Diffusion of Development: From the West to the Rest

Ever since the Industrial Revolution, the growing resources, expansion demand for the of manufacturing and trade, along with technological innovation have worked to produce an increasingly interconnected global economy. Almost all places are in some way part of the web of production, exchange, and consumption that make up that economy-and their position in that web has significant social consequences Those in the developed core tend to be in the drivers seat, whereas those in the periphery have far less control. Semi-peripheral states find themselves in the middle, often far more industrialized than their poorer neighbors, but strongly influenced by the core.

The Impact of the Global Division of Labor

Despite the continued industrialized dominance of the developed core, there are pockets of significant hardship. "Rustbelts" emerged in places like the British Midlands, the American Northeast, and Silesia as firms moved into other areas with lower site and labor costs. In the United States, many firms relocated their factories to the Sun Belt, stretching from the Southeast to the Southwest. Both the population and economy of this region have grown, as manufacturing and service sector businesses have moved to these areas to benefit from favorable climate, tax rates, and fewer labor unions. These changes in economic geography reflect the decreasing importance of coal in the energy-supply picture, the need for more modernized factories, and the emergence of new markets.



The late 20th century brought with it a set of global economic relationships called the **global division of labor**, or the **new international division of labor**. It has been characterized by a growing dominance of service industries in the global economic core and an

associated shift of manufacturing to parts of the developing world (largely due to lower labor costs). There are also the multinational corporations that have helped engineer the global division of labor – taking advantage of low transportation costs, favorable governmental regulations, and expanding information technology (e.g., email, the Internet, social media, etc.).

Starting in the 1970s, after the Arab Oil Embargo, and subsequent rise in petroleum costs, firms moved the manufacture of components and assembly "offshore." U.S. firms moved theirs south of the border into Mexico; the Japanese moved them to Taiwan, Singapore, Malaysia, and South Korea. The assembly stage was the most labor intensive, so it went not just to Mexico and Southeast Asia, but to places such as China, India, and Brazil as well. Then a move toward greater mechanization in the production and assembly process in the 1980s led the then-dominant Japanese producers, as well as some of their Asian counterparts, to locate a growing number of their offshore production sites back in Europe and the United States (with a combination of suitable infrastructure, skilled labor, and accessible markets). These new trade links both reflect and define the global division of labor.

One key component of international finance is foreign direct investment by individuals or companies, either through buying a company in a target country or by expanding operations of an existing business in that country. A few core countries - the United States, Japan, Italy, Germany, France, and the United Kingdom - are responsible for an overwhelming percentage of that investment. Most of this money goes to other core countries and the newly industrializing periphery. Some corporations based in multinational newlv industrializing countries such as Taiwan, South Korea, and Singapore are exceptions.

Another aspect of global finance is the patterns of **loans** and payments handled by banks. The need for capital in the periphery led to significant borrowing, especially by governments seeking to promote development (leaders obviously want to show they are improving conditions within their country – even at the expense of long-term consequences). For many countries the cost of **servicing** their debts (the cost of repayment plus the interest) has exceeded revenues, and defaulting on the loans can become a real possibility. However, defaulting countries find themselves in a severely disadvantaged position when it comes to attracting any future investment.

Growth in the Periphery of the Periphery

Islands of development have sprung up in places where governments or corporations concentrate investment and economic expansion in a certain city or small region. However, creating development opportunities outside these islands of development in rural, impoverished areas has proven to be a great challenge.

In many cases, **Nongovernmental Organizations** (NGOs) spearhead international initiatives on social, economic, and environmental issues. State or local governments do not run NGOs, rather they are run independently, and are usually nonprofits. The goal of many NGOs is to have peripheral countries partake in **participatory development**, where the locals are engaged in deciding how development for them should be defined, and how it should be achieved.

Many NGOs offer **microcredit programs**, giving loans to poor people – particularly women – to encourage self-sufficiency. With repayment rates hovering at 98 percent, these programs can finance themselves. However, these programs have been less successful in places with high mortality rates from diseases such as HIV-AIDS, or malaria. If the borrower is unable to work, must take care of a loved one, or has to pay medical or funeral bills, the likelihood of defaulting on the loan skyrockets.

The **United Nations**, an intergovernmental organization (as opposed to an NGO), put forth the **Millennium Development Goals (MDGs)** in 2000; they are as follows:

- 1. To eradicate extreme poverty and hunger
- 2. To achieve universal primary education
- 3. To promote gender equality and empower women
- 4. To reduce child mortality rates
- 5. To improve maternal health
- 6. To combat HIV/AIDS, malaria, and other diseases
- 7. To ensure environmental sustainability
- 8. To develop a global partnership for development

Each goal has specific targets and dates for achieving those targets. Funds were funneled through several NGOs (such as the **International Monetary Fund (IMF)**, and the **World Bank**) to help cancel debts owed by many developing and impoverished states. While these are lofty goals, and thousands have benefited from these initiatives, many nations are far from reaching any of the intended objectives. Many of their problems are systemic, and not simply overcome with the infusion of additional funds.

World Cities

While growth has been difficult to achieve in the periphery, the core has maintained its position of economic power, in many cases, for centuries. The global division of labor has enabled states, corporations, and even individuals to amass great wealth in shorter timeframes than ever before. Despite the improvements in transportation and telecommunications, the bulk of economic activity still concentrates in logical areas.

The array of economic links around the globe can no longer be described in national terms - that is to say, corporate structures and flows transcend national boundaries. Decisions made in one part of the world may affect what happens thousand of miles away. In the mid-1980s, John Friedmann used the term world cities (or global cities) to describe the control centers of the world economy. These cities are not necessarily the largest in terms of population, nor are they always the greatest centers of manufacturing. Instead, they are the places where the world's most important financial and corporate institutions are located and where decisions are made that drive the world economy. Thus a global economic geography dominated by nation-states is giving way to one in which world cities and multinational corporations play an increasingly significant role.

As one would expect, most of the major world cities are located in the developed core. New York and London are the most integrated in the global economy. However, other major international hubs of economic activity – world cities – are Tokyo, Hong Kong, Paris, Chicago, and Dubai to name a few. The Southern Hemisphere is linked to the system primarily through São Paulo, Brazil, and Sydney, Australia. They are classified as alpha (London, New York), beta (Seattle, Cape Town), or gamma (Baltimore, Islamabad), depending on how connected they are into the global economy.

Below is a **proportional symbol map** that displays the network of many of the globe's world cities – the larger the dot, the greater the influence of that city in



the global economic system. People living far from the network of world cities can find it difficult to influence decisions made in that network.

Many of these metropolises are also **gateway cities**. Because of their geographic location (often with at least one seaport and airport), they act as points of entry and distribution centers for large geographic areas. Cities such as Amsterdam, Miami, San Francisco, and Seoul are all significant gateway cities.

Influences on the Geography of Manufacturing

Regulatory Circumstances

Even before the development of world cities, the world exhibited signs that individual states were no longer sufficient enough to handle to modern economic systems of the world. The General Agreement on Tariffs and Trade (GATT) was organized in 1948 and was in effect until 1994. This initiative assisted in creating a multilateral trading system and reducing tariffs. Participating states worked with the World Bank & the International Monetary Fund (IMF). In 1995, the World Trade Organization (WTO) took the place of GATT. The WTO seeks to supervise and liberalize international trade (make it freer). It also provides a forum for negotiations and for settling disputes. Many developing countries accuse the WTO of putting laws into practice that help maintain the dominance of the core at the expense of the people living in the periphery.

Another supranationalist organization established for economic purposes is the **Organisation for Economic Co-operation and Development (OECD)**, born after World War II to coordinate the Marshall Plan. As of 2014, the OECD had 34 member countries (which produce more than two-thirds of the world's goods & services), with more than 70 developing and transition economies working with them. Founded in 1961, its members have sought to stimulate economic progress and world trade through democracy and the market economy. One must always keep in mind that these constructs are regional and tend to serve rather specific goals of the member states.

Transportation

Relatively inexpensive transportation is one of the most key foundations on which the **flexible production system** exists, where components of goods are made in in different places according to cost and demand. Since the middle of the 20th century, major developments in transportation and telecommunications have improved **intermodal**

connections, where two or more modes of transportation meet (e.g., air, road, rail, barge, or ship). These locations along transport routes are known as **break-of-bulk points**, where goods are transferred from one mode of transportation to another.

The current volume of resources and goods shipped around the globe could not be maintained without the **container system**, whereby goods are packed in standard-sized containers that are picked up by mechanized cranes from container ships at intermodal connections. Many containers are also refrigerated. These innovations, stemming from the middle of the 20th century, dramatically lowered costs and increased flexibility.

Energy

While money makes the "world go 'round", modern trade would be impossible without the use of finite energy resources. The harvesting and use of wood as a primary energy source reached its peak in the middle of the 19th century and has declined ever since. Other energy resources have followed similar paths. Coal as a total percentage of global energy use reached its peak in the 1920s, and oil peaked around the mid 1980s, when it represented about 50% of the global energy supply.

The role of energy sources as a factor in industrial location decisions has changed over time. At the start of the Industrial Revolution, manufacturing plants were developed on or around coalfields. Additionally, the geopolitical goal of **Sea Power** reached its peak along with the peak of coal as an energy source. Colonies and possessions were strategically pursued by core states – such as Britain and the US – for obvious economic purposes. However, these locations were also key for coaling stations in order to maintain an efficient transport network in times of peace, as well as in times of war.



Modified, from Nakicenovic, Daedalus 125(3), 1996; Shell 2009

Share of Primary Energy

Today, major industrial complexes are not confined to oilfields; they are fed through a huge system of pipelines and oil tankers on a global scale. As demand increases, and new sources become scarcer, there are pushes to expand offshore drilling. However, there are always risks, as was the case with the BP "Deepwater Horizon" oil spill in the Gulf of Mexico in 2010; with an estimated total of almost five million barrels of crude released into the waters.

Increasingly, natural gas has gained ground as a cheaper, and somewhat more environmentally friendly alternative to oil. Many new reserves of natural gas have been accessed through **fracking**, the process of fracturing rock and shale under the ground through pressurized liquids to extract gas and oil. However, opponents to the practice warn it may contaminate ground water, or cause other forms of pollution.

Other energy sources play a less significant role for most states. Nuclear energy is widely used in France (over 70% of its total), but rarely exceeds 50% in other countries (the US generates less than 20% of its total from nuclear). Meltdowns in Chernobyl, Ukraine (1986) and Fukushima, Japan (2011), brought to light the dangers of nuclear energy as an alternative to fossil fuels. Additional sources, such as biofuels (e.g., ethanol), and renewables (e.g., geothermal, wind, or solar) make up a tiny percentage of the total energy needs. While these sources are seen as clean and sustainable, they are not nearly as efficient – or inexpensive - as other energy sources with current technology.

Consequently, countries with large reserves of oil and natural gas occupy a special position in the modern world. States, such as Saudi Arabia, Kuwait, and Iraq are not industrialized, yet all play a key role in the global economy. Russia is rich in both, and is in a powerful position in its surrounding region, as the EU is heavily dependent on outside sources of fossil fuels. The United States became the largest producer of oil and natural gas in 2013, surpassing Russia for the first time in decades. Nonetheless, the US is still the largest importer of oil and natural gas due to its massive consumption habits.

As technologies change and supplies fluctuate, the importance of different locations around the world also fluctuates. International organizations and agreements, as well as improved transportation methods are useless without accessible sources of energy – the blood that keeps modern trade alive.

Specialized Patterns of Economic Concentration and Interaction

To understand the economic shifts that have occurred since the middle of the 20th century we must look beyond individual places to the global scale, for the core, semi-periphery, and periphery have been significantly changed. The global division of labor demonstrates that in the traditional core, the shift away from heavy industry and toward the service sector has been accompanied by the rise of laborintensive manufacturing in new locations. Many service industries, however, are not tied to raw materials and do not need large amounts of energy. Market accessibility is typically more relevant, which is why the service sector dominates the core.

The locational influences of many quaternary services, such as banking and various types of administrative services, tend to be located near the businesses they are serving. Other types, however, can operate almost anywhere as long as they have digital processing equipment access to and telecommunications. Those working in the quinary sector tend to be concentrated around specialized nodes - governmental seats, universities, corporate headquarters, or research parks (facilities). Many of these tend to be located in large metropolitan areas, but some are found in places that were selected based on cultural values or political compromises. These compromises led to the establishment of major seats of government in small towns - Ottawa, Canada and Canberra, Australia are two examples of this phenomenon.

Of course, while core state workforces have progressed into higher sectors of economic activity, the mechanization of primary and secondary activities is not enough to satisfy the global demand for resources and goods. Specific economic activities have long been concentrated in particular places; for decades Detroit was synonymous with automobiles, and the Rühr Valley with iron and steel. However, these sites have seen significant competition from multiple global regions.

Special Economic Zones

Global economic change has produced **specialized economic zones (SEZs)** that did not exist before the late 20th century. With the increasingly global economy, many newly industrializing states have established **export processing zones (EPZs)**, sometimes referred to as **free trade zones (FTZs)**.

In the Western Hemisphere, only Mexico and Brazil have developed substantial manufacturing industries outside the U.S. and Canada. Mexico, in particular, has set up special export processing zones where favorable tax, regulatory, and trade arrangements are offered to foreign firms. An extended **maquiladora** zone has developed in northern Mexico just south of the border with the United States. These districts have allowed manufactured products to be sent to the U.S. free of import duties (taxes). Maquiladoras are typically foreign-owned factories that transform imported, duty-free components or raw materials into finished industrial products. Today, at least 80 percent of the goods produced are re-exported to the United States. In fact, Mexico became the United States' number one trading partner for a short time in the mid 1990s.



Although the maquiladora process began in the 1960s, it didn't take off until the 1980s; today there are over 3,000 assembly plants employing around 1.3 million workers, accounting for almost 20 percent of Mexico's entire labor force. Most maquiladoras are located in northern Mexico due to low labor costs, ease of transportation to the U.S., and proximity to major American cities (and markets) – not to mention the Mexican gov't originally required them to be within 35 miles of the border.

Other factors explain why Mexico has emerged as an important location in the global system of industrial organization: weak environmental regulations, Mexico's relatively stable government & their expanding middle class (also urbanization along with skilled labor) have all led to the increase in manufacturing in Mexico. The U.S. shift to a more tertiary economy (outsourcing of manufacturing), the rise of transnational corporations, and the exploitation of less developed countries (the coreperiphery model) also account for Mexico's growth as an important industrial location. The **North American Free Trade Agreement (NAFTA)** signed into action in 1994, began a process establishing a free-trade area between the U.S., Canada & Mexico. This agreement has further encouraged the expansion of maquiladoras.

Mexico is far from the only such region with special manufacturing export zones - China's SEZs have been established in cities like Guangzhou (across from Hong Kong), Beijing, and Shanghai (their largest city). The Chinese government gives the SEZs special (more capitalist-oriented) economic policies and flexible governmental measures to attract more business. Unlike most of Mainland China, some privatization is allowed in these regions. Factory managers are given more freedom to hire and fire as they see fit, and profits are allowed, leading to greater productivity. Massive infrastructure projects have improved these zones' efficiency, with access to roads, rail, seaports, airports, and more efficient telecommunications systems. Tax incentives are given, and with lax environmental regulations as well as cheap labor, cost of production is much lower than in core states. Most of the goods manufactured in these zones are exported to foreign markets worldwide. In fact, China's SEZs have been so successful; China has grown into the largest global trading country, and the second-largest economy in the world.

While much of China's east coast has benefited greatly from industrialization, development has not been even throughout the country by any means. Much of the central and western regions have found themselves in the **economic backwaters**, failing to gain from overall national economic development. This is a very typical situation for any country that undergoes modernization. The economic growth in one area creates a **backwash effect**, adversely affecting the prosperity of other regions. Wealth and



labor move from poorer, peripheral areas to more central regions of economic growth and the industrial production of wealthy regions may well undercut the industrial output of the poorer regions. This draining of wealth and labor together with industrial decline is the backwash, or polarization effect, and is a feature of core-periphery relationships.

China has been pushing industrialization into the interior of the country, with new investment flowing into poorer parts of central and western regions. However, even areas that were once bustling with activity may find themselves out of the focus of new development, as is the case with China's Northeast District – their "Rust Belt". Many of its state-run factories have been sold, closed, or are operating below capacity. Unemployment is high in this region, and economic growth has stalled.

High-Technology Clusters

The growth of service and information industries, especially in the core, has also affected optimal location considerations. Most of these industries are not tied to raw materials, but to market accessibility. A new type of development occurred in the core through **high-technology corridors**, that are areas designated by local, state or federal governments to benefit from lower taxes and modern infrastructure. The primary goal is to provide high-technology jobs to the local population, dealing with the Internet, computers, semiconductors, telecommunications, sophisticated medical equipment and the like.

California's "Silicon Valley" developed around the University of California, Berkeley, and Stanford University. Innovative technology companies were attracted to the region due to the availability of a



Silicon Valley, SF, CA

highly educated workforce. While the cost of this highly skilled labor is relatively expensive, the access to universities and students keeps the cost as reasonable as possible. The area became a **growth pole**, not just due to the businesses that came to Silicon Valley, but because of the concentration of these businesses spurred economic development in the surrounding area.

The collection of high-technology industries (e.g., IBM, Intel, Adobe, etc.) produced a technopole, an area planned for high technology where agglomeration built on a synergy among companies A similar technopole developed outside occurs. Boston, close to Harvard University and the Massachusetts Institute of Technology, along the Route 128 high-technology corridor. Technopoles can be found in a number of countries in North America, Western Europe, Eastern Asia, and These high-technology industries are Australia. thought to be pollution free and offer positive benefits for the communities in which they are located (better jobs, positive image, etc.).

Although there are many positives, there are some drawbacks as well. Computer chips and semiconductors, for example, require toxic chemicals and large quantities of water for production. Land must often be cleared, and buildings must be constructed - placing greater environmental stress on the environment in these regions. Furthermore, many of these are **footloose industries**, in which the cost of transporting both raw materials and finished products are not important for the location of firms (e.g., computer chips, e-commerce). This reality means that these industries can be located at a wide variety of places, which does not ensure that the jobs created in these locations are secure by any means.

Tourism: A Service Industry Giant

Many developing countries look to industrialization to improve their economy, others focus on agriculture, yet another way toward economic growth is through one of the largest industries in the world today – tourism. This industry deserves special attention because of its distinctive geographical character and vast economic impact. The tourism boom began during the latter half of the twentieth century in the core as leisure time and disposable incomes increased.

The initial investment by the "host" country is huge (i.e. building hotels diverts money that could be used for housing, education, etc.) and many hotels are owned by **multinational corporations (MNCs)**, not

the "host" country itself. At the end of the day, tourism affects the local economy little; some jobs and added business occurs, but little else. In addition, tourism has diminished the distinctiveness of the cultural landscape. In many instances it has made the cultural landscape appear more homogeneous - hotels, fast food chains, resorts, theme parks often reflect little of the indigenous culture in which they are immersed. Environmental degradation (litter, pollution, negative effects on wildlife) is also an increasing threat as tourism increases worldwide.



Atlantis, Pleasure Island, Bahamas

Nonetheless, tourism has, in many cases, enhanced the distinctiveness of the cultural landscape. Multinational corporations often have a vested interest in place preservation to maintain the uniqueness and marketing value of the vacation spot they are in. They often go to great lengths to preserve historic buildings, sustain the indigenous lifestyles of the locals, and promote exotic scenery and wildlife (for **ecotourism**). The conservation of natural resources (mostly through commercial (tourist) motives), although done for self-serving reasons, does help maintain the local distinctiveness in some cases.

The economic impacts of tourist-related development are far-reaching. The money spent by visitors related to tourism spillover into other industries and regions, creating a multiplier effect. With the growing middle class in states like China and India, and with increases in life expectancy, tourism is likely to keep growing into the future. However, travel is one of the first things to decline during economic downturns, as disposable income shrinks. For instance, the local economy in South Florida – heavily dependent on tourism – was hit hard after the global economic downturn precipitated by the 2008 housing market crash. Nonetheless, no matter how you look at it, tourism is on the rise – for better or worse.

Time-Space Compression and Its Impact

A key theme of the last few decades is captured by the phrase **time-space compression** – referring to the social and psychological effects of living in a technologically advanced world. This concept is an offshoot of the concept of **time-space convergence** – referring to the greatly accelerated movement of goods, ideas, and information during the twentieth century; made possible by technological innovations in transportation & communication. Simply put, time-space convergence refers to the actual increases in the speed of movement, whereas time-space compression refers to the psychological effects of this change.

The transition away from a Fordist industrialization system to a faster, more flexible system has sped up production, opened new markets, and brought places closer together in time and space than would have been imaginable at the beginning of the twentieth century. The rise of the **World Wide Web** plays into the time-space compression. It is too early to know what the full impact of the Web might be, but its role in reducing the importance of distance is self-evident. It also clearly plays a role in the decentralization of economic activity.

These are only a few reasons why geography is attracting renewed attention and why geographical understanding will be increasingly critical in the years ahead. It is therefore important not just to appreciate the forces that are remaking the world's economic geography, but to be aware of its impact on how people practice the cultures that frame their lives. Understanding and appreciating diverse cultures will become increasingly important in the twenty-first century. It is truly an interesting paradox that the more complicated and intertwined the world becomes – the smaller and more connected it seems to be.

