

## **Chapter 12 – Future Geographies**

### **Mapping Our Future**

- We need to be able to identify the changes that the future might bring so that we can begin to work toward the most desirable outcomes
- Visionary projections can be divided into two scenarios – optimistic and pessimistic
- Optimistic futurists stress the potential for technological innovations to discover and harness new resources, to provide faster and more effective means of transportation and communication and to enable new ways of living
- Pessimistic futurists stress the finite limitations of Earth's resources, the fragility of its environment, and population growth rates that exceed the capacity of the peripheral regions to sustain them
- Looking back at the world-system, a fairly coherent period of economic and geopolitical development occurred between the outbreak of World War I (1914) and the collapse of the Soviet Union (1989)
- Period where the modern world system developed its triadic core of the US, Western Europe and Japan
- Geopolitics was based on an East-West divide and geoeconomics was based on a North-South Divide
- Geographies of specific places and regions within these larger frameworks were shaped by the needs and opportunities of technology systems that were based on the internal combustion engine, oil and plastics, electrical engineering, aerospace industries and electronics
- Much of the established familiarity of the modern world and its geographies seems to be disappearing, about to be overwhelmed by a series of unexpected developments
- We have entered a period of transition since 1989
- We have to anticipate how the shreds of tradition and the strands of contemporary change will be rewoven into new landscapes and new spatial structures
- Study of human geography has taught us to understand spatial change as a composite local place-making processes that are subject to certain principles of spatial organization and that operate within the dynamic framework of the world-system
- Two of the most speculative realms are those of politics and technology
- Surprises can cause geographies to be rewritten suddenly and dramatically

### **Global Outlook, Local Prospects**

- Organizations such as the UN and the World Bank have prepared forecasts of the world economy
- Forecasts are based on economic models that take data on macro-economic variables
  - Looks at GDP, imports and exports, economic structure, investment and savings performance, demographic dynamism
- Economic models are not able to take into account the changes brought about by major technological innovations, significant geographical shifts, governments' willingness and ability to develop strong economic politics
- We know that spatial inequalities are part and parcel of many of the processes shaping our social and economic world

- The gap between the world's core areas and the periphery has already begun to widen significantly
- The UN has calculated that the ratio of GDP per capita between the developed and developing areas of the world increased from 10:1 in 1970 to 12:1 in 1985 and 13:1 in 2000
- Economic disparities are no less marked if we look at the differences within individual countries
- Existence of cores and peripheries at all scales is an aspect of the world-system model
- For many groups of people in Canada, these disparities are considerable and are likely to continue unless some fundamental steps are taken in the next few years
- In 1981, the “average individual income for Registered Indians was 56.7 percent of that for all Canadians; in 1996, it was 59.2 percent”
- The 202 Human Development Report released by the UNDP singled out Canada for praise in dealing with income disparities
- Though incomes have increased over the past 20 years, the disparity between the rich and poor had also increased in most of these countries during that period
- In spite of the globalization of the world-system, much of the world has been all but written off by the bankers and corporate executives of the core
- In many peripheral countries, 20 percent or more of all export earnings are swallowed up by debt service – the annual interest on international debts
- In 1997, 26 peripheral countries had total debts so large that they owed more than they produced.
- Huge dollar figures involved sometimes makes it hard to comprehend the real significance of international debt relief.

### **Write-Offs?**

- Countries being “written off” have already been dismissed by investors and face unprecedented levels of demographic, environmental, economic, and societal stresses
- In the worst off regions, the events of the next 50 years are going to be played out from a starting point of scarce basic resources, serious environmental degradation, overpopulation, disease, unprovoked crime, refugee migrations, and criminal anarchy
- African countries will be further disadvantaged because the prices of commodities produced there and in other peripheral locations have been dropping, while imported goods from the core have become more expensive
- Combined effects of external debt crisis, dwindling amounts of foreign aid, insufficient resources to purchase technology or develop indigenous technological innovations, and the high costs of marketing and transporting commodities
- Parts of Africa, ravaged by disease, experience issues with malaria, tuberculosis on top of the epidemic of HIV/AIDS
- In 2007, the Joint United Nations Programme on HIV/AIDS released a report on the Global AIDS epidemic where it stated that 2/3rds of those living with HIV/AIDS are located in sub-Saharan Africa
- NEPAD (New Partnership for African Development) was a program of action led by African countries emphasizing African leadership and ownership of the development process and calls

for a new global partnership based on shared responsibility and mutual interest

- Recognizes that the new partnership must be based on issues of good government, human rights and human security.

### **Overachievers**

- With the end of the Cold War, new markets in east-central Europe have opened up to capitalist industry, along with more resources and a wider range of skilled and disciplined labour
- New transport and communications technologies have already facilitated the beginnings of the globalization of production and the emergence of a global consumer culture
- Top companies have reorganized themselves to take full advantage of this globalization
- Reforms to the ground rules of international trade have removed many of the impediments to free-market growth, and a new, global financial system is now in place, ready to service the new global economy
- The WTO has begun to provide a system of regulations that supersedes national-level regulations and laws
- This seems to mean that national restrictions over foreign corporations are increasingly subordinated to the new rules of the WTO
- Proponents of the WTO argue that without such an organization, the terms of international trade are more likely to be set by powerful countries and transnational corporations at the expense of the weak
- Subordinating powerful national interests to WTO-enforced free trade, they argue, will benefit less affluent countries by giving them free access to core-country markets and by requiring core countries to stop dumping the products of their subsidized agricultural sectors in peripheral markets
- For the world-system core, the long-term issue is based on relative power and dominance
- In our present transitional phase, the new world order is available; we are coming to the end of a leadership cycle
- Does not necessarily mean that the US will be unable to renew its position as the world's dominant power
- The globalization of economics and culture may result in a polycentric network of nations, regions, and world cities bound together by flows of goods and capital
- Order may come not from military strength rooted in national economic muscle, but from a mutual dependence on transnational production and marketing, with stability and regulation provided by powerful international institutions

### **Resources, Technology and Spatial Change**

#### **Resources and Development**

- Expansion of the world economy and the globalization of industry will undoubtedly boost the overall demand for raw materials of various kinds, and will spur development of unexploited, resource-rich regions in Africa, Eurasia and East Asia
- Worldwide the recent past
- As the periphery is being industrialized and its population increases further, the global demand for energy will expand rapidly

- Basic industrial development tends to be highly energy-intensive
- The International Energy Agency has estimated that the world's total energy demands will increase by 50 percent from 2004 to 2030
- Over 70 percent of this increase will be due to demands from developing countries much of which will be accounted for by the predicted growth in China's energy needs as that country continues its rapid economic development
- An additional \$17 billion US over the period 2004-2030 will be needed to ensure that all of the additional refineries, power stations, transmission lines, and such will have to be constructed to meet that demand
- Half of these additional costs will have to be spent to enable the developing countries meet their projected needs, it will prove difficult fully to meet total world energy needs by 2030 without extensive international cooperation, technology transfer from core countries to those of the periphery and significant investment incentives
- Almost 2 billion people do not have access to commercial forms of energy and a further billion only have access to periodic and unreliable forms of supply
- The World Energy Council believes that if the types of investments suggested were made, it would be possible to halve the number of people without access to modern energy services by 2035 and to halve that figure again by 2050
- Without higher rates of investment in exploration and extraction than at present, production will be slow to meet the escalating demand
- Significantly higher energy costs may change the optimal location for many manufacturers, leading to deindustrialization in some regions and to new spirals of cumulative causation in others
- Higher fuel costs will encourage some people to live nearer to their place of work, while other people will be able to take advantage of telecommuting to reduce personal transportation costs
- It is also relevant to note that almost all of the increase in oil production over the next 15 to 20 years is likely to come from outside the core economies
- The rise in oil prices has now made Alberta's oil sands commercially viable and led to an economic boom in Fort McMurray
- Rise in the value of the Canadian dollar from 2007 to 2008 (to reach over par with the American Dollar)
- In countries that can afford the costs of research and development, new materials will reduce the growth of demand both for energy and traditional raw materials, such as aluminium, copper and tin
- Japan may be able to reduce motor vehicle fuel consumption by 15 percent by using ceramics for major parts of engines
- May also be possible to substitute ceramics for expensive rare metals in creating heat-resistant materials
- Improved engineering and product design will also make possible a reduced need for the input of some resources
- Production of ethanol offers the possibility of creating biofuels from crops such as corn
  - This will result in an increase of the price of corn, benefiting Canada's prairie farmers

- World agricultural prices have increased by 48 percent since the end of 2006

### **New Technologies and Spatial Change**

- Changes in transportation technology are of fundamental importance
- Next generation transportation technologies such as high speed rail, smart roads, smart cars and the emergence of energy sources are key
- **Transportation Technologies**
  - Improved locomotive technologies and specially engineered tracks and rolling stock will make it possible to offer passenger rail services at speeds of 275 to 370 km per hour
  - With shorter check in times and in town rail terminals, it will be quicker to travel between some cities by rail than by air
  - Most advanced plans are in Europe, where the EU announced plans for 2005 for the development of a high speed rail system as one of the major aspects of the EU's future transportation strategy known as the Trans-European Network
  - Intelligent transportation systems is a combination of smart highways and smart cars
  - The basic ITS target concept is an interactive link of vehicle electronic systems with roadside sensors, satellites, and centralized traffic management systems
  - Linkage allows for real-time monitoring of traffic conditions and allows drivers to receive alternative route information via two-way communications, on-board video screens, and mapping systems
  - Next step would be completely automated highway systems, on which groups of vehicles would be guided automatically, in closely packed platoons, with virtually no active driver control
  - Projected changes in transportation technology are enormous and will have profound impacts in both the core and the periphery
- **Biotechnology**
  - Widely associated with both the genetic engineering of crops and with its pharmaceutical potential, biotechnology is also likely to have a profound effect on animal husbandry, industrial production, renewable energy, waste recycling and pollution control
  - Genetic engineering, or genetic modification, is already being applied quite widely in animal husbandry
  - The prospect is for a scientific means to feed a hungry world efficiently
  - An additional advantage offered by genetically modified crops is that they can be engineered to be pest-resistant, saving both the dollar cost and the environmental cost of pesticides
  - If crops can be genetically engineered to withstand pests, cold climates, and other adverse conditions, the whole geography of production may change, bringing the prospect of orange groves and avocado orchards in temperate climates
  - Study carried out by Cornell University in 1999 found that the pollen produced by genetically engineered corn was lethal to the caterpillar of the popular Monarch butterfly
  - First evidence that genetically engineered crops could have a long-term impact on biodiversity
  - Importance of this evidence shows that this only had applications in a laboratory setting

and do not reflect real world conditions

- In many European countries, supermarkets now voluntarily label genetically modified produce and promote organic lines
- Several European governments have approved the compulsory labelling of products containing a significant percentage of genetically modified ingredients
- The commercial exploitation of genetic engineering will be slowed considerably by consumer resistance in the more affluent countries of the world
- More growth can be expected in industrial applications of biotechnology
  - Enzymes are used as industrial catalysts in the microbial recovery of metals, in waste degradation and in biomass fuels
- We can expect the long-term economic benefits of biotechnology to be greatest in the countries and regions that can afford the costs of research and development and of installing and applying the new technologies
- The core may gain control over crops that are currently exclusively produced in the periphery and continue to dominate world agriculture
- Efforts to genetically engineer North American plant species to produce palm oil are underway, and carry with them the potential to rob many tropical producers of their monopoly with this crop
- One of the principal advantages of many applications of biotechnological innovations is that they are economic to use on a small scale, without large infrastructure requirements
- It is possible that biotechnology might reverse the environmental degradation of some parts of the world because it could provide economically viable ways of replacing chemical fertilizers and toxic sprays, recycling waste products, and cleaning up polluted water
- One key benefit may well be the ability to biogenetically engineer plant species that are more salt-resistant than our current food crops
- The increasing salinity of much of the world's irrigated lands could be rendered less problematic
- **Materials Technologies**
  - Include new metal alloys, specialty polymers, plastic-coated metals, elastothermoplastics, laminated glass and fibre-reinforced ceramics
  - Important because they can replace scarce natural resources, reduce the quantity of raw materials used in many industrial processes, reduce the weight and size of many finished products, increase the performance of many products, produce less waste and allow for the commercial development of entirely new products
  - Applications of materials technologies will require a fairly close association with an expensive infrastructure of high-tech industry
  - Their immediate geographical impact is likely to be much more localized within the core-regions of the world-system
  - Peripheral regions and countries that are currently heavily dependent on the production and export of traditional raw materials will see creative destruction
  - As new materials technologies reduce the demand for traditional raw materials, production and employment will decline, and investors will probably withdraw from producer regions to reinvest their capital in more profitable ventures elsewhere

- Some peripheral regions and countries will benefit from the increasing demand for rare earth metals
- Brazil, Nigeria and the Democratic Republic of the Congo account for almost 90 percent of the world's production of niobium
- Brazil, Malaysia, Thailand, Mozambique and Nigeria account for about 75 percent of the world's production of tantalum
- **Information Technologies**
  - Information technologies include all of the components of information-based, computer driven, and communications related activities
  - Includes both the hardware and the software that makes it operate
  - Information technologies include developments as diverse as real-time monitoring of traffic bottlenecks, computer-controlled manufacturing, chemical and biological sensors of effluent streams, 24 hour data retrieval systems, retail inventory control, telemetry systems, and GIS
  - Has found widespread applications
  - It is estimated that even in the more developed countries, only about one-third of the benefits to be derived from information technology based innovations have so far been realized
  - In employment and production, an overall concentration exists in core countries, where the detailed geography of information technologies takes the form of highly localized agglomerations of activity
  - Future technologies of production and employment in information technology will almost certainly follow the same pattern: most research and development and high-end production will be localized within core countries
  - Information technologies have already had an enormous impact in facilitating the globalization of industry, finance and culture
  - At local and regional scales, they have been instrumental in decentralizing jobs and residences
- **Cyberspace and Virtual Geography**
  - Potential for success in cyberspace as well as growth of internet usage has fuelled businesses to focus marketing virtually
  - E-commerce has not supplementing but competing with Canadian business
  - Donald Janelle - "even within a country such as Canada, both peripheral and central regions could be impacted adversely...The global centralization of internet technology may favour accumulation of capital at the upper levels in the global urban hierarchy and drain the time and income resources of local regions"
  - The Internet has benefited even the most peripheral areas of Canada, especially those in northern Aboriginal communities where 10 percent of those use it to find employment opportunities
  - Cyberspace has its own geography, its "core" and its "periphery" of user access
  - Whole imaginary worlds have been created that exist only in a virtual "reality", with their own geographies, and these may be visited at will
  - Access to GPS and wi-fi links enable the interface between that virtual reality and the

physical reality to be achieved effortlessly

- This will enable spatial information about specific locations to be acquired in real time
- Cyberspace intersects with other spaces, and it can impact greatly in economic space such as what Ubisoft Montreal did
- Highly paid and highly skilled computer programmers and game testers have bought up lofts and condominiums in the immediate vicinity and have also encouraged a resurgence of nearby stores and restaurants
- Further advances in computational capacity, telematics, GIS, cellphones and computer-driven surveillance will mean that many of the complex, hard-to-manage aspects of society, will be subject to surveillance and management systems
- Because of this, it has challenged the extent of personal privacy

### **Adjusting to the Future**

#### **Scale and Territory**

- Globalization of the economy is changing the status of the territorial nation-state as the regulator of the global and local dimensions of the world system
- Some important aspects of geographical change will escape the authority of national governments as such:
  - Commercial information, patents, stocks, bonds, electronic cash transfers and property deeds will flow in increasing volume across national boundaries, virtually unchecked and unchallenged by national governments and their agencies
  - Localities will be drawn more and more into dealing directly with overseas investors in their attempts to promote local development through their own “municipal foreign policy”
  - Stealthy, temporary, “virtual states” will emerge illegally from clandestine alliances of political and military leaders and senior government officers to take advantage of the paralysis of national sovereignty
- Some of the consequences are fairly predictable
- Nation-states of the world system core will have to cope with severe economic slumps and homelessness
- Social-democratic parties in many countries, deprived of their main means of satisfying their liberal supporters will lose their appeal
- Nation-building had always promoted the idea of a national society and a “national culture” the permeability of nation states also raises the prospect of national identities leaking away into local lifestyle communities
- To stem economic leaks and gain some control over the globalizing economy, these nation-states are forming economic blocs, such as NAFTA and the EU
- Many of the same nation-states are accommodating internal cultural cleavages by decentralizing their governmental structures
- Governments are dismantling expensive social welfare programs to open up previously publicly operated industries to the private sector – often to transnational corporations
- Consequences of globalization will be much more dramatic in the world's peripheral regions
- Strong governments may be in their apparatus of domestic power, they will be next to helpless in the face of environmental stress, increased cultural friction, escalating poverty and disease,



and growing migrations of refugees

- The power of illegal activity will create the possibility of borderless territories that wax and wane in an ever mutating space of chaos
- Future maps of parts of the world periphery may have to be drawn without clear boundaries, just as medieval maps and the maps of European explorers were

### **Cultural Dissonance**

- Globalization has brought a homogenization of culture through the language of consumer goods
- Material cultures are immersed by the portrayal of the world via the media
- The new culture is made up of people who hold international conference calls, send/receive text messages, make decisions and transact investments that are transnational in scope, market and design international products and travel the world
- It is now easier to easily identify with people who use the same products, listen to the same music, and appreciate the same sports stars that we do
- Sociocultural cleavages are opening up between the haves of the fast world and the have-nots of the slow world
- By focusing people's attention on material consumption, these trends are also obscuring the emergence of new fault lines – between previously compatible cultural groups and between ideologically divergent civilizations
- The evaporation of external threats has allowed people to focus on other perceived threats and intrusions
- The more people's lives are homogenized through their jobs and their material culture, the more many of them want to revive subjectivity, reconstruct we/us feelings and re-establish a distinctive cultural identity
- Cultural fault lines are opening up at every geographical scale, posing the prospect of some many problematic dimensions of future geographies
- Metropolitan scale will see fragmented and polarized communities, with outright cultural conflict suppressed only through electronic surveillance and the “militarization” of urban space via security posts
- The prospect on the regional scale is one of increasing ethnic rivalry, parochialism and insularity
- It can be found commonly through conflicts and issues around the world

### **Sustainability**

- Climate change, seems to pose its greatest threats to poorer, peripheral countries
- Global climate change is causing sea levels to rise and has increased the frequency of violent tornadoes and hurricanes
- During the twentieth century, sea level rose by 20 cm, and a 1999 report by Britain's Meteorological Office warned that flooding will increase more than nine-fold over the next century, with four-fifths of the increasing coming in south and southeast Asia
- By 2050, the Maldives will be permanently flooded
- 70 percent of Bangladesh is at sea level while much of Egypt's most fertile land is also at sea

level

- Future trends will only intensify these contrasts between the rich and poor regions
- The growth of population and the changing geography of economic development is known to a degree where if calculated, water and air pollution generated by low-income countries will double in the next 15 years
- Environmental problems will be inseparable from processes of demographic change, economic development, and human welfare
- **Human Security** – A concept that includes environmental sustainability and population-carrying capacity in the measure of a country's ability to promote and defend its citizens' interests
- The spatial interdependence of economic environmental and social problems means that some parts of the world are ecological time bombs
- Prospect of civil unrest and mass migrations resulting from the pressures of rapidly growing populations, deforestation, soil erosion, water depletion, air pollution, disease epidemics and intractable poverty is real
- **Sustainable Development** – A vision of development that seeks a balance among economic growth, environmental impacts and social equity
- Sustainable development means that economic growth and change should occur only when the impacts on the environment are benign on manageable and when the impacts on society are fairly distributed across classes and regions
- Geared to meeting the needs of the present without compromising the ability of future generations to meet their needs
- **Carrying Capacity** – The maximum number of users that can be sustained over the long term by a given set of natural resources
- Sustainable development means using renewable natural resources in a manner that does not eliminate or degrade them
- It means managing economic systems so that all resources are used optimally
- It means regulating economic systems so that the benefits of development are distributed more equitably
- It also means organizing societies so that improved education, health care, and social welfare can contribute to environmental awareness and sensitivity and an improved quality of life
- “localization” - a desire to return to a more locally based economy where production, consumption and decision making can be oriented to local needs and conditions
- Peripheral countries, as well as workers and citizens throughout parts of the core, want reinstatement of control over the economic events and institutions that shape their lives
- Developments regarding the Kyoto Protocol have given rise for sustainability concerns as the inability of many developed nations have so far failed their commitments, the failure of others even to ratify the treaty and the continued increase of emissions in countries outside of the agreement render the agreement void
-