

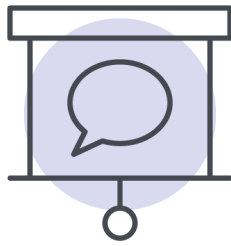
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Western

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Geography 2010A/B  
**FINAL EXAM**  
STUDY GUIDE

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# Lecture Notes

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## Chapter 1: Regions of Canada

### Geography as a Discipline:

- Geography provides a description and explanation of lands, places, and peoples beyond our personal experience
- The concept of place is based on living, working, and sharing together in a common space, and that experience leads to the formation of **regional identity** and **consciousness**

### Regional Geography:

- **Regional geography:** the geographic study of a particular part of the world
- People, interacting with their economic, physical, and social environments, are perceived as placing their imprint on the land scape just as the landscape helps determine their lives and activities
- Geographers focused their attention on the physical aspects of a **region** that affected and shaped the people and their institutions.
- Expressions of a regional belonging and consciousness are contained in the geographic concept of **sense of place** where control over regional and community affairs is the order of the day
- **Regional self-interest:** a logical outcome of regional identity and consciousness, often results in conflicts between the provincial and federal governments and quite different views of the nation in different regions of the country.
- **Dutch disease:** no holds- barred public brawling between the federal government and the provincial government of newfound land and Labrador took place over the federal clawback of Newfoundland and Labradors equalization payments
- Ottawa argues that because of a much larger provincial energy royalties, the provinces revenue no longer justified the level of past annual equalization payments.
- Premier Dnna Williams: claimed Ottawa's policy would deny the province an opportunity to climb out of its dire economic condition.

### Canada's Geographic Regions:

- Atlantic Canada, Quebec, Ontario, Western Canada, British Columbia, Territorial North
- Ontario is subdivided into southern Ontario (the industrial **core** of Canada) and northern Ontario (resource **hinterland**)
- an effort has been made to balance these regions by their geographic size, economic importance, and population size thus allowing for comparison
- Alberta and Saskatchewan form western Canada, and Newfoundland, PEI, New Brunswick, and Nova Scotia comprise Atlantic Canada
- The territorial north consists of three territories
- These regions are associated with: distinctive physical features, resources, economic, reflect the political culture of Canada, facilitate the use of statistical data, are linked to regional identity. Are associated with reoccurring regional complaints and disputes, reveal regional economic strength and cultural presence

- Ontario: automobile manufacturing, Quebec: hydroelectric power, British Columbia: forest industry, Western: agriculture, Atlantic Canada: fisheries, Territorial North: mega projects
- Tensions represent regional consciousness and this sense of place molds each regions unique identity

#### The Dynamic Nature of Regions:

- Ontario and Quebec housed three-quarters of Canadas 3.7 million people
- Over the same span of time, the western half of th country saw its population jump from less than 100,000 to 10 million
- This dramatic demographic shift mirrors the major realignment of Canada's economy caused by global forces
- Such changes pull at the ropes holding the political balance of power, in 2011 Ottawa announced that Western Canada and BC along with ont and Quebec would receive more seats

#### Sense of Place

- Sense of place has deep roots in cultural and regional geography
- Deeply felt attachment to a region or area by local residents who have, overtime, bonded to their environment and resulting institutions
- Sense of place provides some protection from the landscapes produced by economic and cultural **globalization**
- These landscapes are associated with a sense of placelessness
- Sense of place involves a power psychological bond between people and locale. Local roots stem from the physical nature, human acitivities, and institutional bodies found in a region eg. yukan, northern characteristic
- Sense of place recognized that people living in a region have undergone collective experiences that have led to shared aspirations, concerns, goals, and values
- Atlantic Canada and Western Canada provide two examples where nature has made its mark on people and their sense of place
- Atlantic Canada: sea, cod fishery, over fishing brought great economic hardship to inhabitants of the many small fishing communities in Atlantic Canada, especial newfound land
- Praries: characterized by dry spells, difficult farming
- Quebec: where history and geography have had four centures to nurture a strong sense of place and give birth to a nationalist movement that has sought to separate Quebec from the rest of Canada
- Since Quebecs early days, St Lawrence river played a key role in its settlement and economic development. Providing a supply route to France, allowing the fur traders to penetrate far in land to trade with distant indian tribes
- A region, then, is a synthesis of physical and human characteristics that, combined with its distinctiveness from surrounding regions, produces a unique character, including a sense of place and power

- A sense of place falling somewhere somewhere between regional tribalism and commitment to Canada, unites people on common issues and challenges, and compels them to seek solutions to these issues and challenges.
- Eg. Inuit: sense of place is embodied in their natural homeland Arctic and in their search for a new place within Canadian society.

#### Fault lines within Canada:

- **Faultlines:** the geological phenomenon of cracks in the earth's crust caused by tectonic forces- to the economic, social, and political cracks that divide regions and people in Canada and threaten to destabilize Canada's integrity as a **nation**
- Centralist/ decentralist
- English and French
- Old and new Canadians
- Aboriginal- non aboriginal
- In extreme cases, these cracks have threatened the cohesiveness of Canada, and by doing so have shaken the very pillars of federalism
- French and English: troubled the country since confederation and in recent years has come to a head twice with the sovereignty- association and independence referendums in Quebec, the latter of which was won by the federalist side by the narrowest margin.
- Quebec and rest of Canada have an unspoken uneasy compromise. And today too appointment by federal government of two non French speaking supreme court judges.

#### Centralist/ Decentralist Fault line:

- Leans the most heavily on Canada's geography and political system
- Provincial control over natural resources, oil-rich provinces have an advantage over other provinces, reflected between particular provinces and Ottawa
- Quarrels within Ottawa revolve around federal transfer payments. Provinces seek an increase in transfer payments, while Ottawa seeks a way to reduce annual expenditures in order to balance the budget.
- Central Canada, where the majority of national population (voters) reside, and rest of Canada. From Ottawa's perspective, provinces of Quebec and Ontario, the public support is due to economic success in central Canada as a whole.
- Central Canada benefits from federal policies that support industries representing the national interest. Eg. Ontario automotive, Quebec, aerospace/rail
- As the centre population of gravity edges westwards, the population advantage of central Canada is slowly eroding.
- Ontario sees the rise of western power as a threat to his traditional position with confederation, lukewarm to federal governments support for the Alberta oil sands and construction of gas and oil pipelines.
- Long standing dispute between Quebec and Newfoundland, over the Churchill falls, boundary settlement. Quebec never accepted the boundary, preventing hydro Quebec
- Quebec denying space for the transmission of future hydroelectricity from Labrador along its transmission lines to Canadian and US markets.

English- speaking/ French-speaking Canadians

- Quebec passed its government act (1974), making French the sole official language in the province
- New Brunswick recognizes both official languages
- Proportion of French-speaking Canadians has declined overtime
- 1867: 2 main groups British 61% and French 31%
- total French population 2011, has declined to 21.3%
- within Quebec, a faultline exists between two language groups, the political and cultural desire to maintain French. Bill 101 was passed in 1977.
- 1982: supreme court of Canada struck down bill 101, the liberal government Robert Bourassa overturned this

#### Aboriginal peoples and Non-Aboriginal Majority

- both individuals and communities, remain dependent on the Canadian state, which leaves them in a virtual state of poverty and underdevelopment
- only in the late 20<sup>th</sup> century did the doors to the economic and social opportunities available to other Canadians begin to open to Aboriginals
- until then, Indian Act was a means to control and manage First Nations peoples. Segregation from Aboriginals in 1950s from rest of Canadians. Location of that left them no man's land.
- 1960: when First Nation men and women were allowed to vote in federal elections. Although Indian Act still leaves a role for federal government in affairs with Aboriginal people.
- Residential schools: equip Aboriginal students to find and accept a place on the bottom rungs of a larger society, lost their culture
- Aboriginal peoples began to gain control of their traditional lands through modern land claim agreements and through impact benefit agreements. 1975: the James Bay and Northern Quebec agreement, Inuvialuit agreement (1989), Western Arctic (1999)
- Not all agreements are equal, the Attawapiskat First Nation does not have a profit sharing plan with De Beers Canada, which operates diamond mine in their traditional lands.
- Inuit of Nunavut in Arctic Quebec do not receive annual sharing profits from nickel/copper
- Until Indian Act is reconfigured to provide opp to First Nations to grow, the underdeveloped state will still remain

#### New comers- Old timers

- European, British, and French established the economic, political, and social structure of Canada
- New comers: finding a job, gain sense of belonging was not easy, easier for English and French speaking immigrants.
- Canada: continuous waves of new comers, each bringing own set of culture, the cultural rubbing and bumping between those whose cultural roots are in a distant overseas homeland to those roots developed in Canada
- Old timers not always prepared to give ground, Quebec, code of standards and values

- **Shariah Law:** replace the state justice system with that of a particular ethnoreligious group. The wearing of a burqa and the niqab, falls into a grey area of acceptance, show their face during voting and citizenship
- Chinese born in Canada, a cultural gap emerges with diasporic community, those of later generations more acclimated to Canada but less attuned to their own culture. Same with muslim immigrants

#### The core/Periphery Theory

- **Staples thesis:** to explain the process of development in the early stages of Canada's industrialization. (look at exhibit in book)
- Based his theory on resource development in hunterland (Canada) and trade with heartland (Great Britain). Led to regional economic diversification and formation of institutions. Development of primary extraction industries, broadly based economy. Each resource had a different impact on its region, its institutions, and its political culture.
- Core region centered on manufacturing (on and Quebec)
- Rapidly growing region based on expanding resource base (BC, and western Canada)
- Slow growing region based on declining resource base (Atlantic Canada)
- Resource frontier where many resources exist but few are viable (territorial north)

#### The global economy

- **Capatalist world-systems theory:** is based on the assumption that manufacturing cores have an inherent advantage over resource based peripheries because overtime price of manufactured goods increases more rapidly than those for resources.
- Industrial centers become richer overtime
- The global economy has reversed this by creating unprecedented demand for energy and resourced from rapidly industrializing countries, pushing prices to record levels, low labor cost.
- **Super cycle theory:** prices for resources, while declining during to 08-9 crisis, remained relatively high levels ecause of sustained demand from rapidly industrializing countries such as China, India, and Brazil
- **The manufacturing-**orientated provinces of Ontario and Quebec have fallen well behind the resource rich western province in terms of economic performance
- **Old sector could not compete with manufactures in china and other low wage countries**

#### Canada in the Global World

- Canada is rapidly realigning itself to take advantage of new trade opportunities
- Number of trade missions to China,
- Two major agreements are pending, one with European union
- Another major one is **Trans pacific partnership:** would draw Canada more deeply into trade with Pacific Rim Countries
- With the US economy struggling to regain its footing in the world economy, exports to the US have declined
- To reverse this heavy reliance with one country, diversification of key trade is now a key component of Canada's foreign policy. Europe, India etc

- Canada seeks to take advantage of the high demand for agricultural products, energy, and other raw materials in short supply in China and other Asian countries
- Proposed natural gas and oil pipelines to Pacific coast, opposes strong opposition from First Nation groups
- Expand infrastructure needed to protect Canada's Arctic sovereignty. Canada has been preparing its claim for a large part of the Arctic ocean seabed
- The government has sought to increase naval capacity in Arctic, one in Halifax and Vancouver.
- Canada playing active role: G20, Olympics. Military involvements in Afghanistan and Libya
- Nunavut- the only political unit with the majority of Aboriginal population, falls below all territories and provinces (socio economic gap)
- hunger strike demanding executive level meeting between Aboriginal leaders and PM. Broad agenda focused on government recognition of treaty rights and environment related issues. "Idle no more movement"

#### Canada-US trade relations:

- the exports to the huge US market are essential for Canadian industries to achieve **economies of scale** and therefore low per unit prices
- **continentalism**: has always lurked below the surface of serious political thought
- the drop in exports to the US was dramatic, Fed was scrambling for trade agreements
- North America provides a natural economic trade zone, the economies of the two countries complement each other. US requires energy and commodities, automobile
- Trade disputes have sometimes turned bad
- The Ambassador bridge over Detroit river connecting Windsor to Detroit is a vital transportation link between Canada and US

## Chapter 2: Canada's Physical Base

### Physical Variations within Canada

- Physiography: study of landforms, their underlying geology, and the processes that shape these

landforms: geomorphology

- Physical geography has distinct and unique regional patterns across Canada
- Physiographic regions are one aspect of this physical diversity
- Climate, soils, and natural vegetation are another aspect and provide basis for biodiversity
- Impact of human activity is changing the natural environment and, in the case of air, soil, and water

pollution, there are long-term negative implications for all life forms

- Physical geography has a powerful impact on Canadians by making certain areas more attractive for settlement and urban / industrial development eg. combination of mild climate and fertile soils in the Great Lakes- St. Lawrence Lowlands encourages agricultural settlement
  - relationship between the natural environment and the human world forms the basis of the core / periphery model
  - Urban sprawl, which has gobbed up some of Canada's best farmland in the Niagara Peninsula, the Fraser Valley and the Okanagan Valley
- 5 basic elements: geology, physiography (shape of the surface), climate, vegetation, soil
  - Climate provides one example, while Canada has a cold northern climate, the types of climate vary from place with temperate climates in southern Canada and polar ones in northern Canada
  - The Maritimes, has a mild wet climate, while the Arctic has a cold dry climate.

### The Nature of Landforms (table 2.1)

- Mountains, plateaus, and lowlands. These landforms are subject to change by various physical processes.
- The earth is relatively stable with a few changes observable over a person's lifetime
- The Appalachian Uplands in Atlantic Canada and Quebec are undergoing the process of **denudation**

Three principal types: mountains, plateaus and lowlands

- Landforms are subject to change by various physical processes
- Denudation:
  - o Process of breaking down and removing loose material found at the surface of the earth
  - o In this way, erosion and weathering lead to a reduction of elevation and relief in landforms Ex: Appalachian Uplands are prime example of denudation of an ancient mountain chain
- Weathering: decomposition of rock to particles in ancient mountains
- Erosion: transported these small particles by means of air, ice, and water to lower locations where they were deposited. The result was a much subdued mountain chain
- downward movement in response to gravity

- Deposition: Deposit of material on the earth's surface by various processes such as ice, water, & wind

Earth's crust consists of 3 types of rocks: igneous, sedimentary, and metamorphic

#### **Igneous Rocks:**

- Rock formed when the earth's surface first cooled or when magma or lava that has reached the earth's surface cool. Cools from molten state and is very hard / resisting to weathering and erosion, tends to contain minerals

**Sedimentary Rocks:** Rocks formed from the layers (strata) accumulation in sequence of sediment deposited in the

- Made up of particles of pre-existing rock, created when existing rock is exposed to process of weathering and then erosion, deposited in layers and then subjected to increasing heat / pressure and compacted together (fossil fuels, but no minerals)
- Ex: Alberta Badlands are unique type of terrain found only in Alberta, horizontal in original form

#### **Metamorphic Rocks:**

- Rocks formed from igneous and sedimentary rocks by means of heat and pressure
- ♣ Changes its very nature due to extreme heat and pressure, also contains minerals

**Physiographic Regions:** is a large area of the earth's crust that has three key characteristics.

- Extends over a large contiguous area with similar relief features
- Its landform has been shaped by a common set of geomorphic process
- It possesses a common geological structure and history

#### **Canada has 7 physiographic regions**

The Canadian Shield is the largest while the Great Lakes- St. Lawrence lowlands are the smallest

- Most varied **topography** (the shape of the surface of the land) occurs in the Cordillera, Hudson Bay lowlands has to most uniform **relief** (a measure of elevation of the land relative to sea level, which is designated as zero.)
- Remaining there are Appalachian uplands, Cordillera, and interior Plains
- Each geographic location make up a different set of mineral resources
  - Precambrian crystalline make up the Canadian shield and contains, copper, diamonds, gold nicked, iron, uranium 4.5 billion yrs ago
  - In the interior plans 500 million years of massive vegetation made into Alberta's oil sands, sedimentary structure
  - As the regions developed their energy and mineral resources, differences in regional economies began to take shape and these differences were magnified by the global economy
  - Most dramatic difference is between the mountainous Cordillera and the relatively flat Hudson Bay low lands, and interior Plains. Hardness and weather determine the land form because of the ability of the land to erode.

The Wisconsin ice sheets shaped the topography in Canada

- Occurred 30,000 years ago and represents the **Pleistocene epoch**
- consisted of two major ice sheets, the Laurentide and the Cordillera

- The Laurentide was in the Hudson Bay area, and the remains of this massive sheet created much of the Arctic lands and Cordillera
- The Laurentide Ice sheet slowly pushed southward across the Canadian Shield, stripping away its surface material and depositing it much further south. When the ice sheet began to melt it deposited material in situ, and meltwater formed glacial lakes, including Lake Agassiz
- Bottoms of great lakes were formed by glacial scouring and then filled with meltwater from the receding ice sheet
- Today THE LARGEST GLACIERS AND ICE FIELDS ARE IN THE MOUNTAINS OF ELLSMERE ISLAND

#### The Canadian Shield

- The largest physiographic region in Canada
- 4.5 billion years ago molten rock solidified into Canadian shield
- Ancient Precambrian rocks are not only exposed at the surface of the Canadian shield but also underlie many of Canada's physiographic regions
- Rock-like surfaces of the Canadian shield consist of rugged, rolling upland. Lowest elevations: shoreline of Hudson Bay, highest - Labrador and Baffin Islands
- The water divide of the Torngat mountains represents the political boundary between northern Quebec and Labrador
- The surfaces of the Canadian shield and those of other physiographic regions were subjected to **glacial erosion** and deposition. Caused by giant ice sheets grinding over the Earth's surface.
- During the movement of an ice sheet, huge quantities of various loose materials such as sand, gravel, and boulders were trapped within the ice sheet.
- As the ice sheet reached its maximum extent, the edge of the ice sheet melted, depositing rocks, soil, and other debris (**till**)
- Towards the end of the **ice age**, ice sheets melted in situ, depositing whatever debris they contained, sometimes the water from the melting ice was blocked from reaching the sea by retreating ice sheet. These waters formed temporary lakes.
- **Drumlins**: low elliptical hills composed of till (material deposited and shaped by the movement of an ice sheet and subglacial mega floods)
- **Eskers**: long narrow mounds of sand and gravel deposited by meltwater streams found under a glacier.
- **Glacial striations**: scratches in the rock surface caused by large rocks embedded in the slowly moving ice sheet
- **Single-Industry** mining towns, such as the iron-mining town of Labrador City and Newfoundland and Labrador, were connected to global markets by rail and then sea transportation
- Low-value per unit product, such as iron, must have access to the ocean instead of by air. Arctic Quebec falls into that category while the "Ring of Fire" mineral zone in Precambrian rocks in remote northern Ontario west of James Bay area exceeds the size and value of Sudbury area (due to issues holding up large scale production)
- Laurentides: recreational area

### The Cordillera:

- complex region of mountains, plateaus, valleys, 16% of Canada's territory
- extends from southern BC to Yukon
- **Plate Tectonics:** played a key role in the formation of cordillera, created out of the horizontal sedimentary rocks of the north American plate with final tectonic push crumbling these rocks into the Alberta foothills
- Severe **folding and faulting** of the north American plate ensued and its flat lying sedimentary rocks were twisted and broken into series of mountains found in cordillera
- Along the fault line separating the Pacific and north American plates, tectonic movement continues, making the coast of BC vulnerable to earthquakes and volcanic activity
- Strongest earthquake= Haida Gwaii in August 1949
- Over the last 20,000 years, alpine glaciers have sharpened the features of the mountain ranges in the Cordillera and broadened its many river valleys
  - Alpine glaciers advanced down slopes, carving out hollows called **cirques**.
  - As the glaciers increased in size, they spread downwards into the main valleys created **aretes:** steep sided ridges formed between two cirques.
  - As these glaciers advanced, they eroded the sides of the river valleys, creating distinctive U shaped valleys called **glacial troughs eg.** bow valley, transportation corridor
- Rocky mountains are the best known of these mountain ranges, most have elevations between 3000-4000 meters

### The Interior Plains:

- Vast and geologically stable sedimentary plain that covers 20% Canadian land mass
- Wedged between Canadian shield and Cordillera
- Most of the population lives within the southern area where longer growing season permits, but low rainfall
- Long ago, shallow inland sea occupied the interior plains, sediments were deposited to sea, weight of these deposits produced heat and pressure to transform these sediments into rocks
- Stable geographic region (no tectonics)
- Sedimentary rocks, series of flat rock layers, geological time charts
- Alberta and Saskatchewan, rivers have cut deeply into these soft rocks, exposing Cretaceous strata eg. Alberta Badlands
- Beneath the surface of the Interior Plains, valuable deposits of oil and gas are in sedimentary structures called **basins**. oil and gas deposits are the result of the capture of sun's energy by plants and animals, storage of this energy in the form of hydrocarbon compounds takes place in sedimentary basins
- Western Sedimentary basin is the largest
- As the Laurentide ice sheet melted and began to retreat from the plains, the surface of the region was covered with debris, glacial lakes were formed, then drained into the sea
- **Lake Agassiz:** was once the largest lake in NA and covered Manitoba and NW Ontario, and E Saskatchewan. lake is now flat fertile land

- When glacial waters escaped into the existing drainage system, they cut deeply into the glacial till and sedimentary rocks, creating huge river valleys: **glacial spillways**
- Interior plains slope towards the arctic ocean, while east of Edmonton, land tilts toward HB and atlantic ocean
- The principal rivers draining the interior plains are the northward flowing Athabasca and Peace rivers, whose water eventually enters Mackenzie river and proceed to arctic
- Eastward-flowing north and south saskatchewan rivers which rise in the rocky mountains, join in central Saskatchewan into lake winnepeg. Then by Nelson river to Hudson bay
- Three subregions based on sharp changes in elevations take place within the Canadian prairies: the Manitoba lowland, the Saskatchewan plain, and the Alberta Plateau

#### The Hudson Bay Lowlands

- 3.5% of the land area of Canada
- consist of a thin cover of marine sediments deposited by the Atlantic ocean 10,000-12,000 years ago
- lies mainly in northern Ontario, through small portions stretch into Manitoba and Quebec
- surface water is everywhere in the short summer but a frozen landscape exists in the long winter months
- **muskeg**: a type of peat, is the dominant ground cover, beneath which lies permafrost
- low ridges of sand and gravel remnants of former beaches of the **tyrell sea**: separate these extensive areas of muskeg.
- The presence of permafrost, and its immature drainage system, the Hudson Bay lowlands is poorly drained.
- First, a warmer climate appeared 15,000 years ago, causing the Laurentide ice sheet to melt and recede. By 12,000 this area was free of ice but submerged beneath the Atlantic ocean.
- With the tremendous weight of the ice gone from the submerged land, the second event began as the Hudson Bay lowlands slowly rose above sea level.
- As the earth's crust began to rise, the Tyrell sea retreated: **isostatic rebound** (gradual uplifting of earth's crust following a retreat of ice sheet that because of weight depressed the earth's crust)
  - As the ice mass slowly diminished, the isostatic recovery begins: **restrained rebound**
  - Once the ice mass is gone, the rate of uplift reaches maximum: **postglacial uplift**
  - it is followed by a period of final adjustment called: **residual uplift**
- seabed of the tyrell sea rise, exposing poorly drained coastal plain
- this region has only a handful of settlements
- Moosonee and Churchill are the largest settlements, have an economic function as termini of two northern railways

#### Arctic Lands:

- 10% of Canada

- centered in the Canadian Arctic Archipelago, this region lies north of the Arctic Circle
- it is a complex composite of coastal plains, plateaus, and mountains
- The arctic Platform, the arctic coastal plain, and the Innuitian Mountain complex are three principal physiographic sub regions
- Arctic plateau forms: consists of a series of plateaus composed of sedimentary rocks. Is in the western half of arctic archipelago around Victoria island
- Arctic coastal plain extends from the Yukon coast and adjacent area of the northwest territories into island located in Beaufort sea
- Third: Innuitian mountain complex: eastern half of arctic archipelago. Ancient sedimentary rocks.
- Across these lands, the ground is permanently frozen to great depths., never thawing, except at the surface during short summer season: **permafrost**
- Physical weathering, consisting of mainly of differential heating and frost actions, shatters bed rock and produces various forms of **patterned ground**. Consists of rocks arranged in polygonal forms by minute movements of the ground caused by repeated freezing and thawing
- Patterned grounds and **pingod** ( ice cored mounds or hills) give the arctic lands a unique landscape
- Climate is cold and dry
- In the mountain zone of Ellesmere island, glaciers are still active ice is calved or broken from glacier forming ice bergs
- Plains and plateaus= polar desert environment
- Most people live in western part, mouth of Mackenzie river.

#### The Appalachian Uplands

- 2% of Canada
- consists of the northern section of the Appalachian mountains, extend south in eastern US to northern Georgia and Alabama
- weathered uplands are either rounded or flat topped
- they are the remnants of ancient mountains that underwent a variety of weathering and erosional processes over a period, worn down these mountains, creating a subdued mountain landscape with **peneplain** features
- highest elevations are on Gaspé Peninsula in Quebec
- the coastal area, ocean waters have invaded the lower valleys creating bays or estuaries, with a number of harbors like Halifax.
- The island of Newfoundland consists of a rocky upland with only pockets of soil found in valleys
- The nature of this physiographic region favoured early European settlement along the heavily indented coastline where there was easy access to vast cod stocks, these tiny settlements are declining
- PEI consists of flat rolling landscapes, overlaid by sedimentary, soft red colored sandstone. Due to iron oxides. arable land

#### The Great Lakes- St Lawrence Lowlands

- Extending from the St Lawrence river near Quebec city to Windsor, wedged between the Appalachians, the Canadian Shields, and the Great Lakes
- Two distinct subregions
- Landscape is flat to rolling, reflects the underlying sedimentary strata just below the surface
- This slightly tilted sedimentary rock, consists of limestone, is exposed at the surface of southern Ontario, forming Niagara escarpment
- A thin layer of glacial lacustrine (ie lake) material deposited after the melting of Laurentide ice sheet
- The landscape was shaped by Champlain sea, occupied this area for 2,000 years. The sea left behind marine deposits, which today form the basis of fertile soils in the St Lawrence lowlands. It retreated about 10,000 years ago and left broad **terraces** that slope gently towards the St Lawrence river.
- The sandy to clay surface materials are a mixture of recently repositioned sea, river, or glacial materials
- Mostly the sub-region soils are fertile, the physiographic region lies well south of the forty ninth parallel formed US Canada border from west of Ontario to Vancouver island. Its proximity to industrial heartland of us, and favorable physical setting, home to Canada's main economy and manufacturing core.

#### Geographic Location: \*figure 2.3

- Canada's cooler climate translates to less area suitable for agriculture and settlement than US
- Throughout Canada latitude and longitude vary enormously
- The need for time zones stems from the need to organize time to accommodate the scheduling of rapid transportation, buses, railways, and airlights.
- **Longitude:** we mean the distance east or west of the prime meridian. As the equator represents zero latitude, the prime meridian represents zero longitude. (north pole to south passes through Greenwich, England)
- **Latitude:** measure of distance north and south of the equator.

#### Climate:

- Central aspect of the physical world
- Climate describes the average weather conditions for a specific place or region based on past weather conditions over a long period of time, also affects people living in a particular place for a short period of time
- For each part of the world, climate is translated into regional versions known as climatic types and regions: majority is in arctic or subarctic zones

#### Climate Factors:

- Three dominant climate factors:
- Energy from the sun sets the parameters, the amount of solar energy absorbed by the earth is converted to heat. Varies by latitude

- **Global circulation system:** redistributed this energy from low latitudes to high latitudes through circulation in the atmosphere and oceans. Eg. Japan current brings mild weather to BC
- The global circulation system travels west- to east direction in higher latitudes of northern hemisphere, causing air masses that develop over large water bodies to bring mild and moist weather to adjacent land masses. Eg. Canada, air masses from the Pacific ocean cross the cordillera into interior of Canada: **known as marine air masses**
- Air masses originating over land large masses: **continental air masses**. Vary dry and vary in temperature depending on the season. Winter= cold, summer =hot
- Canada experiences warmer and moister in lower latitudes, and colder in higher. Coastal areas experience smaller ranges of seasonal temps, and more annual precipitation.
- Continental effect refers to the fact that land masses heat up and cool more quickly than oceans. In turn, greater distance from an ocean affects temps and participation. As distance from an ocean increases, daily seasonal temp increases and percip decreases.

#### Climatic types and Zones:

- **Climatic zone:** an area of the earth's surface where similar weather conditions occur.
- Canada has 7 climatic zones: the Pacific, Cordillera, Prairies, Great Lakes, Atlantic, Subarctic, and Arctic
- The subarctic climate prevails in the northern areas of Atlantic Canada, Quebec, Ontario and western Canada and northern BC
- Subarctic is the principle climate in northwest territories
- Subarctic climate extends into much higher altitudes in northwest Canada than in northeast Canada because of warmer temperatures in the northwest
- Subarctic climate zone as a southeast northwest alignment, which modifies in Quebec due to proximity to marine

#### Air Masses

- Large sections of the atmosphere with similar temperature and humidity characteristics
- They form over large areas with uniform surface features, and consistent temps: called source regions eg. Pacific ocean marine source region, interior of NA continental source region
- Pacific airmasses bring mild, wet weather to BC, air masses stronger in winter hence more precipitation in winter
- Airmasses bring moisture from ocean to land, precipitation is unevenly distributed. Lowest= territorial north. Highest= BC
- Types of precipitation:
  - Convective precipitation: moist air is forced to rise because the ground has become warm. Associated with thunderstorms
  - Frontal Precipitation: occurs when warm airmass is forced to rise of colder (denser) air mass
  - Orographic precipitation: air mass is forced to rise over high mountains, as the air mass descends along mountains, the temp rises, precipitation less likely to occur: rain shadow effect

- In BC most of the precipitation falls as frontal and orographic because: (1) the warm Pacific ocean serves as a source for east-ward moving Pacific air masses that contain large quantities of water vapor. (2) along BC coast, precipitation occurs either as the Pacific air mass rises over a colder one, or as the same air mass must rise over coastal mountain ranges

#### Climate, Soils, Vegetation

- Climate effects development of soil and vegetation
- Climate determines the **soil order** and native vegetation in a given region and hence influences the land use such as crop cultivation, forestry, or grazing,

#### Extreme Weather Events

- Blizzards, droughts, ice storms, impacts on humans
- Increase in extreme weather events because of rising temps: warmer atmosphere, more moisture
- Atlantic Canada, sight of many hurricanes, cyclones. Halifax hurricane
- Natural disasters create a common bond as everyone struggles against threat (sense of belonging)
- Residents of Winnipeg and other communities along the Red River have suffered through eight spring floods

#### Permafrost:

- Form of a very cold Pleistocene climate, temperatures at or below zero for at least 2 years
- Exist in Arctic and Subarctic regions, and at high elevations at Cordillera zone
- May be several hundred meters deep, further south permafrost is less frequent and where it occurs it rarely penetrates more than 10m. in all geographic regions
- Transitional zone= small pockets of frozen ground have a depth of less than 1m
- **Alpine permafrost:** in mountainous areas and takes on a vertical pattern as elevations of a mountain increase. Follows a zonal pattern, which does not correspond to the latitude but rather to the annual mean temperatures that fall below zero. Map\*
- **Continuous permafrost:** occurs in the higher altitudes of the Arctic climatic zone, 80% of ground permanently frozen. Extends into northern Quebec. Low mean annual air temps
- **Discontinuous permafrost:** occurs when 30-80% of the ground is permanently frozen. Subarctic climatic zone, mean annual temps -5—15
- **Sporadic permafrost:** mainly in northern parts of the provinces, where less than 30% of the area is permanently frozen. 0—5

#### Major Drainage Basins:

- Longest coastline in the world, and has 4 major drainage basins
- **Drainage basin:** land that slopes towards the sea and is separated from other lands by topographic ridges. These ridges form drainage divides.
- Rivers cross the US-Canada border and part of the Great Lakes lies in the US, Columbia River leaves BC and continues its journey to the Pacific Ocean through Idaho, Washington, and Oregon

- Two small rivers Milk and Poplar, flow from southern Alberta and Saskatchewan to Missouri river
- Red River flows from North Dakota and Minnesota into Manitoba beyond Lake Winnipeg to Hudson Bay
- Richelieu River: flows from Lake Champlain, New York, St. Lawrence, empties in Bay of Fundy, New Brunswick
- Aborigines used St. Lawrence-Mackenzie rivers as transportation routes for fur trading, today St. Lawrence plays a key role in internal and foreign shipments
- Canada, exporting water to US

#### The Atlantic Basin

- Centered on the Great Lakes and the St. Lawrence River, Basin also includes Labrador, receives considerable precipitation
- The largest hydroelectric development: Churchill Falls in Labrador
- Earlier hydroelectric developments took place along the St. Lawrence River in Southern Quebec and along its tributary rivers that flow out of the Laurentide Upland of the Canadian Shield
- Rivers such as Manicougan River originate in the higher elevations of the Laurentide Upland, abundant precipitation, natural lakes, and sharp increase in elevation ideal condition for hydroelectric power.

#### The Hudson Bay Basin

- Largest drainage basin
- Great for hydroelectric power stations and is largely generated in the Canadian Shield area of the Hudson Bay Basin
- Largest hydroelectric power is in northern Quebec and on Nelson River in Manitoba

#### The Arctic Basin

- Second largest basin - Mackenzie River dominates and is the second longest in Canada
- Few hydroelectric bc of long distance to markets, exception of Peace River in BC

#### The Pacific Basin

- Smallest basin, third highest volume of water draining into sea
- Largest hydroelectric projects: Ktimat, Kemanó
- Heavy participation of BC mountains

#### Environmental Challenges:

- In Canada's Arctic, indicator of warmer summers is the summer retreat of **sea ice**, leaving the possibility of an ice-free Arctic Ocean for part of the year
- The semi-arid prairies, cycle of wet and dry years. Will turn into arid environment or humid?
- Global warming trend due to burning of fossil fuels and release of greenhouse gases end of century temp will be 1.8-4
- Global warming focuses on the temperature change that results from increased emissions of **greenhouse gases** from human activity (fossil fuels)
- Known as the **greenhouse effect** this anthropogenic caused warming trend began an industrial revolution, great quantities of coal began to be consumed

- Climate change is not restricted to human caused warming, considers natural forces too.  
Precipitation and wind patterns

#### Canada and Global Warming

- Canada appears to be slowly warming climatic zones will shift northward
- Arctic zone could decrease in size till the Arctic Archipelago
- One consequence of melting of ice in permafrost would be **subsidence** resulting in irregular relief
- Major repairs to highways and bridges, pipelines
- Longer growing season for crops, extended navigation season for St. Lawrence and for **northwest passage**, flooding
- Coal burning plants and oil sands production account for most industrial pollution. Nanticoke station in ONT, and Trans-Alta plant Alberta two largest
- Alberta oil sands large amount of crude oil, open pit mining is the worse offender. Politicians have stopped the oil sands some, hurting the manufacturing in central Canada
- Solution: establishing more protected areas and parks, going green
- **Holocene EPOCH**: represents a relatively warm period in the earth's history

#### Urban Smog:

- Emissions from automobiles and coal burning plants
- Mixture of smoke, Sulphur dioxide, and other contaminants, brownish haze over cities
- Southern Ontario: millions of automobiles and trucks
- Closing coal burning plants, replacing with electrical productions

## Chapter 5: Ontario

### Ontario Within Canada

Ontario's place has slipped for four reasons:

1. The principal market for Ontario products, United States dried up due to the economic crisis
2. 2002, when China joined the World Trade Organization, low-cost Chinese manufactured goods flooded Canadian markets
  - many Canadian people can't match low cost of China
  - economists have termed this effect of globalization on the manufacturing sector as "**China Syndrome**"
3. Western provinces are enjoying commodity boom, allowing those provinces to outpace economic growth in Ontario
  - low Canadian dollar kept price of exports to US at low levels
4. Ontario government has heavy debt
  - It has always been the economic engine of the country but in 2009 it received equalization payments from the federal government for the first time ever.
  - Ontario remains an important part in the political aspect, due to large population and affluent people. More representatives in House of Commons

### Ontario's Physical Geography:

- Ontario is larger than most countries (over 1 million sq. km).
- Only 7% of its population lives in northern Ontario.
- The Niagara Escarpment contains the most variable topography in southern Ontario.
- Northern Ontario: Canadian Shield, and Hudson Bay lowlands (resource hinterland)
  - Subarctic of northern has longer and colder winters, short cool summers
  - Very little agricultural land
  - Limited opportunities for hydroelectric and power development
- Southern Ontario: Great Lakes-St Lawrence (agricultural industrial core)
  - Summers in southern Ontario are hot and humid.
  - In winter, invasions of Arctic air masses bring cold temperatures and bitter wind chills.
  - Southern Ontario has over half of the highest quality agricultural land (Class 1) in Canada.
  - The area is underlain by slightly tilted sedimentary rocks, which are covered by glacial till

### Climate and Agriculture

- Proximity to Great Lakes affects the local weather by funneling air masses into this region and by increasing local precipitation
- Southern Ontario has over half of the highest quality agricultural land
- Northern Ontario, highly specialized crops such as grain corn, soybeans, and sugar beets, fruits

- Niagara fruit belt: unique set of growing conditions has provided a basis for grape production, resulting in high quality wine production
  - Air drainage from the Niagra escarpment to Lake Ontario reduces the danger of both spring and fall frosts
  - The water of Lake Ontario is warm in Autumn and its proximity to Niagara fruit belt helps moderate advancing cold air masses
  - The cool waters of Lake Ontario keep air temperatures low, thereby delaying the opening of fruit blossoms, until late spring when risk of frost must lower
- Much more diversifies use of agricultural land prevails in Southern Ontario
- Valuable farmland is now part of the urban landscape
- Highland companies: turned best agricultural class 1 land into mineral extraction place (called quarry)

#### Environmental Challenges:

- Air pollution (smog, vehicular traffic) and water pollution
- Sustainable development technology Canada has provided base funding for promising technologies such as plasco energy group tests in Ottawa that converts urban waste into reuseable products
- Smog: health hazard: automobile exhaust and coal burning plants
- Ontario has closed all coal burning plants. Disadvantages: it is cheap, provincial and local approval takes time.
- Additional nuclear plants will provide more and more electrical power, extra bill to Ontario electricity bill
- Alternatively: wind mills
- Water pollution: contamination of E.coli, due to human activities. Dumping toxic wastes into lakes.
- Water levels in great lakes declining due to warming climate
- Toxic waters: industrial discharges of pollutants, growing level of phosphorus, agricultural runoff, create a "green slime"
- Changing great lakes eco system: Asian carp, zebra muscles

#### Vignette 5.5: The tragedy of the Urban Sprawl:

- Devours valuable underpriced agricultural land
- Urban encroachment and other non-agricultural interests have cut deeply into the amount of farming land (25% of class 1 land lost)
- Indirect impact of urban sprawl is the release of more greenhouse gases because of longer drives from suburbia to places of work
- Ontario has put into place measures such as Greenbelt plan, the Places to Grow act, and the growth plan, efforts fall short
- Convince people to switch from automobile to public transportation

#### Ontario's Historical Geography:

- 1782-3 British loyalist moved north to Nova Scotia and New Brunswick, while others resettled in the Eastern townships of Quebec
- also colonized the wilderness area that later became known as upper Canada

- Britain rewarded its Indian military allies, with the Haldimand tract, consisted of strip of land on each side of the grand river

#### War of 1812

- Ended the influx of American settlers into Upper Canada, **December 1814 treaty of Ghent**, increasing number of settlers came from the British Isles (esp Ireland and Scotland)
- By confederation, all the arable land in the Great Lakes lowland had been cleared of forest by settlers.
- The geographic size of Ontario, a fraction of its present size, but as Canada acquired more territory from Britain, Ontario and Quebec obtained more land. (although north little value for economic development)
- Ontario's second expansion ended the bitter contest between Manitoba and Ontario for the land around the Lake of Woods

#### The birth of an Industrial Core

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- Transportation routes played a key role especially the Welland Canal, which facilitated low cost transportation
- Under the national policy high tariffs on imported goods, allowed manufacturing to flourish
- Growth of industrial workforce in Ontario
- Four factors had led to successful manufacturing in southern Ontario, auto mobile industry. (!) Ontario's geographic advantage, close to America
- (2) trade restriction on foreign manufactured goods (3) access by American branch plants in Canada to lower tariffs for Canadian made products in the british empire
- auto pact resulted in more manufacturing
- Canada US free trade agreement brought other components of the economy under a single North American maker, removing tariffs.
- Golden days of manufacturing **ended during the industrial crisis in 2007-9**

#### Aboriginal Territory Within Ontario

- Land grants- Haldimand Proclamation
- Two Robinson treaties: covered large areas of east and north of lake Huron and north of lake Superior
- Upperwash dispute: land from Stony point was taken to serve as military, land was supposed to be returned, but didn't get returned. Resulted in protests. It was eventually returned. But still remains a limbo
- Specific land claims by native groups are not easy. Eg. Caledonia (refer to vignette)

#### Ontario Today:

- Largest economy, good income, great clusters of cities, universities, more members of parliament, central location in north America.
- Innovation and technology should move developed regions like Ontario into a more sophisticated information society
- Canada's creative wealth is reflected in its universities and provincial and federal research facilities

- Entertainment industry is flourishing (Toronto international film festival)
- Universities foster collaborative innovation

#### Ontario Advantage: Trade with the United States:

- Restructuring of Ontario's manufacturing industry took place after 1989 when the FTA signed, Canadian firms were faced with highly competitive market, that often resulted in closure and/or relocation to us and Mexico.
- Driven by automobile shipments to the US market, size of US market tilted the provinces trade in that direction
- Auto pact came into play, integrate Canada's automobile industry into the north American market, Canadian automobile production was controlled by big three automobile companies
- Economic hard times can alter trades significantly.

#### Ontario's Economy:

- Manufacturing and financial center
- Textile firms and other manufacturers that required semi-skilled labour working at or near minimum wage have disappeared
- Wage cuts, even for unionized workers
- Tertiary sector growing because global economic crisis hit the manufacturing sector
- Resilience: kept sales growing by tapping into booming Alberta market

#### Energy Crisis:

- Ontario faces both energy shortages and high energy costs
- Green energy act: designed to stimulate green construction projects to produce equipment. Clean renewable energy, would be marketed at high rates, negative impact increasing power costs to consumers

### **The Automobile Industry:**

The Auto pact served four objectives:

1. Secured guarantees that Canadian automobile plants would not close
  2. Economies of scale, specialize in few types of automobiles
  3. Reduced price of cars for Canadian customers
  4. Higher wages and benefits for workers
- Auto pact came to an end, resulted in Toyota and Honda expanding, even Germany and South Korea
  - 2008-9 crisis+ tsunami of Japan no Toyota and Honda parts

Importance of Ontario's automobile industry:

- 1/3 loss of employment, companies demanding lower wages
- reduced lower wages, decline in exports

three advantages over American Counter Parts:

1. Ontario assembly plants higher productivity
  2. Lower Canadian dollar, Canadian exports cost less
  3. Health care costs covered in Canada
- Rising power of Japanese based firms
  - Electric car, effort to create greener environment

- Second approach: produce specialized vehicles needed by the mining industry

#### Automobile Assembly Plants

- Concentrated in southern Ontario
- Asian automakers are capturing more and more of the North American market (Honda and Toyota): support from federal and provincial government, easy access to US markets, small town labour force

#### Automobile Parts Firms

- Automobile industry consists of two separate operations: assembly and production
- Automobile parts firm can operate on a **just in time** principle: small batches and quickly delivered as needed to customers. Reduces inventories, warehouse space, labor costs
- Outsourcing has two advantages (1) allowed manufacturers to concentrate on assembling automobiles there by reducing cost and improving quality of their product (2) parts companies were not unionized hence lower wages.
- The strengthening of Canadian dollar caused adv to disappear.
- US autoworkers have lost some healthcare
- Access to US market became more complicated due to 9/11, reduced just in time
- Deciding to make a new bridge, Ottawa paying for all of it

#### Northern Ontario

- Old resource hinterland, sluggish economy, a declining population base, high unemployment
- Computers have replaced news papers, usage of less paper
- Aging population, net out migration, few immigrants, expanding Cree and Metis population
- Mining, forestry, and tourism are the major economic activities
- Northern Ontario, not conducive to major hydroelectric developments, high elevations of Canadian shield in Quebec allow for hydroelectric there
- Long distances separate the four major cities, due to its physical geography, rocky terrain

#### Forest Industry

- Softwood lumber agreement, limits Canadian softwood exports,
- Main challenge is to maintain a balance between logging and regeneration of the forest, private companies must obtain forest leases, should restore trees at logged areas
- Most important primary industry in northern Ontario, Ontario mills produced pulp, paper plywood etc (American owned companies)
- Demand from US has dropped dramatically (shutdowns put thousands of people out of work)
- Today the forest industry faces 2 issues: 1<sup>st</sup>, many mills were built before WW2, and continue to use old technology (toxic discharge)
- 2<sup>nd</sup> fluctuations in US demand of softwood lumber, low prices

#### Mining Industry:

- center of mining is the Canadian shield, diamonds, gold, nickel, copper
- the ring of fire mineralized belt is very promising, nickel copper platinum.

- Chromite: principle component in stainless steel, ring of fire delay in becoming operational until 2017
- 1960s large zinc deposit in Timmins, Crossroads diamond factory

### Ontario's Urban Geography

- fastest growing cities: Guelph, Oshawa, Toronto
- slowing: St. Catharines, Thunder Bay, Sudbury

The Golden Horseshoe:

- densely populated
- many visitors as tourist or business trips
- ¼ of Canada's population

Toronto:

- provides unique high-end services, ranging from finance, opera etc.
- massive population increase, due to immigration (ethnic diversification, foreign architecture)
- GTA: to cope with rapidly expanding population
- Problems: traffic congestion, commuting to downtown
- Resistance of local residence to changing urban space with a new ethnic identity

Ottawa Valley:

- Area where both languages are used, fourth largest metropolitan
- In migration from other parts of Canada
- Ottawa's economic orbit extends to a number of small towns on both Ontario and Quebec sides
- Notional and international affairs, earlier it was the forest industry
- The loss of Nortel has hurt Canada's high tech industry

Southwestern Ontario

- London provides administrative, commercial, and cultural services for the larger region, insurance, manufacturing.
- Auto plants play an important role in the economy of Southwestern Ontario, innovative technology

Cities in Northern Ontario:

Loosing economic strength for three reasons:

(1): the most accessible mineral and timber resources have been exploited, resource production more costly

(2) depressed prices for lumber (mill closures)

(3) more technology, fewer workers required

- Timmins, Sudbury: mining and smelting of nickel and copper, increasing service industries. Low populations.
- Sault Ste. Marie: steel town, downward population trend, geographic location is major disadvantage
- Thunder Bay: major transshipment point and key element in east-west transportation system. Grain, iron, and coal. Ride of Asian markets for resources from Western Canada.
- Thunder Bay cont: loss of softwood lumber demand from US.

- One option being pursued is tourism.
- Sudbury increasingly reacted aggressively seeking to expand its service sector.
- Many first nations are found in Northern Ontario, being evacuated in Timmins due to spring floods. Wanted to put them in another area.
-