of several actors (Smith 2008). Among those who share the perspective of liberalizing trade and international commerce include not only capitalists, but state institutions as well as international financial institutions (Smith 2008). The pervasiveness of neoliberalism as a dominant ideology is evidenced through its widespread acceptance; “The neoliberal globalization network has been successful in getting many people around the world to think that its vision for world order is the best, the most logical, inevitable, and natural” (Smith 2008:156). Unfortunately global economic prosperity has not, to this point, been the outcome. Instead what we have seen is an increase in the levels of global poverty and inequality. “There has been an increasing tendency towards growing unequalisation within and between countries and a stubborn incidence in the absolute levels of poverty, not just in poor countries” (Kaplinsky 2000:117). In addition, it is not necessarily those who resist incorporation into a global system that remain in desperate economic conditions. As (Kaplinsky (2000:118) suggests, if this were the case than it would seem clear that struggling nations should just adopt a neoliberal ideology and get on board the globalized train, so to speak. “However, the challenge is much more daunting than this, since the losers include many of those who have participated actively in the process of global integration.” Globalization affects all industries as connections to raw materials, production processes, and finished goods become more easily accessed. Of particular interest is the impact globalized processes have had on timber products throughout the globe.

Wood in a Globalized World

The global timber industry has seen dramatic transformation over the last fifty years based on the processes of globalization. The increasing connectivity of all regions of the world has allowed for capitalist expansion within the timber industry. This coupled with an exponentially increasing global population has heightened the demand for timber based products immensely (Dauvergne 2008). What we are now seeing is increasingly complex chains of production for a single timber commodity. This process of decentralizing operations has been possible due to the technological advances of the globalized era (Fröbel 1982). Many capitalists of the timber industry have transformed their organizations from locally based companies into multi-national or even transnational organizations which compile resources from all over the globe in the effort to produce a single product. Also these now globally produced timber products are sold throughout the world, Gellert (2007:247) explains, "...globalization currently entails not only the opening of markets but also a reconfiguration of production patterns joining disparate areas of the world." Increased accessibility to global markets and global production locations has supported the rise of transnational corporations who hold considerable power as they can produce or procure commodities at alarmingly low prices and therefore pass that savings on to their billions of customers (Robinson 2004).

Examples of such transnational timber industry giants include the world's largest furniture seller, IKEA, as well as the retail giant Wal-Mart. Their ability to reach such a vast number of consumers puts them in position of power within production chains as

they represent a potential connection to major markets for timber product producers and suppliers. As a result, what we see is a continual increase in the power these large multinational or even transnational companies have in the way the capitalist world-economy operates (Robinson 2004). In conjunction with increased corporate power, powerful state institutions have facilitated corporate expansion through endorsing the neoliberal model (Ciccantell 1999). So not only have technological advances been a significant contributor to the increased ease of access to global resources, state governing bodies which have authority over the terms of trade, have aided in the facilitation of a system which aims to break down national borders in the name of a free economic environment (Smith 2008).

Unfortunately access to resources and globalization of production has not led to a more even or just global timber industry. In fact, the negative consequences of increased consumption of timber, as well as relocation of timber product production, falls disproportionately on those areas of the globe which are economically marginalized. Christopher Chase-Dunn (1975:721) summarizes this in a beautifully simple way: “at the level of the world-system as a whole, uneven development remains the dominant trend.” The aim of this research is to address this unequal “development” through an analysis of the global timber industry. The pages that follow examine the various production processes that take place throughout the globe and they also examine the consequences of those various production processes. If we truly aim to understand inequality at a macro level we must step outside the confines of nation-state analysis as the era of globalization has rendered such analysis insufficient. Instead if we delve into the global system as a

whole, we can begin to form a more comprehensive understanding of a world-system which is divided into hierarchical zones. As the research will hopefully aim to suggest, these zones are unequal in both the financial returns they receive as well as the negative environmental and social consequences they must endure. I conclude this introduction with a fitting quotation that summarizes the general flow of value within timber production chains:

Generally, local communities and small logging companies receive a fraction of the final profit. By the time it goes for further manufacturing in a place like China, the semi-finished timber product may be selling per cubic meter for 10-20 times the price paid for the log. The finished product may then sell to consumers in North America, Europe, Japan, or Australia – even through a big retail store – at 10 times as much again per cubic meter (Dauvergne and Lister 2011:45).

CHAPTER 1: THEORETICAL FRAMEWORK

Like all major theoretical perspectives that aim to better provide a holistic understanding of the world we live in, world-systems analysis was built on earlier theoretical positions and critiques. Widely recognized as the founder of world-systems analysis, Immanuel Wallerstein along with his collaborator Terence K. Hopkins, acknowledge the significance of previous debates on the formation of world-systems analysis. In his text *The Modern World-System I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*, Wallerstein addresses the importance of the discussions which took place around the concepts of core – periphery nations and the subsequent rise of Dependency Theory (Wallerstein 1974a and 2004). The roots of world-system analysis can be traced to the late 1960's and early 1970's. As a necessary foundation to understanding the origins of world-systems analysis, as well as the way in which a world-system approach is relevant to an examination of global timber commodity chains, a historical overview of how world-systems analysis emerged as a response to the inadequacy of previous macro-level social theories, including Development Theory or Modernization Theory, is relevant. Wallerstein (1976a:345) states,

When a theory no longer seems to serve an adequate *social* function, scholars usually begin to question its intellectual credentials. As 'developmentalism' seemed less and less to explain the social reality through which we are living, various authors criticized one or another of its premises, groping towards an alternative framework of explanation, which I shall call a 'world-system perspective'

World-system analysis, from this point of view, was born out of necessity to better understand the world we live in through an attempt to construct a theory that stepped outside a Eurocentric lens. The initial resulting theoretical foundation was created by Andre Gunder Frank (1969) based on his studies in Latin America and was ultimately termed Dependency Theory.

Based on his research, which aimed to understand the world from a perspective outside Europe or the United States, Andre Gunder Frank (1996:22) offers a critique of development theory; “Development meant following step by step in our (American idealized) footsteps from tradition to modernity.” Highlighting the problematic nature of the euro-centricity of development theory are scholars Sing C. Chew and Robert A. Denmark (1996), in that they credit the widely accepted belief that development is a natural processes to the advantageous global power positions of those countries who were considered developed. Those countries that held global power collectively defined what the rest of the world should aspire to be and if other nations failed to meet this image, it was due to internal reasons (Chew 1992). As Hopkins points out in the introduction of his and Wallerstein’s text titled *World-systems Analysis: Theory and Methodology*, dependency theorists argued against this notion of natural stages of modernization or development (Hopkins and Wallerstein 1982: Koo 1984). Rather than the success of so called “developed” or “modern” nations being the result of their ability to advance through the stages of development, dependency theorists believe, “...the present well-being of advanced states was owing in no small measure to the advantageous relations they have had with less-developed states...” (Hopkins and Wallerstein 1982:10).

Hopkins (1982:10) continues by saying that "...not only the well-being of advanced states but, their very development as 'advanced' states had required and been dependent on their having exploitative relations with other parts of the world". Stated even more directly, "Modern 'underdevelopment' is not 'historical backwardness,' the result of late and insufficient capitalist development; it is the product of capitalist development, which is polarizing by nature" (Amin 1996:60).

Perhaps more important than these claims from dependency theorists, is the conclusion that such a theoretical position proposes. If indeed dependency theory is correct as a way of explaining the unequal social condition of various nation states, then it follows that an understanding of the world through the isolationist tendencies of development theory fails us. Expanding on this critique, Wallerstein (1974a:389), by explaining the restrictions of attempting to understand the world based on socially constructed "stages", argues that the so called "stages" in "development" are elements of a social structure which is established not "...*a priori* but *a posteriori*" and therefore allows us to predict only the past, not the future. Ultimately the world-system analysis claim is that if dependency theory provides an accurate understanding of the interconnectivity of the regions of the world, a "...single basic set of general economic processes underlies the world's uneven development" (Hopkins and Wallerstein 1982:10).

This final conclusion that Hopkins and Wallerstein discuss is essential to this investigation of world timber commodity chains and crucial to gaining an understanding of how entities involved within the industry operate. In their text, *Timber*, Paul

Dauvergne and Jane Lister (2011) shed some light on the current complexities of the global timber industry and the interactions between key players.

World-Systems

As a foundational definition to begin an understanding of world-systems as a theoretical framework, scholars Christopher Chase-Dunn and Peter Grimes (1995:388-389) offer this, “The modern world-system is understood as a set of nested and overlapping interaction networks that link all units of social analysis—individuals, households, neighborhoods, firms, towns and cities, classes and regions, national states and societies, transnational actors, international regions, and global structures.” In a sense, world-system analysis can be understood as a critique of traditional methods of social science inquiry. Wallerstein (2004:16) states “World-systems analysis meant first of all the substitution of a unit of analysis called the ‘world-system’ for the standard unit of analysis, which was the national state.” Understanding the world through an analysis of the countries of the world continued to grow more and more problematic as the interconnectivity between nation states and various regions of the world, not always clearly defined by national borders, became more apparent (Sing C. Chew and Denmark 1996). World-system theorists argue that in order to understand the complexity of interactions and the interconnectivity of our existence we must transcend disciplinary explanations of social phenomenon, “...it is necessary to remember that all the parts are also shaped by—and can only be adequately understood in relation to—their participation in the whole and their relation with other parts” (Andre Gunder Frank 1991:1). Sing

Chew (1992:4) reiterates this idea in his explanation of the methodology that Hopkins and Wallerstein present by stating, “Analysis of social change and economic transformation in the making of the modern world necessarily should consider the totality of social action, thus triangulating information from the ‘separate’ social sciences.” In addition world-systems analysis becomes a fitting methodological approach to better understand global timber industries and interactions based on the ideas that Wallerstein and Hopkins present. If the aim is to understand the impact large market retailers have on global timber production, harvesting, and distribution, examination through the lens of particular nations of the world is highly inadequate. To understand interactions between various corporations and regions of the world we need a historical foundation that explains the unequal economic conditions through which these entities interact. One scholar offers that world-system analysis is capable of providing this historical grounding, “A world-systems analysis attempts to explain the emergence of a capitalist world-economy in Europe in tandem with the incorporation of regions through domination and colonization, which in turn resulted in an international division of labor and an interstate system” (Mielants 2007:11).

A world-systems analysis approach to examining the interactions among participants within the global timber industry allows us to escape the restrictive and dated confines of previous theoretical perspectives. Wallerstein (2004:19) states, “World-systems analysts insist that rather than reduce complex situations to simpler variables, the effort should be to complexify and contextualize all so-called simpler variables in order to understand real social situations.” Instead of limiting our scope of understanding to

boundaries of particular nations, we can more clearly see the complexity of interactions through a set of basic components which make up the modern world-system.

The modern world-system which is the focal point of world-systems analysis is understood to have come into existence in sixteenth century (Wallerstein 1974a, 1979, 2004; Hopkins and Wallerstein 1982). At this point in time the world-system was limited, in terms of geographically relevant players, to parts of Europe and the United States and eventually spread to include all areas of the globe, as there is now hardly an area of the globe that has not been incorporated into the modern world-system in some form (Wallerstein 1974a, 1979, 2004). It is worth noting that the age of the world-system is debated among scholars. Two scholars that are most notably in opposition to dating the world-systems only back five-hundred years are Barry Gills and the late Andre Gunder Frank. In an introduction to a text in which they edited, the authors state, “Our thesis is that the contemporary world system has a history of at least 5,000 years” (Frank and Gills 1993). Frank and Gills (1993) make the argument that the characteristics that constitute a world-system are evident long before the 16th century. The argument then becomes that Wallerstein’s historical analysis is Eurocentric, and therefore, it inaccurately dates the origin of the world-system (Frank and Gills 1993).

Although this distinction bears noting and the significance of understanding the historical origins of such a major methodological approach to social knowledge is worthy of discussion, this difference is not relevant to the issues to be examined in this thesis. Both camps understand the components of world-systems in very similar ways, despite their disagreements on the date of origin, and these components are the essential pieces of

our analysis. Hopkins and Wallerstein (1982) note that at this point in the life span of world-system analysis, which was still in its early years, analysts began to speak in common vocabulary and some core concepts were identified. These concepts which will be elaborated on include: capital accumulation, division of labor, inter-state system, cyclical rhythms and secular trends. Along with these five major components of the world-system, understanding of the relationship between core-periphery as well as the concept of hegemony is essential and will be discussed in connection with division of labor and the state-system.

Capital Accumulation

Perhaps one of most telling statements speaking to the importance of capital accumulation as a necessary starting point for understanding the world-system comes from the late Andre Gunder Frank (1979a:43);

Any serious inquiry, then, into the differences in the origins of the historical experiences and subsequent development paths of the various regions of the New World must begin with an examination of the historical process of capital accumulation on a world scale, since that was the driving force of the various processes in the New World which were integral parts of the world process, and go on to consider how it was mediated through differing modes of production in the various parts of that World which corresponded to the differing – though related – roles these regions played in that worldwide process.

Stated quite directly, the modern world system does not exist without the quest for capital accumulation. Accumulation of capital is the so called life-blood of our current global economic system. The endless quest for continued economic growth and expansion in the form of amassing as much capital as possible is the driving force of the world as we

currently know it. Expansion in terms of continual economic growth requires expansion into new geographic areas as well. Given that production of commodities, which are traded or sold in the quest for increased accumulation, is dependent on the availability of natural resources, expansion into areas of the world that have untapped resources is inevitable. Sing C. Chew (1992:57) in his text, *Logs for Capital: The Timber Industry and Capitalist Enterprise in the Nineteenth Century*, discusses this trend of geographic expansion, “This expansionary trend has been exhibited in the development of the world-economy; through an incorporative process, new geographic areas and their associated labor processes are included and integrated into the system.”

While the sale or trade of goods and services are certainly a part of capitalism, it is the ceaseless quest for the accumulation of capital that is the defining characteristic of a capitalist system. As Wallerstein (1983, 2004) explains, capitalism does not simply mean the production of goods and services to be sold on the market for profit. People have been producing goods to be sold or traded at a profit for thousands of years, however what makes capitalism unique as a social and economic system is that it “...gives priority to the *endless* accumulation of capital” (Wallerstein 2004:24). His earlier work provides more depth to this understanding; “Whenever, over time, it was the accumulation of capital that regularly took priority over alternative objectives, we are justified in saying that we are observing a capitalist system in operation” (Wallerstein 1983:14). Irrefutably, this is the current state of the world-system in which we live. Everywhere you look, the quest for capital accumulation is evident and great measures are gone to continually expand the capital one possesses. An understanding that

ceaseless capital accumulation is the driving force behind our current world-system is important, but perhaps more important is the way in which such a process creates a hierarchical division of labor that constructs unequal accumulation processes based on a nation or regions position within the global hierarchy (Amin 1974).

Core-Periphery Relations and Global Division of Labor

Although division of labor is common terminology in nearly all disciplines of social sciences including anthropology, economics and sociology, Wallerstein and Hopkins do make some important comments on the context in which they use the concept. The authors state, “We thus use ‘division of labor’ to designate processes that are constitutive of, continually reproduce, and regularly alter the relational structures of production” (1982:45). In the context of world-systems analysis we must think of division of labor as a process that takes place on level of the world-system as a whole as well as within specific industries. Wallerstein (1974a, 1974b, 2004) explains that it is this division of labor that unifies the world-system more than anything else. Division of labor is an essential concept in order to understanding the interactions between various regions of the globe and Wallerstein and Hopkins (1982) argue that world-system analysis reveals patterns of production relations within the world-system which designates some areas as “core” and others as “periphery. It is imperative to acknowledge the relationship between core and periphery regions in order to understanding the modern-world system and the relationship of production within the global timber industry.

The concepts core and periphery or rather the core-periphery relationship was not originally presented by a world-systems theorist and credit for the creation of such concepts can be traced to the 1950's and the United Nations Economic Commission for Latin America (Hopkins and Wallerstein 1982). Although the concept was first used as a way of explaining the current conditions of various regions of the world, it was transformed into a historical understanding of the ways in which a system had been established to continue this pattern. Once again the work of Andre Gunder Frank becomes essential to developing the base of world-system analysis for he first shed light on the historically exploitive practices of the core regions of the world toward the periphery in his work "The Development of Underdevelopment" (Frank 1979b). Frank (1979b:5) explains, "...contemporary underdevelopment is in large part the historical product of past and continuing economic and other relations between the satellite underdeveloped and the now-developed metropolitan countries". The relationship is often an exploitive one which works to maintain the system of global capitalism,

Core capitalism is dependent on peripheral capitalism because exploitation of the periphery provides a good bit of the resources that core capital uses to pay higher incomes to core workers, and the reproduction of an underdeveloped periphery legitimates the national capital-labor alliances that provide relative harmony of class relation in the core and that undercut radical challenges to capitalist power (Christopher Chase-Dunn 1993:256).

This statement forces a focus away from traditionally understood theories of development through linear stages and refocuses on the interconnectivity and relationships between regions of the world. This reiterates the concept of division of labor within the world-

system as well as speaks to the extreme polarization of positions the various nation-states and regions of the world now find themselves (Amin 1994).

It is important to note that although the core-periphery relationship is always at play within the world-system, the processes of the core and processes of the periphery can shift and become relocated within the world-system but the relationship between core-periphery is constant (Hopkins and Wallerstein 1982). This interdependent relationship between core-periphery is summarized more succinctly in Wallersteins (2004:17) later work, “In world-systems analysis, core-periphery is a *relational* concept, not a pair of terms that are reified, that is, have separate essential meanings”.

The question then becomes what is it that creates and distinguishes core regions of the world-system from periphery regions? Wallerstein (1974a, 2004) argues that the division of labor is created and maintained as a result of differing production processes and these production processes are either core-like or periphery-like. The distinction between the types of processes and consequently where a region of the world is situated in the division of labor is directly related to the relative monopolization of the particular production processes they are involved in (Wallerstein 1974a, 1979, 2004). In summary, Wallerstein (2004:18) states, “The processes that were relatively monopolized were far more profitable than those that were free market”. The result then is that areas that have more monopolized production process create relatively more valuable products and therefore accumulate surplus value when trading the products of their production processes with regions that have multiple producers (Wallerstein 2004). Although this seems like a basic economic principle, it helps to explain the rise and continued

relationship between core and periphery regions of the world-system based on this concept of division of labor.

An important note must be added to the analysis of core-periphery and that is the contested use of semi-periphery. From their early work, Hopkins and Wallerstein (1982) discuss the debatable usage of semi-periphery but also grant the term some legitimacy by agreeing that there are regions of the world that are involved with both core-like production processes as well as periphery-like ones, therefore semi-periphery can be defined as those states, "... that enclose within their boundaries a more or less even mix of core-peripheral activities" (Arrighi and Drangel 1986). As the theoretical methodology of world-systems evolved, the prevalence of semi-periphery regions or states of the world became more obvious and therefore the concept has gained considerable recognition. Wallerstein (2004:29) explains that those states that exist in the semi-periphery are often in the most difficult positions to navigate. They, on one hand, feel pressure from core states or regions and on the other are simultaneously pressuring periphery states or regions, "...their major concern is to keep themselves from slipping into the periphery and to do what they can to advance themselves toward the core." What is most important to take away from this analysis of core-semi-periphery-periphery is the distinct division of labor within the varying production processes and the dependent situation such divisions of labor create for semi-periphery, to some extent, but mostly periphery states or regions of the world.

Another important point that was briefly touched on yet warrants restating, is that the position of various regions, in terms of core or periphery, is not forever determined,

these positions are fluid. Wallerstein (2004:29) states, “Since, as we have seen, quasi-monopolies exhaust themselves, what is a core-like process today will become a peripheral process tomorrow.” He continues, “The economic history of the modern world-system is replete with the shift, or downgrading, of products, first to semi peripheral countries, and then to peripheral ones.” The same can be seen from the other direction, regions or states of the world can climb to core status as the global market for specific production processes change. What will not change however is the continued existence of both core and periphery states of the world because of the structural existence of the division of labor and the relative relationship between core and periphery; one cannot exist without the other.

Inter-State System

The second of the four major components of the modern world-system is the state-system. While world-systems analysis argues against the nation state as the focal point of analysis, to deny the significance of states within the world-system would be a tremendous fault. Wallerstein (2004) explains that the rise of the modern state is largely tied to the concept of sovereignty which, in essence, means total autonomous state power. With the creation of sovereign states, which Wallerstein (1974a, 1979, 2004) argues were a creation of the modern world-system, you now have alleged autonomous states working within a larger interstate system where they are constantly engaged in interaction among other autonomous states. The importance of these interactions must be identified and examined in an attempt at understanding the ways in which a world capitalist system

operates. Wallerstein (2004:46) provides the ways in which sovereign states assert authority over capitalist operations:

(1) States set the rules on whether and under what conditions commodities, capital, and labor may cross their borders. (2) They create the rules concerning property rights within their states. (3) They set rules concerning employment and the compensation of employees. (4) They decide which costs firms must internalize. (5) They decide what kinds of economic processes may be monopolized, and to what degree. (6) They tax. (7) Finally, when firms based within their boundaries may be affected, they can use their power externally to affect the decisions of other states

With these powers in place in many of the states that make up the modern world-system, we can begin to see the complexities at play and better understand the impact state structures have on the world-system.

An essential element of the world capitalist system is the accumulation of capital (Fröbel 1982; Gills and Frank 2002). This concept is so central to understanding capitalism and the capitalist world-system that Gills and Frank (2002:151) state, “The process of capital accumulation is the motor force of (world-system) history”. Frank and Gills have a view that capital accumulation has been ongoing for the last 5,000 years of world history (Frank and Gills 1993). Accumulation has been the focus of sociological interest for many years and integral to the work of Karl Marx among several other sociologists. As Wallerstein (2004:47) points out, the accumulation of capital is not possible without the concept of personal property and therefore creation and protection of property rights, “There is no way to accumulate capital endlessly unless one can hold on to the capital that one has accumulated”. These rights are established and maintained by systems of authority which are states, rendering the state system critical to understanding

capitalist exchange in the world-system. Given that capitalist enterprises transcend state boundaries, it becomes obvious that those firms involved within the world-system are affected by state governance of not only the state in which their headquarters are geographically located, but also the many states in which they conduct business. While all states seek legitimacy and strength within their territorial boundaries, they also seek power within the world-system. With this said, we are well aware that state power is not evenly distributed throughout the world-system and by examining the concept of hegemony we can see the ways in which that unequal distribution of power affects the capitalist world-system.

An integral part of conceptualizing the state-system within the collective global capitalist world-system requires a comprehension of the complex concept hegemony. In their work from the early eighties, Wallerstein and Hopkins (1982:52) explain hegemony as "... the relative superiority of one core power over other core powers such that no second power or combination of second powers seems capable of challenging effectively the economic supremacy of the strongest power." Another scholar, William I Robinson (2004:101) in his text, *A Theory of Global Capitalism*, adds to the definition by adding that a hegemon is, "...a dominant capitalist power that has the resources and the structural position to organize world capitalism as a whole and impose the rules, regulatory environment, and so on, that allow the system to function." While Wallerstein and Hopkins provide the general idea of what it means to be a hegemonic power, Robinson contributes to our understanding of the concept by expanding on the importance and implications of such power.

The definitions presented by Hopkins and Wallerstein as well as Robinson are critical in that they speak to the control and power that accompanies a position of hegemony; however they speak primarily in terms of domination. A brief look at the work of Antonio Gramsci's conceptualization of hegemony sheds light on the complexity to which hegemony becomes culturally and socially internalized. Gramsci scholar Joseph V. Femia (1981:24), in his work *Gramsci's Political Thought*, explains; "...Gramsci states that the supremacy of a social group or class manifests itself in two different ways: 'domination', or coercion, and 'intellectual and moral leadership.'" The second part of this two part process is extremely important as is elaborated on: "Social control, in other words, takes two basic forms: besides influencing behavior and choice externally, through rewards and punishments, it also affects them internally, by molding personal convictions into a replica of prevailing norms" (Femia 1981:24). Ultimately what Gramsci is getting at is that the supremacy of one group is enacted but equally important, it is internalized by subordinate groups. Dominance thus becomes maintained through consent as much as through coercion. Consent is achieved through the ideological transformation of less dominant groups or areas of the world through the adoption of the economic, cultural, political and institutional values of the hegemonic group(s) (Gramsci 1995). Both consent and coercion are responsible for the creation and maintenance of a hegemonic power at any time.

Wallerstein (1974a, 1979, and 2004) believes that we have seen three powers achieve hegemony in the history of the world-system. While an elaboration on the hegemonic powers that have existed is not necessary for this study, it is important to note

that hegemony exists within the world-system and that a constant battle to achieve hegemony is taking place, “Hence, hegemony is crucial, repeated, and always relatively brief” (Wallerstein 2004:59).

While achieving hegemonic power is seldom achieved, the struggle for power within the world-system is continual and states find themselves spread widely along the spectrum of possible positions. As Wallerstein (2004) makes clear, the power of a state is not only understood by its ability to exercise authority internally, but also by its ability to hold its own within the competitive environment of the world-system. The relative power of a state within the world-system is critical to explore and it is at this point that we will see the connection between the division of labor within the world-system and the hierarchical power structure of the state system.

“All states are theoretically sovereign, but strong states find it far easier to ‘intervene’ in the internal affairs of weaker states than vice versa, and everyone is aware of that” (Wallerstein 2004). This statement by Wallerstein explains the importance of a state’s position within the world-system. He continues by stating, “Strong states relate to weak states by pressuring them to keep their frontiers open to those flows of factors of production that are useful and profitable to firms located in the strong states, while resisting any demands for reciprocity in this regard” (Wallerstein 2004:55). As evidence of this claim, Wallerstein (1974a, 1979, 2004) describes how core state powers, including the United States and members of the European Union, continually demand that states throughout the rest of the world open their borders to the flow of manufacturing and services provided by capitalist firms from their respective states. At the same time, these

core powers consistently oppose the opening of their own territories to imports from periphery zones that compete with their domestic products. There are several other ways in which stronger state actors within the world-system control the actions of weaker states including: the pressure to install and maintain leaders which strong states find acceptable while also pressuring weak states in joining them to pressure other weak states to conform to the needs of strong states, pressuring weak states to accept and adopt stronger states cultural practices, and also imposing pressure for weak states to follow the strong states lead in international affairs (Wallerstein 2004). The power those stronger states have in manipulating and controlling the weaker states of the world-system will be of importance as we examine the interactions among various agents involved in timber industries. In the constant quest to climb the global ladder towards hegemony and core status, states navigate the economic landscape in various ways. As a result of the shifting within the global system, rhythms become apparent as a natural consequence. These rhythms are the next topic to be discussed.

Cyclical Rhythms

The third major component of world-systems analysis is the recognition that the economy of world-system operates in cyclical rhythms. Given that the world-system is a capitalist system, Hopkins and Wallerstein (1982:53) stated, “That capitalism operates in cyclical rhythms is perhaps one of the least contested generalizations in the social sciences.” These cyclical rhythms are seen as existing in both short-term as well as longer-term cycles. Hopkins and Wallerstein (1982) identify short term cycles as the

process of adjustment that takes place between supply and demand where as longer-term cycles, lasting from 40 to 50 years more dramatically alter the power relations within the world-system and account for the change in core-periphery interactions. The emphasis of this section will be on these longer-term cyclical rhythms because of their importance in understanding more dramatic transformation within the world-system.

The work of economist N. D. Kondratieff is responsible for the identification and consequently the naming of such longer-term cycles as Kondratieff cycles (Hopkins and Wallerstein 1982). Kondratieff in 1935 wrote, “There is, indeed, reason to assume the existence of long waves of an average length of about 50 years in the capital- istic economy” (Kondratieff and Stolper 1935:105). According to Wallerstein (2004) these longer-term cycles within the capitalist world-system are a direct display of the creation and eventual dissolving of quasi-monopolies. “The normal evolution of the leading industries—the slow dissolution of the quasi-monopolies—is what accounts for the cyclical rhythms of the world-economy” (Wallerstein 2004:30). The general process that takes place according to Wallerstein looks something like this,

A major leading industry will be a major stimulus to the expansion of the world-economy and will result in considerable accumulation of capital. But it also normally leads to more extensive employment in the world-economy, higher wage-levels, and a general sense of relative prosperity. As more and more firms enter the market of the erstwhile quasi-monopoly, there will be 'overproduction' (that is too much production for the real effective demand at a given time) and consequently increased price competition (because of the demand squeeze), thus lowering the rates of profit. At some point, buildup of unsold products results, and consequently a slowdown in further production (Wallerstein 2004:30)

When this takes place within the world-economy, we see what is considered a period of stagnation or recession. Cyclical rhythm of expansion and eventual stagnation can be understood in terms of phases. Whereas expansion represents an A-phase and stagnation represents a B-phase, these phases understood as a cycle represent a Kondratieff cycle (Wallerstein 2004). Kondratieff discovered what he considered to be four empirical patterns that exist within these long-term cycles. The first pattern being that during periods of stagnation or recession there appears to be significant technological inventions which are eventually employed in the next expansion phase. The second observable pattern according to Kondratieff was that during periods of stagnation there appears to be an increase in social discontent and radical changes of society. The third pattern was that a decrease in agriculture accompanied the downward phase of the cycle. The last of Kondratieff's empirical patterns is that there are cycles of upswing, crisis, and depression existing within the larger cycles (Tarascio 1988). These patterns within the Kondratieff cycles perhaps shed light on the contradictions and frequent opposition of society and ecology with capitalism.

Kondratieff cycles are important to note because they represent the unsustainable nature of a capitalist system. As Kondratieff's (1935) research indicates, the continual increase in the accumulation of capital is eventually impossible as it requires the continual increase of production to the point of surplus and an imbalance between supply and demand. Once this point is reached, "Producers seek to reduce costs in order to maintain their share of the world market" (Wallerstein 2004:30). and a major process used to reduce cost is the relocation of production to areas of the world-system that have

historically lower wages, which is usually the peripheral and occasionally the semi-peripheral countries. This process of production relocation ultimately fails to solve the capitalist problem of maintaining infinite capital accumulation because as wage labor costs decrease the purchasing power of consumers decreases along with reducing their wages; “Effective demand which was at first lacking because of overproduction now becomes lacking because of a reduction in earnings of the consumers” (Wallerstein 2004:30). Clearly this does not deter capitalists and continual attempts to avoid periods of stagnation result in secular trends (Hopkins and Wallerstein 1982; Wallerstein 2004).

Secular Trends

World-system analysis argues that there are secular trends within the world-system that are unlike the cyclical rhythms based on their long term nature and structural inevitability in relationship to our modern capitalist world-system. As these trends continue to remain present within the world system, they can be understood as the historical unfolding or development of the modern world-system (Hopkins and Wallerstein 1982). Scholars within world-system analysis believe that there are at least three secular trends which are generally agreed upon which include: Expansion, Commodification, and Mechanization.

The concept of expansion is historically linked to capitalism and nearly synonymous with the idea of infinite capital accumulation. In order for capitalists to maintain capital accumulation they must expand, not only geographically in terms of incorporating more areas of the globe into the world-system, but also internally which

Hopkins and Wallerstein (1982) further explain as the process of involving areas already within the larger boundaries of the entire world-system into the economic process of the system. In their work that is now 30 years old, Hopkins and Wallerstein (1982:56) were already seeing the limits of that expansion, “Whereas ‘outer’ expansion has undoubtedly reached its limits, it may be that ‘inner’ expansion has still some small distance to go.” Now 30 years later, it is hard to find any region or process of economic production that has not in some way been incorporated into the capitalist world-system, leading many scholars to believe that the “small distance to go”, which was touched on three decades ago, has been traveled.

A second major secular trend evident within the capitalist world-system is the increased commodification of our world. Hopkins and Wallerstein (1982:56) identify commodification as “The transformation of land, labor, and natural resources from phenomena utilized and distributed in terms of social conventions of limited flexibility into commodities available for ‘purchase’ on a ‘market’...” More simply stated, commodification is “the assignment of a market ‘price’ to an ever expanding percentage of the products of human activity” (Grimes 2000:388-389). While Hopkins and Wallerstein (1982) provide more detail in the process of commodification unfolding through their definition, scholar Peter Grimes (2000) makes an important point to state that the process is “ever expanding” which correctly reflects the idea that commodification is a secular trend and inherent in the structure of capitalism. While Hopkins and Wallerstein (1982) observe that the two primary phenomena which have become commodified have been land and labor, what perhaps is more interesting is that

less tangible phenomena have also been commodified including, time, risk, and even “natural beauty”. We see the constant adaptation to commodify wider ranges of social phenomena because without continued commodification stagnation eventually occurs and therefore continued accumulation ceases. As we have previously examined, this is not acceptable within a competitive capitalist system.

The last of the three major secular trends which exists within a capitalist world-system is mechanization. The origins of increased mechanization are traced to the “industrial revolution” and the “scientific-technological revolution” (Hopkins and Wallerstein 1982). Mechanization can be understood as, “...the basic expansion of human energy such that for a given ‘input’, output was multiplied” (Hopkins and Wallerstein 1982). Where the process of mechanization is apparent in certain aspects of our lives based on the continued advances of technology, world-systems analysts generally agree that mechanization is not limited to specific industries but rather it takes place in all productive processes. Logically this seems true; by diminishing wage labor or human labor costs and increasing production or “output”, capitalists can increase profits and therefore continue their quest for increased capital accumulation.

Where cyclical rhythms consist of repeated periods of expansion and then stagnation, these secular trends are linear by nature. As the previous paragraphs attempted to illustrate, secular trends are structurally determined within a capitalist world-economy (Hopkins and Wallerstein 1982). Along with being structurally determined, these secular trends are continually reaching unsustainable levels or “asymptotes” (Hopkins and Wallerstein 1982; Wallerstein 2004). Wallerstein (2004:76)

provides this, “These secular trends inevitably approach asymptotes that aggravate considerably the internal contradictions of the system: that is, the system encounters problems it can no longer resolve, and this causes what we may call systemic crisis”. The internal contradictions of the modern capitalist world-system can be understood as a model of infinite growth (capital accumulation) in a world of finite resources. What we are left with is slight modifications to the system which results in cyclical rhythms however the secular trends of expansion, commodification, and mechanization continue on their paths to unsustainable levels. Based on this continue process of exploitative interaction with natural resources, we have historically seen periods of social system crisis which demands serious reorganization or restructuring of social life which then allows for environmental regeneration to take place (Chew 2001 and 2006). In concluding this section, an excerpt from Wallerstein (2004:87) is fitting:

...just because a system is in crisis does not mean that it does not continue to try to function in its accustomed ways. It does. Insofar as the accustomed ways have resulted in secular trends that are approaching asymptotes, continuing in customary ways will probably be the mode of behavior or most people. It makes sense in the very short run. The customary ways are the familiar ways, and they promise short-run benefits, or they would not be the customary ways. Precisely because the fluctuations are wilder, most people will seek their security by persisting in their behavior.

The modern world-system is the major theoretical perspective through which an attempt at better understanding the global timber industry is carried out in this research. By incorporating the four major components of that system throughout the study, the aim is to increase the knowledge around the impact that specific large retailers have on timber production, harvesting, marketing, distribution, sales, and consumption. An appropriate

unit of analysis for such a project is found within the literature of world-systems and that unit is called a commodity chain.

Commodity Chains

Important to world-systems analysis, as a theoretical unit of analysis through which to better understand the political economy as well as social reality, is the concept of commodity chain or value chain. The original commodity chains terminology was used in a journal article published in 1977 by Hopkins and Wallerstein (Bair 2005). A commodity chain was defined in the context of a world-system and Hopkins and Wallerstein (1977:128) provided this definition;

What we mean by such chains is the following: take an ultimate consumable item and trace back the set of inputs that culminated in this item – the prior transformations, the raw materials, the transportation mechanisms, the labor input into each of the material processes, the food inputs into the labor. This linked set of processes we call a commodity chain.

As Wallerstein explains, the necessity of commodity chain as a concept and unit of analysis only comes to be within the current (16th century and later) modern world-system. In pre-modern markets, “it is probably that everything or almost everything, that was sold in that market was produced nearby, and that the sellers were in many cases, perhaps most cases, the producers” (Wallerstein 2000:1). By looking at the countless interactions that take place in any given commodity production process, we begin to see the intricacy and complexity of a global system that transcends national boundaries by incorporating multiple regions of the world. Stringer (2006:705) adds to the

conversation by stating, “An examination of emerging input–output structures can reveal how products, services and resources are linked together in value-adding sequence, and how economic action and decision making is embedded in such chains.” Stinger (2006) goes on to state that value is often added at higher levels the closer the chain gets to the core, demonstrating the division of labor within the world-system.

The multitude of connections between various players within a given chain works to showcase the structure of a system that above all else attempts to accumulate capital while maintaining the capitalist system in general. An example of a commodity chain is given by Hopkins and Wallerstein (1977), “If the ultimate consumable were, say, clothing, the chain would include the manufacture of the cloth, the yarn, etc., the cultivation of the cotton, as well as the reproduction of the labor forces involved in these productive activities” (Hopkins and Wallerstein 1977:128). Commodity chain as a concept is simplified and condensed in a later article titled “Commodity Chains in the World-economy prior to 1800” when Hopkins and Wallerstein (1986:159) explain commodity chain as “a network of labor and production processes whose end result is a finished commodity”.

This concept was reproduced in the book *Commodity Chains and Global Capitalism*, and one of its editors is Gary Gereffi who is responsible for the creation of the Global Commodity Chains (GCC) framework. Gereffi (1999:1) offers his definition as well; “A commodity chain refers to the whole range of activities involved in the design, production, and marketing of a product”. While this study uses the terminology of commodity chain, scholars throughout world-systems and commodity chains analysis

use varying terms to discuss the complexity of interactions within the global capitalist economy. A few of the differences will be discussed, but it is important to note that the general conceptual ideas are very similar;

Within value-chain analysis there is a proliferation of overlapping names and concepts. Different researchers use different terminology to discuss very similar ideas. Global commodity chains, value chains, value systems, production networks and value networks are just some of the terms used by researchers whose common ground is much greater than their divisions (Gereffi et al. 2001:2).

A commodity chains analysis approach to understanding the complexity of specific industries within the world-system has a historical point of origin, yet it has evolved and differences in application of the concept within the major framework have surfaced. Jennifer Bair (2005:154) works to provide an understanding of these distinctions that have since been utilized in research. While Bair (2005:153) explains that both global commodity chains (GCC) and global value chains (GVC) were born out of the "...original world-systems-inspired tradition of commodity chain research..." there are significant distinctions to acknowledge between Hopkins and Wallerstein's use of commodity chains, and Gary Gereffi's framework of GCC or GVC. The commodity chain as the focal point of analysis is considered a global commodity chains (GCC's) approach (Gereffi et al. 1994). These scholars argue that as the global economy has undergone some significant changes over the past few decades, a form of analysis that aims to understand the diverse and ever changing connections between various actors throughout the world is necessary; "A GCC consists of sets of interorganizational networks clustered around one commodity or product, linking households, enterprises,

and states to one another within the world-economy” (Gereffi et al. 1994:2). Whereas commodity chains are a useful tool within world-systems analysis, GCC analysis is a framework in itself.

Many of the differences between world-system’s and GCC analysis are based on the contextual usage of commodity chains as a form of analysis and not necessarily differences of definition. GCC researchers aim to discover the ways in which participation in commodity chains can support developing countries quest for industrial upgrading (Bair 2005). On the other hand, as Bair (2005:156) states, “...world-systems theorists are most fundamentally interested in how commodity chains structure and reproduce a stratified and hierarchical world-system.” The distinction is more so one of application rather than definition. Both schools of thought conceive of commodity chains in a similar form, but their application of commodity chains as a form of analysis is different based on their respective quests for specific social understanding and knowledge creation. Being that this study examines timber commodity chains within the world-system, the focus of such analysis falls more in line with that of Wallerstein and other world-system theorists in an attempt to showcase the ways in which commodity chains maintain a global capitalist economy through the reproduction of core-periphery relations and overall facilitation of a world-system.

A look at the common terminology used to describe various “links” of the chain so to speak is important because it represents the distinctly different processes that make up the larger whole. These various points along the chain are what commodity chain analysts call “boxes” or “nodes” (Gereffi et al. 1994; Hopkins and Wallerstein 1982;

Hunter 2005). Each box or node refers to a specific process within a global commodity chain,

Each successive node within a commodity chain involves the acquisition and/or organization of inputs (e.g., raw materials or semifinished products), labor power (and its provisioning), transportation, distribution (via markets or transfers), and consumption (Gerreffi et al. 1994:2)

These nodes or boxes are extremely important in and of themselves because they showcase the processes of production independently, but perhaps more important is the process of exchange between different nodes as it speaks to the unequal exchange that takes place within the global system. The start of that process is at the point of extraction of raw materials. Stephen Bunker (1984) speaks to the importance of understanding this part of any given commodity chain and argues that it is frequently given inadequate attention. Focusing at the starting point which is extraction of a natural resource, “...provides us with new insights into contemporary globalization, the rise of a ‘new international division of labor’, and economic restructuring, as well as better understanding of concomitant unequal processes of ecological change and degradation” (Ciccantell and Smith 2009:362).

Based on the nature of this study being directly tied to the extraction or harvesting of a raw material, it seem imperative that we consider the work of Bunker, Ciccantell and Smith and dedicate a thorough analysis to this part in the commodity chain for it is here, at the beginning of the chain, that the connections between a commodity chains analysis and the global division of labor, which is a critical element of world-systems theory, begins. As Hopkins and Wallerstein (1994a:17) point out, “The major direction of

interzonal movement along the commodity chains is from a peripheral product to a core product.” In the case of timber, that periphery product is raw timber and the core product is the finished industrialized commodity that raw timber created. In other words, within a given commodity chain there are core-like processes taking place as well as periphery-like processes taking place and the core-like processes are typically more profitable. The control that such core companies have within a commodity chain as well as the larger world-system is touched on; Gereffi states, “The lead firms are predominantly located in developed countries and include not only multinational manufacturers, but also large retailers and brand-name firms. They play a significant role in specifying what is to be produced, how, and by whom” (Gereffi et al. 2001:1). This sense of control over production, based on a privileged place within the world-system, will be a theme throughout the study. Based on the quest for endless capital accumulation within the global capitalist system, it is not difficult to see that manipulating or exploitive practices are carried out from those in control of core like processes as a means to maintain dominance within the world-system.

A commodity chains approach to understanding the connection between large retailers and periphery/semi-periphery timber suppliers is a fitting framework to better understand the interconnectivity and inequality of the entire world-system. Based on the goals and objective of this research, the term commodity chain is used in agreement with the objectives of traditional world-systems study and therefore the work of Hopkins and Wallerstein are seen throughout. With this said, the contributions of more contemporary commodity chains theorists like Gary Gerrefi, are important and elements of their work

will be incorporated as part of the framework for analyzing global timber commodity chains. Connections and interactions between various players throughout the world economy create intricate chains as the production processes unfolds (Wallerstein 2000). Often these interactions and exchanges tend to favor those core regions of the world leaving the periphery exploited in a process that maintains the status-quo of the world-system and the components that make up that system.

As evidenced through previous studies, commodity chains both work within the world-system as well as aid in the reproduction of that system. They are adaptive and fluid as they navigate within a world economy to create finished goods (Özveren 2000; Pelizzon 2000). Through the work of past studies by commodity chain theorists we begin to see the production processes that are carried out in creation of finished timber products and specifically furniture which illuminate elements of the world-system reminding us of the structural characteristics of a system that is truly global. While constantly in the context of the greater world-system, the major portion of this study will be broken down into chapters which each describe a particular link or set of links within the commodity chain. From raw materials, which will be discussed in terms of inputs, to the wide range of processes that take place between raw material extraction to the finished good, understood as intermediate processes, to the final stage, that of finished goods we can see intricate processes unfolding.

As a general model of the way wood resources are extracted, transformed into products and ultimately sold on the global market, the following figure is provided as a visual representation of a typical global timber commodity chain (Figure 2.1)

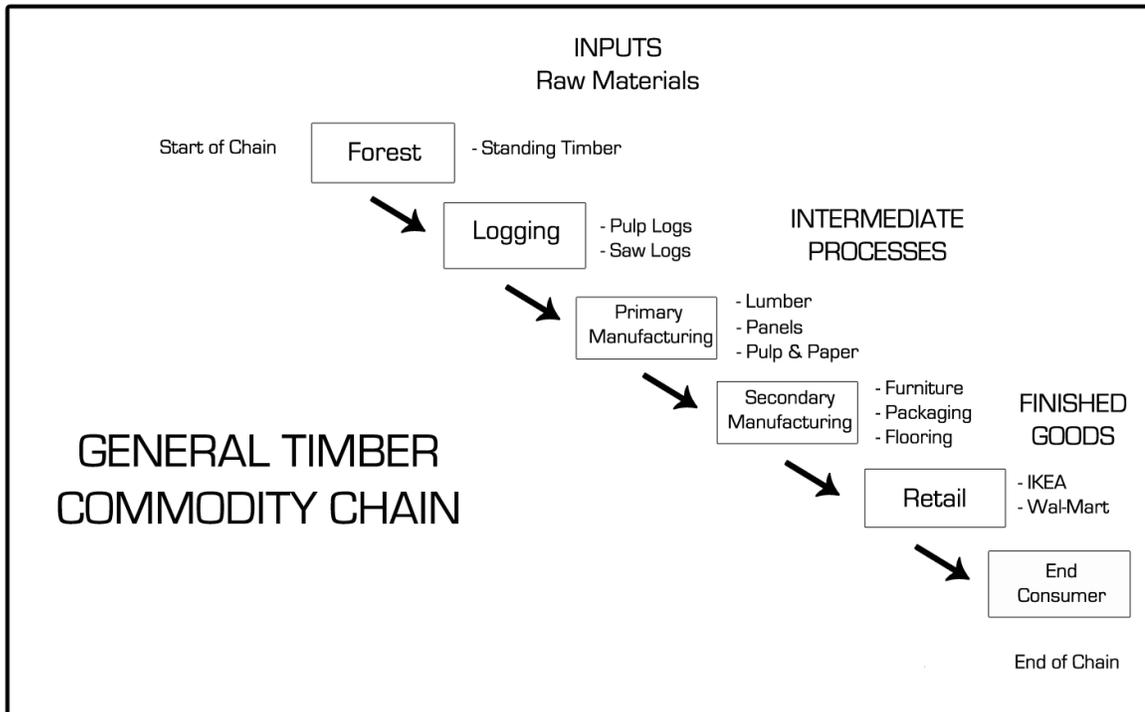


Figure 2.1 Original figure adapted from Dauvergne and Lister 2011.

The various points along the chain are represented by the boxes and are understood as either boxes, or nodes. The general flow is from standing forests to the eventual consumption of the finished good. The figure is intended to be a useful reference for better understanding commodity chains as a concept, as well as a visual model of the basic flow of this research.

CHAPTER 2: INPUTS

The fundamental starting point for understanding commodity chains and their interconnection with a global economic world-system would naturally be at the point of extraction of natural resources as all consumable material goods are products of natural resources. As Bunker (1984) drew attention to, this link in analysis of commodity chains often gets neglected and in terms of timber based commodities it is an essential starting point. Extraction and handling of timber for various usages is by no means a new phenomenon; “For the last five thousand years of world history, wood has been utilized continuously in the reproduction of societies, empires, civilizations, and nation states” (Chew 2012:1). While the long historical connection between timber and societies is well documented and undeniable, numerous changes in global interaction have dramatically shifted and altered the way wood is extracted, transported, mixed with labor and ultimately consumed. Like many natural resources, access to world timber supplies has grown increasingly possible regardless of geographical location, especially for those regions of the globe that hold power (economically and politically), which is typically those core nations; “Every forest, no matter how remote, is part of a globalized world economy” (Dauvergne and Lister 2011:111). As Sing C Chew (2012) discusses, global population increase along with urbanization have demanded increased consumption of timber resulting in increased levels of deforestation over the past several decades. Based on the demand for more timber, the world-system attempts to reproduce itself through the process of expansion (Wallerstein 1974a, 1979, 2004), which means a trending

consumption of the semi-periphery and periphery regions of the world's natural resources, including timber, as a way of meeting the global demand (Dauvergne and Lister 2011).

Although production from the core regions of the world is clearly prominent within the system as a whole as is evidenced by the data from the Food and Agricultural Organizations of the United Nations (FAOSTAT), there is a shifting trend of sourcing timber products from periphery and semi-periphery regions of the world (Dauvergne and Lister 2011). This process is explored in terms of trends as well as some of the complex political interactions which impact production processes across the globe and particularly in marginalized regions.

Logging the Forests of the Periphery/Semi-Periphery

While the global production of timber still predominantly takes place in the core regions of the world (Dauvergne and Lister 2011), with the United States leading among all nations (FAOSTAT), changes in production trends are seen and continued production from the periphery/semi-periphery seem probable. The term industrial roundwood, includes “all industrial wood in the rough (sawlogs and veneer logs, pulpwood and other industrial roundwood) and, in the case of trade, chips and particles and wood residues” (Industrial Roundwood). Used as a measurement of the total timber production of a given nation of the global economy, industrial roundwood provides insight into the shifting trends in global timber production. According to the Food and Agriculture Organization of the United Nations, in 1971 the top five national producers of industrial

roundwood included the United States with, over 320 million cubic meters, USSR at just under 300 million, Canada just over 115 million, Sweden just over 61 million, and Japan right at 45 million (Figure 3.1) .

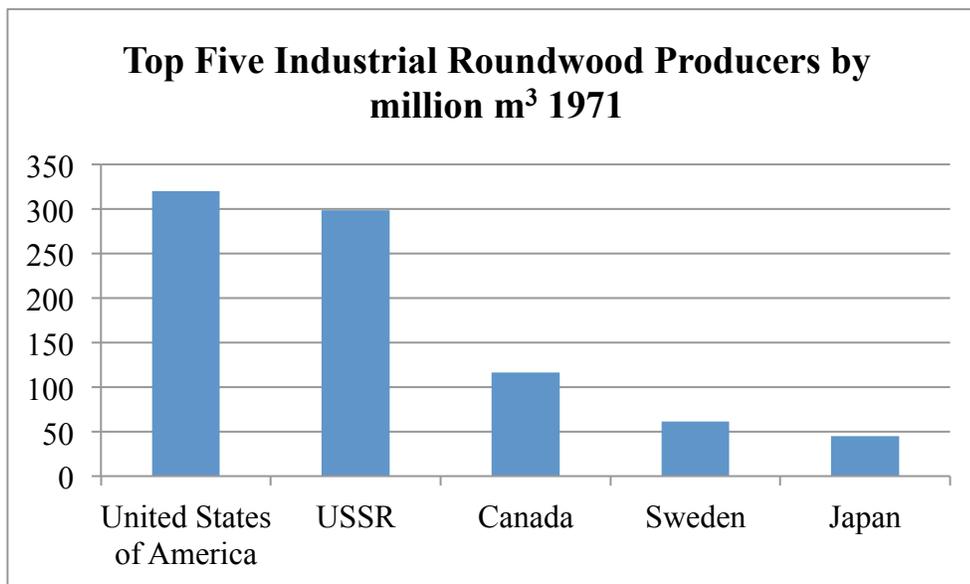


Figure 3.1 Data from FAOSTAT (<http://faostat3.fao.org/home/index.html#VISUALIZE>)

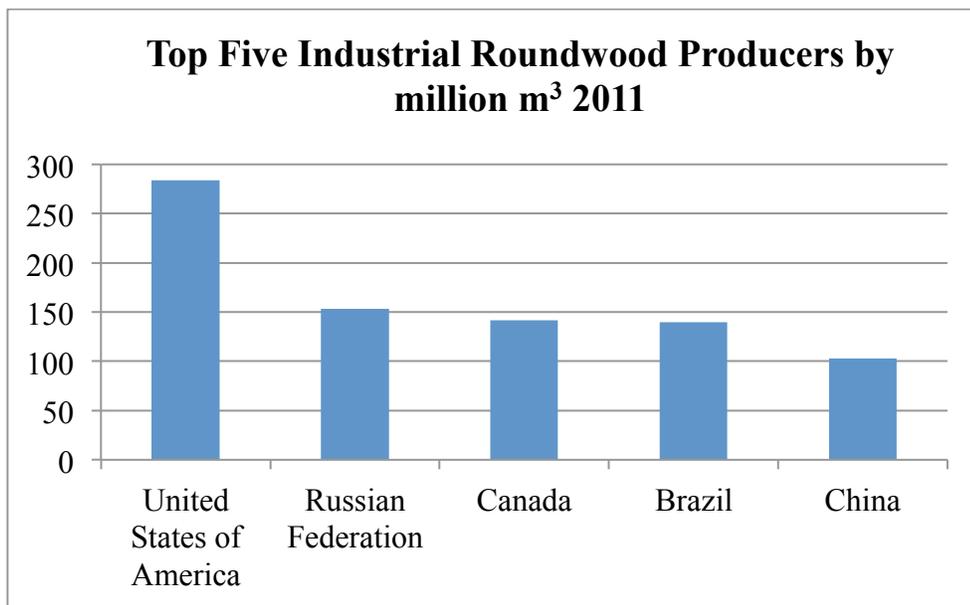


Figure 3.2 Data from FAOSTAT (<http://faostat3.fao.org/home/index.html#VISUALIZE>)

Over the course of the next 40 years we have seen considerable changes on a global scale and even among the top five industrial roundwood producers. As of 2011, the United States was still the leading producer of industrial roundwood at just over 280 million cubic meters with Russia (150 million), Canada (140 million), Brazil (140 million) and China (100 million) rounding out the top five (FAOSTAT) (Figure 3.2). Perhaps the most interesting points of examination, based on these transformations over the course of four decades, are both the decline in American roundwood production, and the rapid rise of Brazil as a major timber producing country.

The decrease in American industrial roundwood production is an interesting discovery because the decline in production actually took place during a period of dramatic increases in global consumption; “from the early 1960’s to 2007, global timber consumption increased by about 70 percent—from about 1 billion cubic meters to 1.7 billion cubic meters per year” (Dauvergne and Lister 2011:112). The question then becomes why, when the United States continually consumes a large share of the global timber products, has their national production of industrial roundwood decreased? While undoubtedly several factors influence production quantities, a world-system supported division of labor and continual peripheral exploitation is also a critical player (Frank 1979b). The quest for control over natural resources is nothing new within the world-system, as raw material rich nations have used their natural resources as a means of entering the global economy (Ciccantell 1999), but what is interesting about a decline in timber production from a core, even hegemonic, nation within the world-system is that the decline in production of industrial roundwood is not due to a lack of available

resources; “Unlike oil, we will not run out of timber” (Dauvergne and Lister 2011:1).

What has changed is a trend towards heightened ecological concern which has generated increasing momentum to challenge the political economy of forest interaction, especially in core nations. A way out of dealing with domestic environmental concerns is to acquire timber resources from elsewhere. The periphery and semi-periphery regions of the world make great alternative sources of timber given that timber lands are often controlled by local governments who are willing to exploit their domestic forests in an attempt to better their financial situation within the global economy (Repetto 1987). Timber is therefore a valuable resource within the global economy to which access is granted or sold at extremely low prices based on the nation’s dependent, peripheral location within the world-system.

The second of the interesting points which the data highlighted, was the meteoric rise of Brazil as a major player in the production of timber. Along with becoming one of the top five industrial roundwood producers of the world, Brazil’s production jumped by nearly 120 million cubic meters from 1971 to 2011 (FAOSTAT). The Brazilian Amazon acts as a microcosm of the way in which once periphery players in the global timber trade have emerged as significant actors. Unfortunately, the incredible increase of production from Brazil does not come without serious environmental and social costs (Bunker 1984; Zarin et al. 2007).

While global deforestation is not considered a major concern as deforestation numbers are annually dropping on a world-wide scale, the same cannot be said about the global south (Food and Agriculture Organization of the United Nations 2011). South

America, Africa, Australia, and the majority of South East Asia are the areas of the globe suffering the highest rates of deforestation (Food and Agriculture Organization of the United Nations 2011). According to the FAO of the United Nations, South America had suffered the largest “...net loss of forests between 2000 and 2010” (Food and Agriculture Organization of the United Nations 2011:xvi) with a large portion of the deforestation taking place in Brazil. Second on this list of highest net loss of forest over that ten year span is Africa (Food and Agriculture Organization of the United Nations 2011). These statistics are not surprising when understood within the world-system’s global division of labor. A quick glimpse at deforestation divided by region highlights the global inequities within a world-system that above all else supports capital accumulation and favors those core regions of the globe (Figure 3.3).

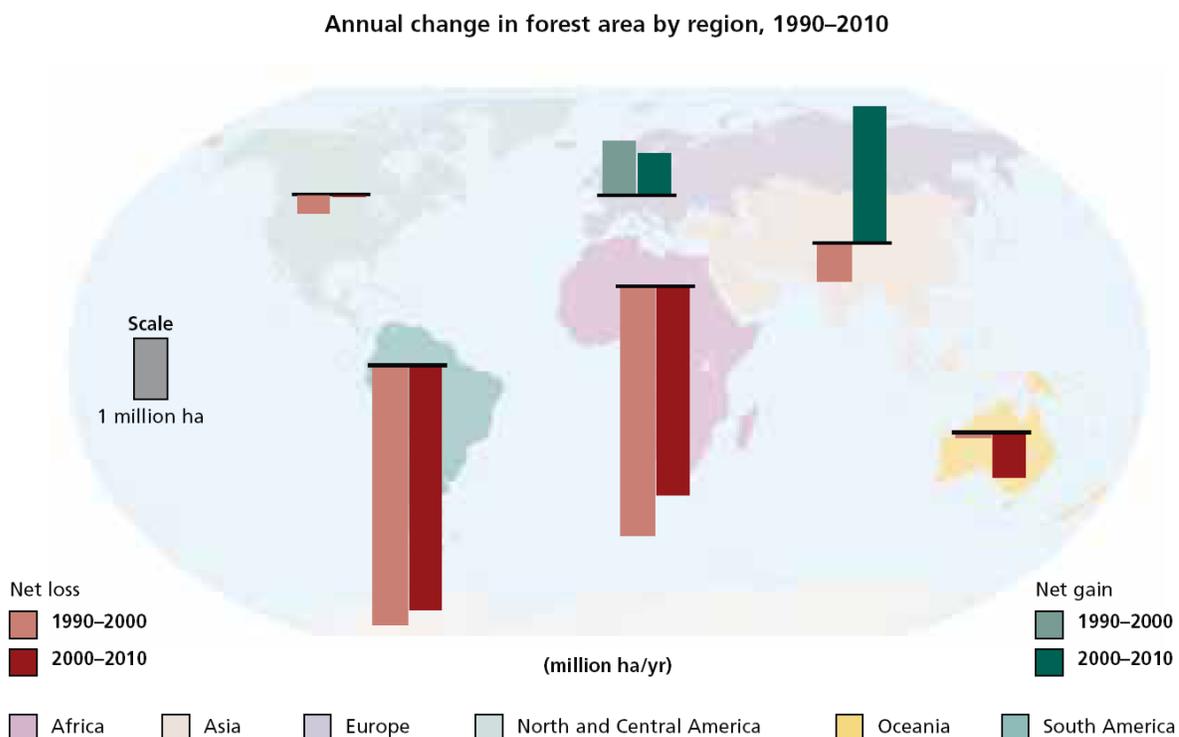


Figure 3.3 Source: Food and Agriculture Organization of the United Nations. 2011

Many of the hardwood species harvested from the Brazilian Amazon are valuable on a global market and therefore are harvested intensely despite their low density (Schulze et al. 2008). In addition to financial benefits from harvesting these high demand hardwoods, much of the Brazilian tropical forests are cleared for commercial agricultural practices (Butler 2008; Dauvergne and Lister 2011; Food and Agriculture Organization of the United Nations 2011). Land once home to extraordinary biodiversity, including several timber species is being destroyed in an attempt to maximize commercial agricultural potential (Fujisaka et al. 1996). As a result, Brazil is now the second largest producer of beef and buffalo products in the world behind only the United States (FAOSTAT).

The point of using Brazil as a case study to examine the process of deforestation is not to highlight the country's neglect of serious ecological concerns, but to provide an example as to the ways our current economic world-system encourages and demands integration into the system through westernized or core ideas of "development", which requires placing capital accumulation at the top of the priority list. Although the severity of the environmental impacts of capital expansion is well documented (Bevington 2009; Foster, Clark, and York 2010; Jensen, McBay, and Keith 2011), there have been recent attempts to alter the way we interact with our forests in an attempt to sustainably harvest a truly imperative resource. In an attempt to create sustainably managed forests throughout the world, various organizations have created certification schemes which assess the methods and practices used in timber production and harvest to determine if they meet a set of criteria which would ultimately deem their products "sustainable". An

investigation of the political elements of such schemes is important as it calls attention to the influence certification has over harvesting processes throughout the world.

Certification

The 1990's gave rise to a dramatically different way of dealing with environmental issues around timber production and harvesting as we witnessed an increase in the potential power of private organizations ability to influence the ways forests were managed (Cashore, Auld, and Newsom 2004). According to these scholars, around this time, "forest certification, was beginning to emerge as a key issue, both in the United States and globally" (Cashore et al. 2004: ix). The idea of certifying forests was born out of a heightened concern for the environmental consequences of timber harvesting including deforestation, and biodiversity loss (Rametsteiner and Simula 2003; Stringer 2006). Various forests certification programs have been initiated over the course of the past few decades including the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC) and the Sustainable Forestry Initiative (SFI) (Stringer 2006). Stringer (2006:706) adds, "certification standards are a market-based tool used by a third-party to ascertain whether a company and/or product has attained a certain standard of achievement, and are a useful instrument from both a trade and management perspective". The certification standards differ based on the respective organizations offering certification but ultimately the idea is to promote sustainable and ecologically conscious timber interaction (Rametsteiner and Simula 2003; Stringer 2006). A particular certification organization, The Forestry Stewardship Council explains that their process of certification "ensures that products come from

responsibly managed forests that provide environmental, social and economic benefits” (Forest Stewardship Council-Certification). Although certification seems like a logical step in creating sustainably managed forests, there are definitely some concerns that have surfaced.

One of these issues, that is of particular concern in relation to this study, is that periphery nations of the world have limited ability to engage in certification schemes based on limited economic and technological resources (Stringer 2006). While on one end this limits their ability to compete in many core markets where buyers are demanding certified timber, it also means that many periphery or semi-periphery forests are a source of cheap wood which is uncertified or often illegally harvested (Dauvergne and Lister 2011). This is particularly what is often seen happening in several Brazilian forests. While there are certified forests within Brazil that attract international specialty buyers, a large portion of the wood that is harvested and consumed within its national borders remains illegally logged (Cashore et al. 2006).

Another issue presents itself when we look at who seems to benefit from certification schemes. While the quest for selling certified timber products appears to be a noble one, some scholars will argue that it is actually large market retailers that benefit most from the global push for sustainable forestry; “Big retail chains for wood products have used certification as part of their ‘green marketing’ strategies and appear to be the main beneficiaries for the time being” (Rametsteiner and Simula 2003:96). The multinational furniture company IKEA originally from Sweden, represents an example of purchasers that aim to both use more certified wood while also attempting to meet global

demand. While their desired goal is for 100% of their wood products to be from certified forests, as of March 2012 they were only at 27% (Energy & resources - IKEA). As the company explains, based on the limited amount of certified timber available in the global market, they must purchase uncertified wood to meet global demand (Energy & resources – IKEA). Major retailers demanding certified wood are able to market themselves as environmentally conscious therefore appealing to segments of the market they may otherwise not, while also bearing little to none of the costs of the certification process itself, (Atyi and Simula 2002). The brunt of the financial blow is taken by producers not those making the majority of the profit from the sale of certified finished goods; “In general, certification costs tend to be much heavier for primary producers than for processors. On the contrary, the benefits of certification, which relate mainly to market access, tend to be realized by actors further down the supply chain” (Atyi and Simula 2002:33). Being that such a large portion of timber suppliers business is dependent on multinational retailers, which are increasingly demanding certification from suppliers, certification is becoming a crucial element of competing in a global market. In many ways these large retailers possess considerable power in influencing production. That influence can have dramatic impacts on the logging practices of timber suppliers and therefore is an important element of understanding the political processes at play within the input node of global timber chains.

Buyer Power

The four largest global wood retailers as of 2009 include Home Depot, Lowe’s, IKEA, and Wal-Mart. Each of these large retailers operates in multiple countries,

including 37 different countries for IKEA and 15 for Wal-Mart (Dauvergne and Lister 2011). These corporations truly are global with substantial power in setting the requirements for suppliers given their incredible size. The global power of large retailers to influence supplier price and even production standards can be understood as buyer power, defined as “the ability of buyers to obtain advantageous terms of trade from their suppliers” (Dobson and Inderst 2007:2). Buyer power although, often seen as benefiting the consumers of the world by driving down prices, ultimately heavily restricts the flexibility and autonomy of suppliers in general but specifically periphery suppliers;

“When negotiations with a small buyer fail, the supplier can easily sell the released capacity to other firms without suffering a large reduction in the prevailing price. In contrast, if negotiations with a large buyer fail, selling the quantity that was previously earmarked for this buyer to other firms should have a larger impact on prices and revenues” (Inderst and Wey 2007:)

Buyer power is intuitive from this perspective; the larger a retailers market share, the more economically desirable it is to do business with that retailer and therefore the more willing a supplier is to comply with the demands of such a retailer (Chen 2003). This idea is exemplified by author Naomi Klein in the companion film to her text *No Logo* when she explains that large retailers act as a sort of censor over what is produced in that such a large percentage of a producer’s product(s) are sold in one particular retailer’s store (Jhally 2003). In his best-selling book *The Wal-Mart Effect: How the World’s Most Powerful Company Really Works—and How It’s Transforming the American Economy*, Charles Fishman (2006:229) speaks candidly about the power of a large, multinational company,

It is one thing to have a few hundred stores clustered in the middle of the country, for which you furiously buy stuff as cheaply as possible, always on watch for someone willing to make you a deal. It is quite another to have so much buying power that instead of simply scrounging for good deals, or for willing suppliers, you can literally reach into the factories of your suppliers and determine how they operate—or even where they operate

While Wal-Mart stands alone as the world's largest retailer and therefore their buyer power is unrivaled, they are not the only retailer with substantial influence on the production process, and that influence starts at the point of extraction. The multinational home furnishings company IKEA speaks openly about their “connection” to their suppliers in their most recent annual report; “Thanks to our close relationships with our suppliers, including our own industrial group, we connect the whole supply chain – from the sourcing of raw materials to the product on the shelf. The result is a range that reflects our values of simplicity, sustainability, innovation and functionality” (IKEA 2013:11). While their “close relationships” are presented as a way of producing affordable products for their consumers, as this study unfolds we can see the inequality that is obvious in such relationships and the social consequences which are often ignored.

Conclusion

As this chapter attempted to explain, timber production and extraction takes place across the globe, but what we are seeing is a continual increase in the extraction and exploitation of semi-periphery and periphery zones' timber supplies (Dauvergne and Lister 2011). The data from The Food and Agriculture Organizations of the United Nations highlights the rapid deforestation of the global south, understood as the periphery

in world-systems. World-systems theorists explain this as a systemic process to maintain the hierarchical structure of a global division of labor which ensures unequal accumulation favoring those core zones (Frank 1979a, 1979b, Wallerstein 1974a, 1979, 2004).

Scholar Stephen Bunker (1984:1019) summarizes this inherent unevenness of the world-system in analyzing the way that materials and energy are often extracted from the periphery regions of the world to be transported towards the core,

When natural resources are extracted from one regional ecosystem to be consumed or transformed in another, the socioeconomic and ecological linkages to the extracted commodity tend to a loss of value in the region of origin and to accretion of value in the region of consumption or transformation

As the statement explains, there is a loss of value in the region of extraction and a gradual increase in value as raw materials are transformed through production processes into commodities. In addition, it must be reiterated that this transformation from raw material to commodity and the subsequent increase in value generally follows a flow from the periphery regions of the world to the core (Frank 1979a, 1979b; Wallerstein 1974a, 1979, 2004).

This gradual value adding continues to unfold throughout the production process as nodes of commodity chains are linked and a final finished commodity is produced. While this chapter aimed to explain the unequal situation of the various zones of the world-system in terms of a starting point within commodity chains, the following chapter continues the discussion as it looks at the continued process of increasing value as raw timber is transformed through intermediate processes on its way to becoming a finished good.

CHAPTER 3: INTERMEDIATE PROCESSES

Amongst the numerous processes that can take place throughout a given commodity chain, the majority are often unseen and possibly unknown to the eventual consumer of a finished good. While national labels denote the location of production, to some degree, they do not provide an exhaustive list of the locations or processes that take place in the production of that finished commodity. As was touched on earlier, the complexity of a given commodity chain is influenced by several variables and the number of nodes or boxes within a chain can range widely (Gereffi et al. 1994). The increasing complexity of commodity chains is an important area worth study as more and more players are incorporated into the global economy. Processes of globalization, including technological advancements which have compressed time and space (Harvey 1999), as well as a continual increase in population, have facilitated the relocation of production which has allowed for the creation of intricate interactions across the globe (Fröbel 1982). These intricate interactions have become common place and to some extent necessary in order to increase economic profits; "...global production networks are becoming increasingly complex and arm's-length trade is increasingly being confined to commodities with low returns" (Kaplinsky 2000:140). By incorporating various regions of the world, companies have the potential ability to increase their profits.

The days of a product being designed, created, and sold all in a central geographical space are, for the most part, behind us. While there are still specialty items that are completely manufactured in one building, the majority of what we purchase

comes from materials and labor from various parts of the world. This transition is often understood as a shift from a Fordist to a Post-Fordist production model (Bair 2005; Reynolds 1994).

The previous chapter illustrated the ways in which inequality within our world-system impacts natural resource extraction and consumption within timber commodity chains while the aim of this chapter is to shed some light on the structural division of labor that remains evident throughout the next steps that take place in the production of timber products. Admittedly the numerous processes which occur between extraction of raw materials and a finished good are not all the same and therefore the generalizations that are implied by the usage of the term intermediate processes are reductive. With that said, the idea is to showcase the structural inequality within the core/semi-periphery/periphery zonal relationship as well as to explain the gradual value adding process that takes place as production moves from periphery-like process towards core-like processes (Gereffi et al. 1994).

A key element that provides distinction between core-like process and periphery-like process is the extent to which a given process is specialized (Wallerstein 1974a, 2004) and the consequential value adding that is a result. This idea will be specifically examined as this chapter unfolds. In addition, a look into the unique situation of China, a semi-periphery and arguably near periphery power provides an example of a country that has situated itself as a key player in global timber industry through its display of both core-like and periphery-like processes. Lastly the chapter continues to explore the key theme that large retailers maintain significant amounts of control over timber commodity

chains throughout the chain based on their privileged (core) location within the hierarchy of the world-system (Gereffi 1994).

Primary and Secondary Manufacturing

Of particular interest of world-system theorists in regards to the structural makeup of commodity chains, is surplus value, as it is critical to understanding the process of capital accumulation (Hopkins and Wallerstein 1994b). As the authors explain, “If one thinks of the entire chain as having a total amount of surplus value that has been appropriated, what is the division of this surplus value among the boxes of the chain” (Hopkins and Wallerstein 1994b: 49). By examining the so called flow of surplus value within commodity chains research we typically find a trend of increased value along the chain towards the final boxes or nodes (Wallerstein 2004). A major contributor to the level of value within each link or node of the chain can be attributed to the total level of monopolization within each specific process.

The extent to which a process within a given commodity chain is specialized, and therefore more difficult to replicate, the more likely it is to result in a wider profit margin than less specialized processes (Frank 1979a; Wallerstein 1979). World-system theorists argue this is due to the possibility of quasi-monopolization based on the specialization of the production process or processes;

Core-periphery is a relational concept. What we mean by core-periphery is the degree of profitability of the production processes. Since profitability is directly related to the degree of monopolization, what we essentially mean by core-like production processes is those that are controlled by

quasi-monopolies. Peripheral processes are then those that are truly competitive (Wallerstein 2004:28).

Contributing to the conversation about this critical element of unequal distribution of value based on specialization and the subsequent monopolization, Kaplinsky (2000:123) states, “As more and more countries have developed their capabilities in industrial activities, so barriers to entry in production have fallen and the competitive pressures have heightened”. Consequently, less specialized production processes have become highly competitive and therefore less value is connected with such processes.

With the distinction between core and periphery processes clearly drawn by Wallerstein (2004), there are still those semi-periphery zones that find themselves situated in their unique position based on their connection to both core-like and periphery-like production processes. This unique position provides a set of opportunities as well as challenges as semi-periphery zones or states act as periphery states for core zones while simultaneously acting as core states for periphery zones (Wallerstein 1976b). As a result of this dual existence within the core and the periphery, semi-periphery nations or zones of the world are often centers where intermediate processes within a global timber commodity chain take place. These intermediate processes are generally understood as primary or secondary goods (Figure 2.1). Acting as a core country for periphery nations, semi-periphery zones or nations import raw timber products, and acting as periphery nations for core nations, they export primary or secondary goods or commodities that are not finished goods but require some production or manufacturing (Wallerstein 1979, 2004). It is these types of processes which I consider intermediate

processes. It must be reiterated that while processes are understood as either core-like or periphery-like, and such processes are associated with various countries and regions, no zone or nation-state exclusively participates in one type of production processes. As an example of the so called semi-periphery and the type of primary and secondary production processes that take place, a look at China highlights the intermediate processes in the production of timber goods and subsequent increase in value as the products have advanced along the chain and production processes have become more specialized.

China as a Checkpoint

The location of China within the global hierarchy of the world-system is contested as is the location of many nation states. Whether China is understood as a new member of the global core or remains on the top edge of the semi-periphery is a distinction that can be argued either way. What is irrefutable is the impact that China has had on the timber industry throughout the past couple decades (Cao et al. 2004; Laurance 2012; Sun et al 2004; Xu and A White 2004). As a nation, China has vaulted itself to a position within the global timber industry that cannot be ignored. Over the past 20 years, China has far and away been the highest importer of industrial roundwood averaging just over 20 million cubic meters per year, which is roughly five million more than the second largest importer, Japan (FAOSTAT). Even more alarming is the most recent statistics related to China's domination as an importer of industrial roundwood. In 2011, China imported just over 43 million cubic meters of industrial roundwood whereas Austria, the second largest importer, imported only seven million cubic meters (FAOSTAT) (Figure 4). "As a

result of the increasing demand for structural and fiber products, consumption of industrial roundwood in China has increased steadily” (Zhang et al. 1997:29). To put the impact of China as a global timber player into perspective, “More than half of the timber now shipped globally is destined for China” (Laurance 2012:12).

A more in depth look at China’s timber industry showcases what types of timber products they are predominantly producing and therefore exporting or consuming. It is this second element of China as a case study that adds to our understanding of China as a country which is extremely relevant in the discussion of intermediate processes within timber commodity chains. As scholars Xu and White (2004: ii) explain, “China has suddenly become the wood workshop of the world...”. According to data taken from the Food and Agriculture Organizations of the United Nations (FAOSTAT), China has asserted itself as a major producer of several intermediate commodities that are essential elements of several finished goods.

Included in these types of products are fibreboard (or fiberboard) and plywood which are considered various types of wood based panels (Zhang et al. 1998; Cao et al. 2004). The different types of wood based panels are used for different purposes but these types of products are heavily used in the production of furniture as well as wood based construction. Fiberboard is defined as, “A material made from wood chips or shavings, which are compressed and bonded with resin and formed into stiff sheets, and used in building or making furniture” (Fiberboard). Plywood is “Construction material supplied in sheets, and made of three or more layers of wood veneer glued together, laid up with

alternating layers having their grain perpendicular to each other” (Plywood). Both of these products are forms of wood based panels.

A look at the extent to which China has dominated the world-system in the production of fibreboard and plywood highlights their emergence as a major player in timber commodity chains, and the types of products produced act as a testament to their specific position within the global division of labor hierarchy. The most recent data available from the FAO, which is for the year of 2011, indicates that China produced more than eight times more fibreboard than the second leading producer, which is the United States, 49 million cubic meters for China and just over eight million cubic meters for the U.S.A. (FAOSTAT) (Figure 4.1).

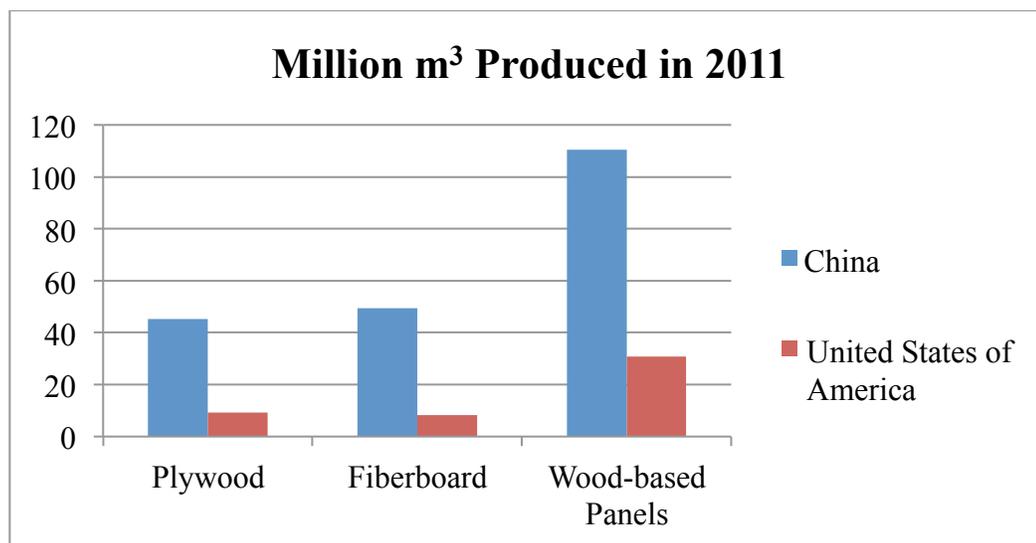


Figure 4.1 Data from FAOSTAT (<http://faostat3.fao.org/home/index.html#VISUALIZE>)

A similar alarming gap is seen in regards to global production of plywood, which is another very useful intermediate product in timber commodity chains (Dauvergne and Lister 2011). In 2011, China was leaps and bounds above the United States (the second

leading producer), producing just over 45 million cubic meters while the U.S.A. produced just over nine million cubic meters (FAOSTAT). This data supports the overall claim that “China has jumped into the global scene as a significant producer and exporter of panels” (Gellert 2007: 253-254).

China’s meteoric rise in the timber industry is not without concern. Several scholars point to issues that such a high demand for wood has brought about (Laurance 2012; Sun et al. 2004). While their demand for wood continues to grow, policy constraints have actually regulated and limited domestic forest production, leaving China in a position that requires the levels of importation we have previously examined (Sun et al. 2004). In an article titled *Meeting China’s Demand for Forest Products*, the issues are examined; “This growing import demand is having major impacts on forests and forests peoples in producer countries and is stimulating increases in illegal logging and deforestation” (Sun et al. 2004:227). In addition to the concerns associated with illegal logging, Laurance (2012) brings other important issues to the forefront. He argues that the type of wood products being imported by China, which are typically raw logs, “...are the least economically beneficial way for developing nations to exploit their timber resources, as they provide only limited royalties and little employment, workforce training, and industrial development” (Laurance 2012:12). Unfortunately there are little options for a nation towards the periphery of the world-system to enter into specific markets in any other way. In concluding the section, a statement from Laurance (2012) speaks to the structural power of a system dedicated to accumulation of capital over all

else, and it also reintroduces the theme of core power in the form of multi-national corporations in that processes of accumulation;

...the country (China) and its hundreds of wood-products corporations and middlemen have been remarkably aggressive in pursuing timber supplies globally, while generally being little concerned with social equity or environmental sustainability (Laurence 2012:12).

Buyer Driven Timber Commodity Chains

One of the major ways we've come to examine the outsourcing, or relocation of production is through an understanding of the ways a globalized world-economy is made up of characteristics which facilitate such relocation (Fröbel 1982). Included within these characteristics is an increased accessibility to a huge, global labor force who's wages are locally determined (Fröbel 1982). As a response, major retailers dealing heavily in timber products are tapping into this large labor force and incorporating already established manufactures of timber commodities in lower wage areas of the world (Dauvergne and Lister 2011). So while the previous section of the chapter critically addressed the impacts of China's enormous wood products manufacturing industry, a more in-depth look reveals just who those products are generally manufactured for.

Multi-national retailers are viewed as an avenue through which suppliers can gain access to otherwise unreachable markets, and therefore they are often attractive as potential business partners; "Large retail conglomerates, brand-name multinationals and intermediate buyers have more market power than small, competitive producers and subcontractors, affecting their ability to capture the benefits associated with an expansion of low-wage manufacturing" (Heintz 2003:1). As a result of trying to tap into some of

that market, “Timber producers and manufacturers jostle for an opportunity to become part of a supply chain linked to a big box retailer” (Dauvergne and Lister 2011:28). Industries or products which show this disproportional power towards the end of a commodity chain are considered buyer-driven chains (Gary Gereffi 1994; Gibbon 2001). Gereffi (1994:97) offers a definition; “Buyer-driven commodity chains refer to those industries in which large retailers, brand-named merchandisers, and trading companies play the pivotal role in setting up decentralized production networks in a variety of exporting countries...” Many finished timber products would fall within the category of buyer-driven commodity chains based on their production processes being primarily facilitated by the large retailers at the end of the chain who possess the majority of the power over the production process.

The global furniture industry and the major retailers within that industry represent a useful example of a buyer-driven chain. Dauvergne and Lister (2011:43) point out the often complex nature of furniture commodity chains, “For wooden furniture, commodity chains are dispersed widely among many different contractual partners.” In addition they argue that, “Typically, downstream retailers wield significant design control and purchasing power within these chains” (Dauvergne and Lister 2011:43). Based on the extent to which their business is reliant on timber products, IKEA remains important as an example of large retailer impact on intermediate timber production processes. While IKEA has a minimum set of requirements that must be met in order for timber to be used in their products and they claim to be rejecting wood from illegally logged sources (Energy & Resources - IKEA), there is another side to the story. According to one

employee of a Chinese company which supplies IKEA, there is very little oversight as to the what wood is used in their products which are then supplied to IKEA (Goodman and Finn 2007). These sentiments are shared by other scholars; “Most IKEA suppliers buy wood on the market and thus lack direct control of the forest areas from where the wood is harvested” (Djurberg et al. 2004:98).

These claims showcase not only the difficulty of monitoring intricate production process to ensure materials come from sustainably managed and legally logged timber sources, but they also speak to the power of profit as priority number one. If suppliers can produce products for large retailers like IKEA at the price they dictate, serious investigation into the origins of the materials used is a waste of time and resources. This coupled with suppliers need to maintain business with large retailers at any cost, creates a situation where any true environmental concern is secondary. Ultimately the majority of the power rests in the hands of those at the end of these buyer-driven chains; “Large retailers can credibly threaten to drop a particular supplier and source from another subcontractor elsewhere in the world – thereby insuring that they enjoy competitive prices” (Heintz 2003:11). The pressure lies on intermediate producers and raw timber suppliers, not on the large retailers that benefit the most from production.

Conclusion

In concluding the chapter, it is important to maintain a focus on the structural inequality of a world-system that is systemically hierarchical based on a global division of labor (Frank 1979a, 1979b, 1979c; Hopkins and Wallerstein 1977, 1982; Wallerstein

1974a, 1979, 2004). The aim of highlighting the processes of further specialization, which ultimately leads to increased monopolization, works to provide an explanation for the increase in value along the commodity chain. While regions of the world-economy where intermediate processes take place benefit from the value often added over raw materials, they still exist in a position that is constantly pressured by core regions. As Wallerstein (1979:71) states, “In a system of unequal exchange, the semiperipheral country stands in between in terms of the kinds of products it exports and in terms of the wage levels and profit margins it knows. Furthermore, it trades or seeks to trade in both directions, in one mode with the periphery and in the opposite with the core” (Wallerstein 1979:71). Often intermediate processes within timber commodity chains are carried out in these semiperipheral nations or zones and as a result, these suppliers find themselves in dependent positions.

The result of such complex chains where intermediate production processes are often extremely geographically and culturally distanced from the eventual consumer, creates a serious disconnect. “Some of the largest swaths of natural forest left on the planet are being dismantled at an alarming pace to feed a global wood processing industry centered in coastal China” (Goodman and Finn 2007:1). While China was analyzed in this chapter to showcase their tremendous demand for wood supplies, they are not unique in the types of products they produce nor the situational constraints they face due to their position within the timber industry and the world-system as a whole. Interestingly, China, while currently located within the semi-periphery of the timber industry, they represent the cyclical and fluid nature of the world-system as they

increasingly engage core-like production processes. As their furniture industry continues its climb within the world-system (Cao et al. 2004), they have the potential to break from the restraints of large retailers and provide finished goods to the globe. It is also important to note that while China and IKEA are used as examples to provide a case-study, the objective is to remain focused on the overall inequality which houses these countries and companies in a specific position within the global division of labor. The top profiting position within that division will be discussed as the final links of global timber commodity chains are explored.

CHAPTER 4: FINISHED GOODS

Finished goods are the end product of often complex timber commodity chains and they represent the potential accumulation of capital for the suppliers of those goods. From raw materials to intermediate processes to finally reaching a sellable, finished good, there are several points of interaction that are often taken for granted in westernized, consumer based cultures. Communication and technological advances have compressed time and space (Harvey 1999), and facilitated a disconnect between the various stages of production. While for centuries we have been consuming timber products which have been mixed with human labor, the current extent to which these products are a major element of daily life has never been reached before. Another interesting, yet disconcerting feature of the current global timber industry is the way in which timber is allocated for the creation of less vital finished goods. Whereas timber is an essential element for heating, cooking and shelter in the periphery regions of the world (Dauvergne and Lister 2011), core consumers flip through daily-newspapers, while their children play games on the back of their cereal boxes. For millions, even billions of the world's population, wood is still a resource vital for survival on a fundamental level, yet in more economically "developed" regions of the world, this resource is manipulated into finished goods that are far from essential.

As the final of the three chapters that examine the processes unique to various links within timber commodity chains as well as the economic inequality associated with those links, this chapter focuses on the finished timber goods and the social implications

of where and how they are produced and consumed. As a starting point, a look at general consumption of major timber products showcases an alarming difference between core and periphery regions, “developed countries, with just one fifth of the world’s population, consume about three-quarters of the world’s solid wood and almost two thirds of its paper” (Dauvergne and Lister 2011:33). This information, considered simultaneously with global deforestation trends presented earlier, paints a clear picture of which areas of the world most intensely feel the consequences of increased forest lost and which areas benefit from the products produced.

To provide some concrete evidence of disproportionate consumption, the following section of the chapter will explore the global paper industry in terms of its significance within the timber industry as a whole, as well as the consumption habits of various nations. Secondly, a look at the influence large retailers have on global timber demand in connection with their geographical/socio-economic position within the world-system further highlights uneven levels of consumption. And lastly the chapter will conclude with the importance of and issues that come with such disproportionate consumption of the world’s finished timber commodities through the concept of externalization of costs.

Paper and Paperboard

Overall global consumption of paper was steadily increasing through the 90’s and into the new century (Fales 2001). According to Dauvergne and Lister (2011), paper product consumption is expected to increase by 75% by 2020 compared to 1999 levels.

This is of particular concern because such a wide range of products are made from paper and paperboard; “Paper and paperboard products include newsprint, printing and writing, household and sanitary, and packaging and industrial” (Corrie et al. 2012:126). Also paper and paperboard make up a large quantity of the total timber products, “By value, half of the world’s timber goes to make paper and paperboard” (Dauvergne and Lister 2011). In terms of who is consuming paper and paperboard products, the statistics are telling. Whereas the average person in periphery/semi-periphery nations of the world consumes just 17 kilograms of paper products per year, those within core nations consume on average more than 200 kilograms. (Dauvergne and Lister 2011). This disproportionate consumption of paper speaks to the consumerist habits of the core where many paper products are luxuries, not necessities.

In 2011, the most recent data available from the FAO of the United Nations, four of the top five importing nations of paper and paperboard were members of the core. At the top of the list was Germany, which imported 10 million tonnes (about 22 million pounds). The United States was right behind at about nine million tonnes, followed by the United Kingdom at roughly seven million tonnes and bringing up the rear was France and China, each at just under six million tonnes (FAOSTAT) (Figure 5.1). This information is telling in that it shows the domination of core nations in their importation of paper. It is the large economies of Western Europe and the United States that top the list of paper importers (Tissari 2011). Although importation of a product does not necessarily mean consumption, what is often the case is that imported paper is

transformed into a consumable good and sold or distributed within core countries of the world (Dauvergne and Lister 2011).

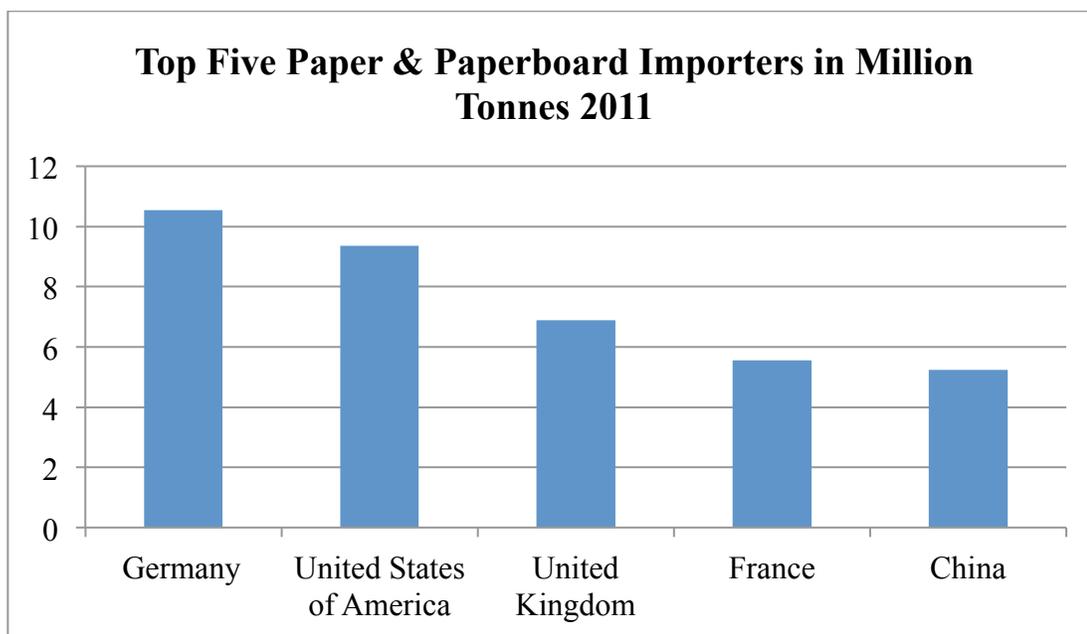


Figure 5.1 Data from FAOSTAT (<http://faostat3.fao.org/home/index.html#VISUALIZE>)

Print material and packaging are two of the specific uses of paper and paperboard that exemplify core consumption of natural resources, in an unnecessary fashion. Often print material includes retail advertisements or catalogues, magazines, and newspapers. To offer a bit of perspective, IKEA alone uses over 200,000 pounds of paper a year to print roughly 200 million copies of its catalogue. (Dauvergne and Lister 2011). Print advertisements are an excellent representation of the continual quest for ceaseless accumulation which drives our world-system. While these types of products bombard the daily lives of those within the core, they are far from essentials of existence. In addition, in the case of newspapers, advertisements, and magazines, an intermediate product which is paper, is transformed into a finished good which is consumed. In this process of

production, value is added and the newspaper or magazine is sold on the shelves of retailers at prices that generate the added value.

Paper, in the generally understood sense of material written or printed on, is just one side of the story, the other important commodity that the FAO of the United Nations data focuses on is paper and paperboard for packaging. Based on the increased length of commodity chains, goods or commodities are often shipped around the globe (Gereffi et al. 1994; Gereffi 1999; Hopkins and Wallerstein 1994a) and therefore protection throughout the transportation process is necessary. As a result, paper and paperboard are heavily used in the packaging of products (Dauvergne and Lister 2011; Tissari 2011). Of all the uses for paper and paperboard products, “Wrapping and packaging paper and paperboard has always been the largest product category, accounting for about one half of the paper industry output world-wide” (Tissari 2011:3). Although trends show an increase in the amount of paper and paperboard being recycled, global production of paper and paperboard continues to increase (Dauvergne and Lister 2011). The consequences of paper and paperboard consumption are sure to be a continued disproportionate consumption in the global north and deforestation of the global south as the world-system maintains works to maintain a division of labor in the never ending pursuit of accumulation.

Retail

Along with what finished commodities are being produced, where those products are being sold in terms of the geographic/socio-economic location within the global

system speaks to the hierarchical structure and inequality of the system. The economically advantageous position of core regions of the world allows citizens within those zones to indulge in products that the majority of citizens in less fortunate regions could not. Examples of such products are the pieces of furniture produced by IKEA. As their yearly report of 2012 explains, four and perhaps all five of the top five selling countries of IKEA products rest within core regions of the world (IKEA 2013). Germany accounted for 14% of the company's sales, the United States at 12%, France at 9%, Italy and Russia at 6% (IKEA 2013). From a zonal perspective, an alarming 86% of their total sales from the year 2012 came from either Europe (70%) or North America (16%), both of which house core-nations of the world and are members of the global north. Being that IKEA is the world's largest furniture retailer (IKEA 2013; Dauvergne and Lister 2011), the amount of timber we're talking about is significant, "The 1.6 million customers that visit an IKEA store every day combine to consume more than 7 million cubic meters of wood per year. This is equal to one tenth of Sweden's annual forest production" (Dauvergne and Lister 2011:35). IKEA is not alone as a retailer with considerable impact on the timber industry. Wal-Mart, as the largest retailer and company in the world (Fishman 2006), is also a major player in the sales of timber based products.

Wal-Mart stores are found throughout the globe, and their impact as a global retailer is unbelievable. As their corporate website says, "Each week, more than 200 million customers and members visit our 10,700 stores under 69 banners in 27 countries and e-commerce websites in 10 countries" (Walmart Corporate - Our Story) . Roughly

half of their 10,700 stores can be found in just three countries of the world. All three of these nations are core countries and the United States houses the largest number of Wal-Mart stores with 4,637 (Walmart Corporate - Locations). These retail outlets are “...strategically spread out across the country so that more than 80 percent of Americans live within 24 kilometers (15 miles) of a Wal-Mart store” (Dauvergne and Lister 2011:35). Even though Wal-Mart stores sell a wide range of products, from electronics to groceries without a focus on timber products, they are the world’s fourth largest timber retailer and they sell over 900 forest and paper products (Dauvergne and Lister 2011). Their sheer size and power as a global retailer, coupled with their predominance within core countries further illuminates who is doing the bulk of the buying and consuming of finished timber goods. While a breakdown by specific type of item was not available, overall sales figures are telling. Wal-Mart sales for the fiscal year ending in January of 2012 show that over 264 billion dollars in sales came from Wal-Mart stores within the United States and less than half of that, about 126 billion came from all international stores combined (Walmart 2013).

The idea of examining large retailers such as IKEA and Wal-Mart is not to simply point a finger at their immense size or question their domination of specific sectors of the retail market, but also to call attention to where the majority of their sales take place. While they rest at the end of often complex commodity chains, and therefore generally receive the lion’s share of the added surplus value (Wallerstein 1979, 2004), the large majority of their consumers are typically located within those same core regions of the world in which their businesses are located. This is no coincidence; citizens of the core

have considerably higher standard of living than those of the periphery and therefore higher levels of disposable income. The purchasing of finished timber goods is disproportionate based on global population distribution with overwhelming consumption coming from the core regions of the world. However, the ecological and social costs of production fall disproportionately on the periphery regions of the world (Frank 1979a; Wallerstein 1974a, 1979, 2004). The zonal disproportion of environmental costs in relation to consumption can be understood as the externalization of costs by the core-regions and organizations of the world.

Externalizing the Costs of Core Consumption

An important element of the hierarchical structure of the world-system which perpetuates the global division of labor is the ability of organizations and nations of the core to externalize costs. Wallerstein (2004:93) defines the externalization of costs as “A term used by economists to refer to practices that allow certain costs of production not to be paid by the producer but ‘externalized’ to others or to society as a whole.” Although a traditionally economic term, the concept is extremely relevant when we examine the environmental and social costs of timber commodities. As is so pointedly stated by Chew and Denmark (1996:12), “The world system is exploitive. It is certainly not, nor has it ever been, a fair, just or idyllic place.” In fact a system predicated on the continual accumulation of capital actually encourages the practice of externalizing costs as it supports growth of the bottom line. The environmental costs of production processes are often paid little attention and seldom critically examined however, they are real; “Almost all production processes involve some kind of toxicity, that is, some kind of residual

damage to the environment, whether it is disposal of material or chemical waste, or simply long-term transformation of the ecology” (Wallerstein 2004:48). The argument can be made that with the heightened level of global connectedness due to the process of globalization, it has become increasingly easy for core consumers and multi-national retailers to externalize the environmental costs of their production and consumption habits.

The idea was briefly touched on in previous sections, but sourcing wood products from periphery or semi-periphery regions of the world is a major way in which companies can externalize environmental costs to foreign regions. Through intricate commodity chains, external timber is often used in major retailer’s production processes therefore disconnecting the costs of such timber use from the consumers that typically end up consuming the products. Unquestionably, the globe as a whole faces serious environmental issues associated with deforestation (Dauvergne and Lister 2011; Dauvergne 2008; McLaren 1999; Salim and Ullsten 1999). However, the majority and most severe displays of environmental degradation can be seen in the south; “Important instances are the deforestation of Amazonia, Indonesia, the Himalayan slopes, and elsewhere...” (Frank 1996). Based on consumption figures that display overwhelmingly that the majority of timber consumption takes place in the core nations of the global north, the depletion of periphery resources illuminates the structural power of the world-system in its maintenance of a global hierarchy.

There are structural reasons as to why this process of exploitation takes place. Important contributions from Andre Gunder Frank (1969, 1979a, 1979b, 1979c) and

dependency theory offer insights into the structural system which facilitates such unequal exchange throughout the production process. As Rice (2007:1369) explains, “the structure of international trade shapes disproportionate access to global environmental space in a manner substantially predicated upon hierarchical position in the world system.” The economic strength of core nations situates them in favorable positions, positions that periphery and semi-periphery nations aspire to reach. Based on the limited economic and political strength of the periphery of the world-system, many nations seek to enter into global markets through supplying core companies with raw materials. A typical result of such attempts to enter more economically prosperous markets includes exploitation of their own natural resources or producing low-wage products. Heintz (2003:1) explains, “Relying on consumer markets of affluent countries to provide the demand needed for export growth frequently involves new types of dependencies for low-wage manufacturing sectors.” In a world-system where capital is king, entrance into such markets is seen as vital for economic survival and therefore the environmental and social costs are of secondary concern. In reality what choice do dependent periphery regions have? They can abstain from exporting their natural resources, in this case timber and remain confined to economic disadvantage, or they can enter the market and face the social and environmental consequences that follow. This situation of dependence on core markets is understood as dependent accumulation (Frank 1979a). The “underdeveloped” situation of periphery regions is based on their dependent relationship with core regions (Frank 1969, 1979a, 1979b).

From an alternative perspective, that of the core, it is not only smart but necessary within the system to externalize as much of the social and environmental costs of consumption as possible. In an era of heightened ecological concern where the forests of many core nations are highly valued and vehemently defended (Mather 1990), an alternative is necessary. Given that the world-system must be maintained through the accumulation of capital, and that the demand for wood products, remains the resources must be gathered from elsewhere. A perfect storm is created in which the peripheral regions see their timber as a way of improving their economic situation and core regions maintain a high demand for timber but wish to avoid the consequences of massive timber harvests. The answer becomes simple, exploit the exploitable, those who lack the political and economic power to resist. This is what Wallerstein (2004) refers to as the process of ignoring the exhaustion of materials which is a way of externalizing costs.

All of this is not to suggest that timber is not harvested from core regions of the world, indeed it is. As the data from the FAO of the United Nations from chapter three shows, the United States, arguably the greatest core power produces more industrial roundwood than anyone (FAOSTAT). However, the harvesting of such timber is regulated at a higher level within core regions than the periphery regions and the value from such wood typically remains in the core. This is not the case with periphery harvesting, as these regions tend to bear the burdens of the harvest without reaping the majority of the economic return from sales in the global markets (Amin 1994; Frank 1979b; Kaplinsky 2000).

CONCLUSION

The quest for capital accumulation has irrefutable consequences on our natural environment as well as tremendous impact on the global population. Rice (2007:1370), speaking of capital accumulation, states “It shapes both the social relations of production and the structure and integrity of ecological systems”. Timber as a resource has been instrumental in the reproduction of human social systems throughout our history (Chew 1992, 2012). Although timber consumption is a global process, and a huge global industry, it would be erroneous to claim that a single industry, that of timber, alone acts as the sole determinant of a nation’s or region’s place within the global division of labor. That is not the point of this research, but rather the idea is to build an understanding of the unequal process of accumulation on a global scale through an analysis of a specific industry. By focusing on the various types of processes that commonly take place within several timber commodity chains, a picture begins to form that allows us to see how the proverbial “pie” is cut and ultimately who gets the largest pieces. The fact of the matter is that there are indeed core-like and periphery-like processes that transpire throughout the process of producing a good (Hopkins and Wallerstein 1982; Wallerstein 1974a, 1979, 2004). By focusing on the extent to which regions participate in either core or periphery processes, the structural limitations of hierarchical positions within the division of labor become clearer.

This research supports previous claims of world-systems theorists that there is a systemic structure that holds considerable power over the processes of “development” or

“modernization”. Rather than a set of predetermined stages that must be passed through on the way to reaching development, there is indeed a global economic system with characteristics that dramatically impact the economic and therefore social position of nations and even zones of the world (Hopkins and Wallerstein 1982; Wallerstein 1974a, 1979, 2004). The position of nations within the global hierarchy is therefore not a result of “backwardness” but rather must be understood in the historical context of capital accumulation (Frank 1979a, 1979b, 1979c).

By focusing on the timber industry and the specific ways in which regions of the world participate in that industry, elements of the world-system become evident. There is a hierarchical division of labor which has been repeatedly shown both by looking at regions in terms of the products they produce and following the value that is added as inputs are transformed through intermediate processes into finished goods. The evidence from Brazil suggests that timber is a natural resource which is heavily exploited in the hope of bettering the nation’s economic position within the global system. As a result, Brazil faces serious environmental issues as a result of intense rates of deforestation (Bunker 1984; Zarin et al. 2007). Brazil is not alone as a nation which is dealing with the consequences of heavy deforestation as the demand for timber products continues to climb. From a zonal perspective, South America and Africa are the two continents most heavily deforested (Figure 3.3). From a world-systems perspective these areas are considered the periphery and understood as the global south.

China, while on their way towards the core within the timber industry and the world-system as a whole, based on their growing production of finished goods, still relies

mainly on their intermediate commodities which include plywood, particleboard, and wood-based panels (FAOSTAT). Ultimately those organizations within nations that sell finished timber commodities receive the largest economic benefit from the chain of production as they are able to externalize costs and maximize profits. This systemic process is summarized by Wallerstein (1979:292-293)

This chain of the transfer of surplus value frequently traverses national boundaries and, when it does, state operations intervene to tilt the sharing among bourgeois towards those bourgeois located in core states. This is unequal exchange, a mechanism in the overall process of the appropriation of surplus value

Not only does this statement speak to the unequal exchange inherent within the world-system's global division of labor, it touches on the concept of governance within the inter-state system.

World-system analysis as a whole aims to step beyond the constraints and limits of a nation-state analysis, but nation-states exist within the world-system and their relative power to influence economic transactions is important. Depending on the political, economic, and military power a nation has, they are able to pressure weaker states, often the periphery, to open their borders to trade and therefore perpetuate the system of unequal exchange (Wallerstein 2004). In addition, global financial institutions including the World Bank and International Monetary Fund (IMF) have impacted global commerce. The structural adjustment plans these institutions place on periphery nations often encourage the opening of borders for trade and demand privatization of public goods, thus representing the neoliberal economic perspectives of core powers (Gellert 2007). As a result of the majority of global governance power residing with core nations

and core institutions, the hierarchical system is replicated. Simply stated, “Power-dependence relations between core and periphery operate to reproduce the inequalities between national societies” (Chase-Dunn 1975:735).

Shifts over time in production, importation, and exportation of various types of timber commodities speak to the cyclical trends of the world-system. As the data from the FAO of the United Nations displays, China has considerably changed their status within the global timber industry over the past few decades (FAOSTAT). Their increasing economic prosperity can assuredly be connected to their dominance of certain segments of the timber products industry as half of the timber shipped globally goes to China (Laurance 2012). Bunker (1984:1019) offers a perspective on how countries can benefit from resituating themselves in certain industries, “I propose that different regional levels of development result from the interaction between changing world demand for specific commodities and the local reorganization of modes of production and extraction in response to new or changing market opportunities and pressures” (Bunker 1984:1019). China exemplifies this process, as they took advantage of the high demand for flat-packaged furniture and pushed their way to the top as producers of the commodities needed for those finished goods. However, they still remain just outside the core of the industry based on their primary role as a supplier. Their production processes are often controlled by core organizations that end up marketing and selling the finished goods and therefore receiving the highest financial gain. Even if, and it seems probable, China becomes a core nation within the timber industry and the world-system as a whole, other

regions or zones will be relocated to the periphery or semi-periphery. The division of labor and cyclical nature of the system are inherent and as a result inequality is systemic.

In concluding this research, it is critical to remain focused on the global impact of a world-system that supports continued accumulation above all else. The consequences, both good and bad, of continual accumulation are not evenly distributed across the globe. The research has shown the disproportionate consumption of timber goods (Dauvergne and Lister 2011; FAOSTAT), as well as the unequal rates of deforestation, biodiversity loss, and other environmental consequences (Butler 2008; Schulze et al. 2008; Zarin et al. 2007). Dauvergne and Lister (2011:4) succinctly summarize this inequality, “The net effect is to cast deeper and longer ecological and social shadows of high consumption in the First World onto poor peoples and fragile environments in the third world.” The consequences of consumption are not shared evenly, but based on the interconnectedness of the entire globe, the issues associated with deforestation due to increased demand are global issues.

The fear is that accumulation will remain the priority despite overwhelming evidence of the ecological consequences. Wallerstein (1974a, 1979, and 2004) explains that the world-system tries to reproduce itself despite the undeniable signs of impending collapse. This “staying the course” attitude has contributed to the secular trends which have been apparent throughout the history of the world-system. Ultimately it appears the trend of expansion is leading us to a point of systemic crisis as land is a finite resource within the infinite model of accumulation. The future is open and the possibilities are numerous, the question is what will we do?

REFERENCES

- Amin, Samir. 1974. "Accumulation and Development: A Theoretical Model." *Review of African Political Economy* 1(1):9–26.
- Amin, Samir. 1994. "The Future of Global Polarization." *Review (Fernand Braudel Center)* 337–47.
- Amin, Samir. 1996. "On Development: For Gunder Frank." Pp. 59–86 in *The Underdevelopment of Development: Essays in Honor of Andre Gunder Frank*. Thousand Oaks, CA: SAGE.
- Arrighi, G., and J. Drangel. 1986. "The Stratification of the World-economy: An Exploration of the Semiperipheral Zone." *Review (Fernand Braudel Center)* 10(1):9–74.
- Atyi, Richard Eba'a, and Markku Simula. 2002. *Forest Certification: Pending Challenges for Tropical Timber*. International Tropical Timber Organization.
- Bair, J. 2005. "Global Capitalism and Commodity Chains: Looking Back, Going Forward." *Competition & Change* 9(2):153–80.
- Bevington, Douglas. 2009. *The Rebirth of Environmentalism: Grassroots Activism from the Spotted Owl to the Polar Bear*. Island Press.
- Bunker, Stephen G. 1984. "Modes of Extraction, Unequal Exchange, and the Progressive Underdevelopment of an Extreme Periphery: The Brazilian Amazon, 1600-1980." *American Journal of Sociology* 89(5):1017–64.
- Butler, Rhett A. 2008. "Deforestation in the Amazon." *Mongabay.com*. <http://www.mongabay.com/brazil>.
- Cao, Xiaozhi, Eric N. Hansen, Meiqi Xu, and Boming Xu. 2004. "China's Furniture Industry Today." *Forest Products Journal* 54(11):14–23.
- Cashore, Benjamin, Graeme Auld, and Deanna Newsom. 2004. *Governing Through Markets: Forest Certification and the Emergence of Non-State Authority*. Yale University Press.
- Cashore, Benjamin, Fred Gale, Errol Meidinger, and Deanna Newsom, eds. 2006. *Confronting Sustainability: Forest Certification in Developing and Transitioning Countries*. Yale University Faculty of Environmental Studies Publication Series.

- Chase-Dunn, Christopher and Peter Grimes. 1995. "World-systems Analysis." *Annual Review of Sociology* 21:387–417.
- Chase-Dunn, Christopher. 1975. "The Effects of International Economic Dependence on Development and Inequality: A Cross-National Study." *American Sociological Review* 40(6):720–38.
- Chase-Dunn, Christopher. 1993. "World-Systems Similarities and Differences." Pp. 246–58 in *The World System: Five Hundred Years or Five Thousand?* Thousand Oaks, CA: SAGE.
- Chen, Zhiqi. 2003. "Dominant Retailers and the Countervailing-Power Hypothesis." *The RAND Journal of Economics* 34(4):612–25.
- Chew, Sing C. n.d. "World Development and World History According to Andre Gunder Frank: Appreciation and Critique."
- Chew, Sing C. 1992. *Logs for Capital: The Timber Industry and Capitalist Enterprise in the Nineteenth Century*. Westport, CT: Greenwood Press.
- Chew, Sing C. 2001. *World Ecological Degradation: Accumulation, Urbanization, and Deforestation, 3000 BC-AD 2000*. AltaMira Press.
- Chew, Sing C. 2006. "System Crisis." Pp. 3–17 in *The Recurring Dark Ages: Ecological Stress, Climate Changes, and System Transformation*. Lanham, Md.: AltaMira Press.
- Chew, Sing C. 2012. "Timber in World History" *Global Commodities Resources*. London: Adam Matthews Publications.
- Chew, Sing C., and Robert A. Denemark. 1996. "On Development and Underdevelopment." Pp. 1–16 in *The Underdevelopment of Development: Essays in Honor of Andre Gunder Frank*. Thousand Oaks, CA: SAGE.
- Ciccantell, Paul S. 1999. "It's All About Power." *Sociological Quarterly* 40(2):293–315.
- Ciccantell, Paul S. and David A. Smith. 2009. "Rethinking Global Commodity Chains Integrating Extraction, Transport, and Manufacturing." *International Journal of Comparative Sociology* 50(3-4):361–84.
- Corrie, Kristen, Kah Low, Mihir Gupta, and Bethany Burke. 2012. "Paper and Paperboard." *Agricultural commodities*.
- Dauvergne, Peter. 2008. *The Shadows of Consumption: Consequences for the Global Environment*. Cambridge, MA.: The MIT Press.

- Dauvergne, Peter, and Jane Lister. 2011. *Timber*. Cambridge, UK; Malden, MA: Polity Press.
- Djurberg, Hans, Pär Stenmark, and Gudmund Vollbrecht. 2004. "Ikea's Contribution to Sustainable Forest Management." *Ecological Bulletins* (51):93–99.
- Dobson, Paul W., and Roman Inderst. 2007. "Differential Buyer Power and the Waterbed Effect: Do Strong Buyers Benefit or Harm Consumers?" *European Competition Law Review* 28(7):393.
- Fales, Gregg. 2001. "World Paper Consumption Rising." *PIMA's ... Papermaker* 83(1):18.
- "Energy & Resources - IKEA." Retrieved March 5, 2013a
(http://www.ikea.com/ms/en_US/about_ikea/people_and_planet/energy-and-resource.html).
- "FAOSTAT." Retrieved February 21, 2013b
(<http://faostat3.fao.org/home/index.html#VISUALIZE>).
- Femia, Joseph V. 1981. *Gramsci's Political Thought: Hegemony, Consciousness, and the Revolutionary Process*. Oxford: Clarendon Press.
- "Fiberboard - Wiktionary." Retrieved March 28, 2013c
(<http://en.wiktionary.org/wiki/fiberboard>).
- Fishman, Charles. 2006. *The Wal-Mart Effect: How the World's Most Powerful Company Really Works--and How It's Transforming the American Economy*. New York, NY: Penguin.
- Food and Agriculture Organization of the United Nations. 2011. *Global Forest Resources Assessment 2010*. Food and Agriculture Organization of the United Nations.
- Food and Agriculture Organizations of the United Nations. 2012. *State of the World's Forests*. Rome: Food and Agriculture Organizations of the United Nations.
- "Forest Stewardship Council-Certification" Retrieved March 13, 2013
<https://us.fsc.org/certification.194.htm>
- Foster, John Bellamy, Brett Clark, and Richard York. 2010. *The Ecological Rift: Capitalism's War on the Earth*. New York, NY: Monthly Review Press.
- Frank, Andre Gunder. 1969. *Capitalism and Underdevelopment in Latin America; historical Studies of Chile and Brazil*. First Modern Reader Paperback Edition. New York: Monthly Review Press.

- Frank, Andre Gunder. 1979a. *Dependent Accumulation and Underdevelopment*. New York, NY: Monthly Review Press.
- Frank, Andre Gunder. 1979b. "The Development of Underdevelopment." *The Political Economy of Development and Underdevelopment* 103–13.
- Frank, Andre Gunder. 1979c. "Unequal Accumulation: Intermediate, Semi-peripheral, and Sub-Imperialist Economies." *Review (Fernand Braudel Center)* 281–350.
- Frank, Andre Gunder. 1991. "A Plea for World System History." *Journal of World History* 2(1):1–28.
- Frank, Andre Gunder. 1996 "The Underdevelopment of Development." In *The Underdevelopment of Development: Essays in Honor of Andre Gunder Frank*, 17–55. Thousand Oaks, CA: SAGE,
- Frank, Andre Gunder, and Barry K. Gills. 1993. "The 5,000 Year World System: An interdisciplinary introduction." in *The World System: Five Hundred Years or Five Thousand?* London: Routledge.
- Fröbel, F. 1982. "The Current Development of the World-Economy: Reproduction of Labor and Accumulation of Capital on a World Scale." *Review (Fernand Braudel Center)* 5(4):507–55.
- Fujisaka, Sam, William Bell, Nick Thomas, Liliana Hurtado, and Euan Crawford. 1996. "Slash-and-burn Agriculture, Conversion to Pasture, and Deforestation in Two Brazilian Amazon Colonies." *Agriculture, Ecosystems & Environment* 59(1):115–30.
- Gellert, Paul K. 2007. "From Managed to Free(r) Markets: Transnational and Regional Governance of Asian Timber." *Annals of the American Academy of Political and Social Science* 610:246–59.
- Gereffi, Gary. 1994. "The Organization of Buyer-Driven Global Commodity Chains: How U.S. Retailers Shape Overseas Production Networks." in *Commodity Chains and Global Capitalism*. Westport, CT: Greenwood Press.
- Gereffi, Gary. 1999. "A Commodity Chains Framework for Analyzing Global Industries." *Institute of Development Studies*.
- Gereffi, Gary, John Humphrey, Raphael Kaplinsky, and Timothy J. Sturgeon*. 2001. "Introduction: Globalisation, Value Chains and Development." *IDS Bulletin* 32(3):1–8.

- Gereffi, Gary, Miguel Korzeniewicz, and Roberto P. Korzeniewicz. 1994. "Introduction: Global Commodity Chains." Pp. 1–14 in *Commodity Chains and Global Capitalism*. Westport, CT: Greenwood Press.
- Gibbon, Peter. 2001. "Upgrading Primary Production: A Global Commodity Chain Approach." *World Development* 29(2):345–63.
- Giddens, Anthony. 1990. *The Consequences of Modernity*. Cambridge, MA: Polity Press.
- Gills, Barry K, and Frank, Andre Gunder. 2002. "A Structural Theory of the Five Thousand year World System." Pp. 151–76 in *Structure, Culture, and History: Recent Issues in Social Theory*. Boulder, CO: Rowman & Littlefield.
- Goodman, P. S., and P. Finn. 2007. "Corruption Stains Timber Trade." *Washington Post*.
- Gramsci, Antonio. 1995. *Further Selections From the Prison Notebooks*. edited by Derek Boothman. Minneapolis: University of Minnesota Press.
- Graziano da Silva, José. 2012. *State of the World's Forests: Foreward*. Rome: Food and Agriculture Organizations of the United Nations.
- Grimes, Peter. 2000. "Recent Research on World Systems." Pp. 29–58 in *A World-Systems Reader: New Perspectives on Gender, Urbanism, Cultures, Indigenous Peoples, and Ecology*. Lanham, Md.: Rowman & Littlefield.
- Harvey, David. 1999. "Time-Space Compression and the Postmodern Condition." *Modernity: Critical Concepts* 4:98–118.
- Heintz, James. 2003. "The New Face of Unequal Exchange: Low-wage Manufacturing, Commodity Chains, and Global Inequality." *Political Economy Research Institute: Working Paper Series* (59).
- Hopkins, Terence K., and Immanuel Wallerstein. 1977. "Patterns of Development of the Modern World-System." *Review (Fernand Braudel Center)* 111–45.
- Hopkins, Terence K., and Immanuel Wallerstein. 1982. *World-systems Analysis*: *Theory and Methodology*. Beverly Hills, CA: Sage Publications.
- Hopkins, Terence. K., and Immanuel Wallerstein. 1986. "Commodity chains in the world-economy prior to 1800." *Review (Fernand Braudel Center)* 10(1):157–70.
- Hopkins, Terence K., and Immanuel Wallerstein. 1994a. "Commodity Chains: Construct and Research." in *Commodity Chains and Global Capitalism*. Praeger Publishers.

- Hopkins, Terence K., and Immanuel Wallerstein. 1994b. "Conclusions About Commodity Chains." Pp. 48–50 in *Commodity Chains and Global Capitalism*. Westport, CT: Greenwood Press.
- Hunter, Ian. 2005. "Commodity Chains and Networks in Emerging Markets: New Zealand, 1880-1910." *The Business History Review* 79(2):275–304.
- IKEA. 2013. *Welcome Inside: IKEA Group Yearly Summary FY12*.
- Inderst, Roman, and Christian Wey. 2007. "Buyer Power and Supplier Incentives." *European Economic Review* 51(3):647–67.
- "Industrial Roundwood" Retrieved March 1, 2013
<http://www.fao.org/docrep/w7705e/w7705e0b.htm>
- Irland, Lloyd C. 2007. "Developing Markets for Certified Wood Products: Greening the Supply Chain for Construction Materials." *Journal of Industrial Ecology* 11(1):201–16.
- Jensen, Derrick, Aric McBay, and Lierre Keith. 2011. *Deep Green Resistance: Strategy to Save the Planet*. NONE. Seven Stories Press.
- Jhally, Sut and Loretta Alper. 2003. *No Logo*. Media Education Foundation.
- Kaplinsky, Raphael. 2000. "Globalisation and Unequalisation: What Can Be Learned from Value Chain Analysis?" *Journal of Development Studies* 37(2):117–46.
- Kondratieff, N. D., and W. F. Stolper. 1935. "The Long Waves in Economic Life." *The Review of Economics and Statistics* 17(6):105–15.
- Koo, Hagen. 1984. "World System, Class, and State in Third World Development: Toward an Integrative Framework of Political Economy." *Sociological Perspectives* 27(1):33–52.
- Laurance, William. 2012. "China's Appetite for Wood Takes a Heavy Toll." *Timber and Forestry E-News* 2012:12–13.
- Martell, Luke. 2010. *The Sociology of Globalization*. Malden, MA: Polity Press.
- Mather, Alexander S. 1990. *Global Forest Resources*. Portland, OR: Timber Press.
- McLaren, James, ed. 1999. *Issues in Global Timber Supplies*. San Francisco, CA: Miller Freeman Books.

- Mielants, E. H. 2007. *The Origins of Capitalism and the "Rise of the West."* Temple University Press.
- Özveren, Y. Eyüp. 2000. "Shipbuilding, 1590-1790." *Review (Fernand Braudel Center)* 15–86.
- Pelizzon, Sheila. 2000. "Grain Flour, 1590-1790." *Review (Fernand Braudel Center)* 87–195.
- "Plywood - Wiktionary." Retrieved March 28, 2013 (<http://en.wiktionary.org/wiki/plywood>).
- Rametsteiner, Ewald, and Markku Simula. 2003. "Forest Certification—an Instrument to Promote Sustainable Forest Management?" *Journal of Environmental Management* 67(1):87–98.
- Raynolds, Laura T. 1994. "Institutionalizing Flexibility: A Comparative Analysis of Fordist and Post-Fordist Models of Third World Agro-Export Production." Pp. 143–62 in *Commodity Chains and Global Capitalism*. Westport, CT: Greenwood Press.
- Repetto, Robert. 1987. "Creating Incentives for Sustainable Forest Development." *Ambio* 16(2/3):94–99.
- Rice, James. 2007. "Ecological Unequal Exchange: International Trade and Uneven Utilization of Environmental Space in the World System." *Social Forces* 85(3):1369–92.
- Robertson, Roland. 1992. *Globalization*. London: Sage.
- Robinson, William I. 2004. *A Theory of Global Capitalism: Transnational Production, Transnational Capitalists, and the Transnational State*. Baltimore: Johns Hopkins University Press.
- Salim, Emil, and Ola Ullsten. 1999. *Our Forests Our Future: Report of the World Commission on Forests and Sustainable Development*. Cambridge University Press.
- Schulze, Mark, James Grogan, R. Matthew Landis, and Edson Vidal. 2008. "How Rare is Too Rare to Harvest?: Management Challenges Posed by Timber Species Occurring at Low Densities in the Brazilian Amazon." *Forest Ecology and Management* 256(7):1443–57.

- Smith, Jackie. 2008. *Social Movements for Global Democracy*. Baltimore, MD: The Johns Hopkins University Press
- Stringer, Christina. 2006. "Forest Certification and Changing Global Commodity Chains." *Journal of Economic Geography* 6(5):701–22.
- Sun, Xlufang, Eugenia Katsigris, and Andy White. 2004. "Meeting China's Demand for Forest Products: An Overview of Import Trends, Ports of Entry, and Supplying Countries, with Emphasis on the Asia-Pacific Region." *International Forestry Review* 6(4):227–36.
- Tarascio, Vincent J. 1988. "Kondratieff's Theory Of Long Cycles." *Atlantic Economic Journal* 16(4):1.
- Tissari, Jukka. 2011. *Highlights on Paper and Paperboard: 1999-2009*. FAO Forestry Department.
- Wallerstein, Immanuel. 1974a. *The Modern World System. Capitalist Agriculture and the European World-Economy in the Sixteenth Century*. Academic Press.
- Wallerstein, Immanuel. 1974b. "The Rise and Future Demise of the World Capitalist System: Concepts for Comparative Analysis." *Comparative Studies in Society and History* 16(4):387–415.
- Wallerstein, Immanuel. 1976a. "A World-System Perspective on the Social Sciences." *The British Journal of Sociology* 27(3):343–52.
- Wallerstein, Immanuel. 1976b. "Semi-Peripheral Countries and the Contemporary World Crisis." *Theory and Society* 3(4):461–83.
- Wallerstein, Immanuel. 1979. *The capitalist world-economy*. Cambridge University Press.
- Wallerstein, Immanuel. 1983. *Historical Capitalism*. London: Verso.
- Wallerstein, Immanuel. 2000. "Introduction." *Review (Fernand Braudel Center)* 1–13.
- Wallerstein, Immanuel. 2004. *World-systems Analysis□: An Introduction*. Durham: Duke University Press.
- Walmart. 2013. *Walmart: 2012 Annual Report*.
- "Walmart Corporate - Locations." Retrieved April 8, 2013e (<http://corporate.walmart.com/our-story/locations>).

“Walmart Corporate - Our Story.” Retrieved April 8, 2013
(<http://corporate.walmart.com/our-story/>).

Xu, Jintao, and A. White. 2004. “Editorial: Understanding the Chinese Forest Market and its Global Implications.” *The International Forestry Review* (Special Issue: Forestry in China - Policy, Consumption and Production in Forestry’s Newest Superpower)(6):ii–iv.

Zarin, Daniel J., Mark D. Schulze, Edson Vidal, and Marco Lentini. 2007. “Beyond Reaping the First Harvest: Management Objectives for Timber Production in the Brazilian Amazon.” *Conservation Biology* 21(4):916–25.

Zhang, Daowei, Junchang Liu, James Granskog, and Jianbang Gan. 1998. “China: Changing Wood Products Markets.” *Forest Products Journal* 48(6):14–20.

Zhang, Yibing, Joseph Buongiorno, and Dali Zhang. 1997. “China’s Economic and Demographic Growth, Forest Products Consumption, and Wood Requirements: 1949 to 2010.” *Forest Products Journal* 47(4):27–35.