IDX G10 S1 M1 Human Geography H
Study Guide Issue 1
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Table of Contents

Chapter 1 Issue 1: Why Is Geography a Science?

A) Introducing Geography

- Uniqueness of places
    - Place: a specific point on earth, distinguished by a particular characteristic
    - Region: an area of the Earth defined by one or more distinctive characteristics
- To explain why different places are interrelated
    - Scale: the relationship between the portion of Earth being studied and Earth as a whole
    - Space: the physical gap or interval between two objects
    - Connection: the relationships among people and objects across the barrier of space

B) History of Geography

- Geography was first studied in the ancient Greek civilisation
- Human geography has been practised for centuries
- The first person to write the word ‘geography’ was Eratosthenes

C) Cartography

- Map: two-dimensional model of the Earth's surface
    - A reference tool to determine location and distance

    - A communication tool to depict the distribution of human activities or physical features
- Cartography: the science and art of mapmaking
- Reference map
    - Informational, for general-purpose use
    - Show boundaries, place names, physical/topographic or manmade features
    - Focusing on where things are
- Thematic map
    - Quantitative
    - The emphasis is placed on a particular element

D) Contemporary Geographic Tools

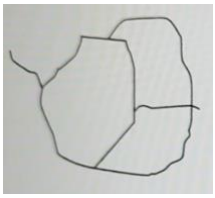
- GPS
    - Global Positioning System (GPS): a system that determines the precise position of something on Earth
        - Provides a mathematical location by using coordinates
    - Commonly used for navigation
    - Limited to the Earth's orbit
    - Doesn't organise and display maps
    - Geo-tagging: identification and storage of a piece of information by its precise latitude and longitude coordinates
    - Usage, e.g. find the best routes via navigation maps
- Geographic Information Science (GIScience)
    - GI Science: analysis of data about the Earth acquired through satellite and other electronic information technologies
    - Geographic Information System (GIS)
        - Captures, stores, queries, and displays geographic data
        - Produce accurate and attractive maps
        - Computer-based system
    - Remote sensing: the acquisition of data about Earth's surface from a satellite orbiting Earth or from other long-distance methods
        - Remote sensing satellites scan Earth's surface and transmit images in digital form to a receiving station on Earth
        - Without physical contact
        - Not limited to Earth's orbit

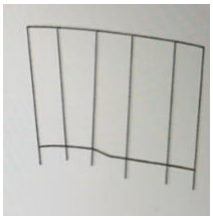
- Help geographers create more accurate and complex maps and measure changes over time
- Ground-truthing: driving around to gather information for street navigation devices

- VGI
  - Volunteered geographic information (VGI): the creation and dissemination of geographic data contributed voluntarily and for free by individuals
  - Citizen science: scientific research by amateur scientists
  - Participatory GIS (PGIS): community-based mapping
  - Mashup: a map that overlays data from one source on top of a map provided by a mapping service
    - E.g. Google Maps / Google Earth
    - E.g. a mashup map shows the locations of nearby pizza restaurants

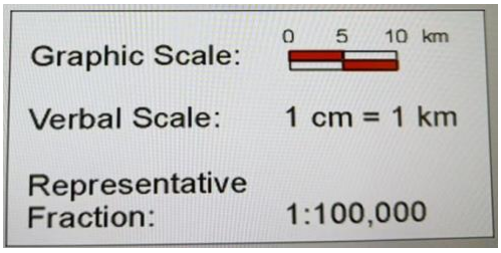
E) US Land Survey System

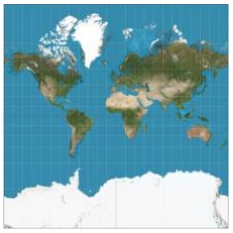
- One of the rural settlement patterns
- Township & Range system
  - North-South lines = principal meridians
  - East-West lines = base lines
  - 

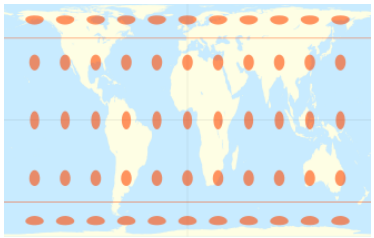
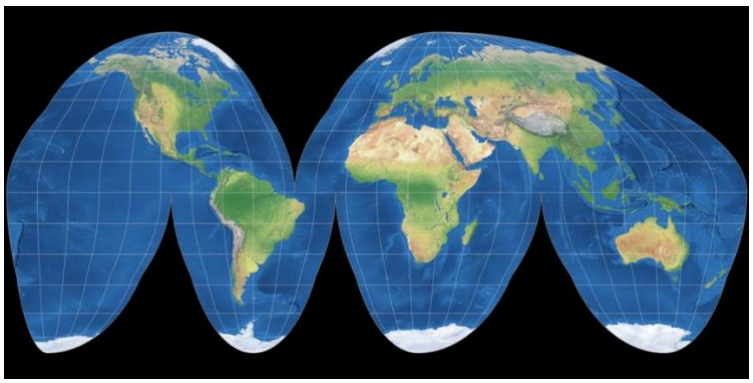
  - The Land Ordinance of 1785 (implemented in the US): a system used for dividing the territories
    - Townships, range, sections, quarter sections
- Land survey patterns in North America
  - Metes and Bounds
    - Brought by the British
    - 
  - Township and Range
    - US pattern

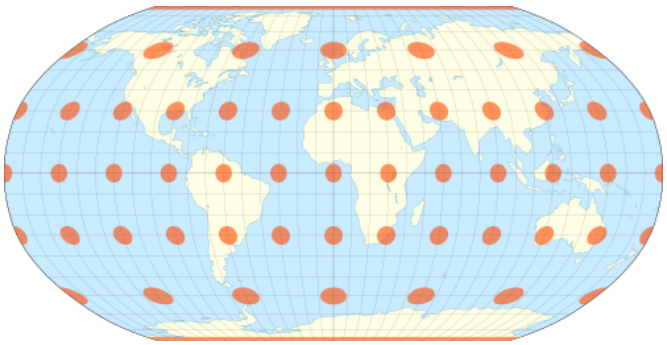
- Long lots
  - Used by the French
  - Each family can get equal access to resources, e.g. rivers
  - 

F) Interpreting Maps

- Map scale
  - Map scale: the relationship of a feature's size on a map to its actual size on Earth
  - Three types of map scales
    - Graphic (bar scale, line scale)
    - Verbal (word statement, word scale, statement of equivalency)
    - Ratio scale (representative fraction)
    - 

  - Larger scale = more detail is shown in a smaller area
  - Distortion is more severe in small-scale maps
- Projection
  - Projection: the scientific method of transferring locations on Earth's surface to a flat map
  - Distortion
    - Preserve shape
      - E.g. Mercator
      - 
      - Cylindrical
      - Preserve the direction everywhere along the straight line, but only preserve the shape in a small region and at a low latitude

        - Suited for navigation, as the representation of the rhumb line is a straight line on the map
            - Rhumb line: a line that crosses meridians at the same angle
            - Rhumb lines are not straight on the Transverse Mercator maps
        - Distortion of size
- Preserve size
    - Equal area of landmasses, but distorts the oceans
    - E.g Gall-Peters map
        - Equal area, cylindrical
        - 
    - E.g. Goodes map
        - Equal area, pseudo-cylindrical
        - Earth is broken into segments instead of having one continuous map image
        - Not suitable for navigation
        - 
- Compromise
    - E.g. Robinson
        - All distorted, but to a minimal level
        - Pseudo-cylindrical, good looking

- 

G) The Geographic Grid

- Latitude and Longitude
  - Longitude: the location of each meridian
    - Meridian: arc drawn between the north and south poles
      - A half-circle from the North to the South Pole (not a full circle)
      - Never distorted by magnetic declination
      - Every meridian has the same length
    - Prime meridian: the meridian that passes through the Royal Observatory at Greenwich, England, is 0° longitude
  - Latitude: The numbering system to indicate the location of a parallel
    - Parallel: a circle drawn around the globe parallel to the equator and at right angles to the meridians
    - Varies in length
    - 90° for each pole (max. 90° north & 90° south)
  - Mathematical location: exact, numerical description of a place's location on the Earth's surface using latitude & longitude
- Time
  - Greenwich Mean Time (GMT): the time at the prime meridian
    - Reference time for all points on Earth
    - Measured from 0° longitude
  - Each 15° band of longitude is assigned to a standard time zone
  - International Date Line: 180° longitude, move the clock back 24 hours when passing it eastwards

Chapter 1 Issue 2: Why Is Each Point of Earth Unique?

A) Ways to describe a place

- Place names
  - Toponym: the name given to a place on Earth

    - E.g. Shanghai
- Site
    - Physical character of a place
    - Essential in selecting locations for settlements
    - Humans can modify the characteristics of a site
    - Environmental determinism: the physical features of a place can directly shape human society and culture
    - Possibilism: a geographic theory that argues the physical environment might set constraints on human development, but humans can still develop by choosing from a wide range of possibilities among the limit
    - Cultural ecology: study of how human and their environment interact
    - E.g. Huangpu River
- Situation
    - Relative location
    - Valuable ways to indicate location
        - Finding an unfamiliar place
        - Understanding the importance of a place
            - Many locations are important because they are accessible to other places
            - E.g. Istanbul is a centre for the trading and distribution of goods between Europe and Asia

B) Region

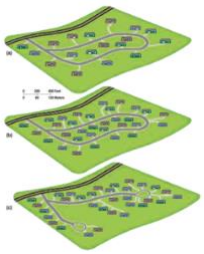
- Region: an area of unique characteristics
- Study a "region" using the cultural landscape approach (Carl Sauer)
- Two common scales of a region
    - Several neighbouring countries that share important features
        - E.g. Latin America
    - Many localities within a country
        - E.g. southern California
- A region is a combination of cultural, economic, and physical features
- People are the most important agents
- Formal Region (uniform region)
    - Area within which everyone shares one or more distinctive characteristics
    - The shared feature could be a cultural value

- E.g. language, religion, sharing common laws
- E.g. the U.S. Census Bureau divides America into nine formal regions (Northwest, Midwest, etc.) for data collection and analysis

- Functional Region (nodal region)
  - Area organised around a node or focal point
  - The characteristic chosen to define a functional region dominates at a central focus or node and diminishes in importance outward
  - Often used in economic areas
  - E.g. transportation, communication network, newspapers, area of dominance of a television station
- Vernacular Region (perceptual region)
  - An area that people believe exists as part of their cultural identity
  - E.g. dominance of people's education

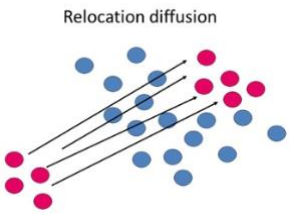
Chapter 1 Issue 3: Cultural Diffusion and Globalisation

A) Distribution

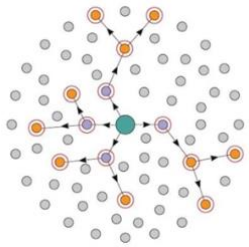
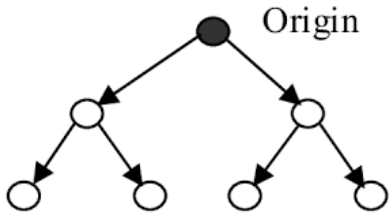
- The arrangement of a feature in space
- Concentration
  - The extent of a feature's spread over space
  - Clustered
    - If the objects in an area are close together
  - Dispersed
    - If they are relatively far apart
  - To compare the level of concentration most clearly, two areas need to have the same number of objects and the same size area
  - Two neighbourhoods could have the same density of housing but different concentrations
    - 
- Pattern
  - Geometric arrangement of objects in space
- Density

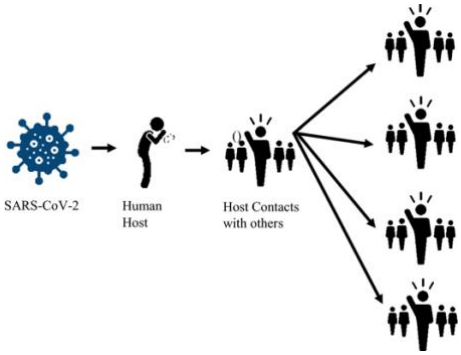
- The frequency with which something occurs in space
- Arithmetic (crude) = total number of people / total land area
- Physiological (nutritional) = total number of people/amount of arable land area
    - E.g. Singapore has a high population but a small amount of arable land
    - Indicates the pressure that people may place on the land to produce enough food
- Agricultural = total number of farmers/amounts of arable land area

B) Connections: Diffusion

- Connection: relationships among people and objects that cross the barrier of space
    - Results
        - Assimilation: the process by which a group's cultural features are altered to resemble those of another group
        - Acculturation: the process of changes in cultures that result from the meeting of two groups
        - Syncretise: the combination of elements of two groups into a new cultural feature
- Diffusion
    - Diffusion: the process by which a feature spreads across space from one place to another over time
    - Something originates at a hearth and diffuses from there to other places
        - Hearth: a place from which an innovation originates
    - A cultural group must be willing to try something new and must be able to allocate resources to nurturing the innovation
    - Relocation diffusion
        - The spread of an idea through the physical movement of people from one place to another
        - When people move and migrate, they carry with them their culture
        - 

    - Expansion diffusion
        - The spread of a feature from one place to another in additive processes
        - Hierarchical diffusion

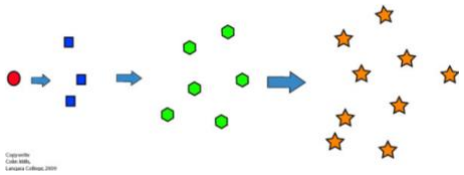
- The spread of an idea from a person or nodes of authority or power to other persons or places
- May result from the spread of ideas from political leaders, the social elite, or other important people
- Can jump over intervening areas
- E.g. diffusion of innovation & pop culture
- E.g. Hailey Bieber leads fashion trends
- 
- 

▪ Contagious diffusion
- The rapid, widespread diffusion of a characteristic throughout the population
- From a single, powerful source point
- E.g. diseases, viral internet trends, religions
- 

- No jumping across intervals
- E.g. the diffusion of RMB, HIV/AIDS in the U.S., waves among fans in a stadium

▪ Stimulus diffusion
- The spread of an underlying principle, even though a characteristic itself apparently fails to diffuse

- Part of an idea is spread to create something new



- Maladaptive diffusion: diffusion of an idea or technology with negative side effects
  - Works better in one region but not in another region
  - E.g. The Green Revolution → Sub-Saharan Africa, Fur trade → tropical regions

C) Connection: Spatial Interaction

- Interaction takes place through a network
  - Network: a chain of communication that connects places
- Friction of distance: the distance itself imposes a discouragement for movement and interaction between two points
- Distance decay: increasing distance → diminishing contact
  - The farther away someone is from another, the less likely the two are to interact
- Space-time compression: the reduction in the time it takes for something to reach another place
  - Much less severe in the contemporary world because the connection between places takes much less time
- Computers, tablets, and smartphones make it possible for individuals to set up their own connections through individually constructed networks
- Advanced transportation/communication technologies → globalisation
  - Economic globalisation
    - Global movement of money has been enhanced by the technologies (online transactions, etc.)
    - Intensified the economic differences between countries
    - Benefits the developed countries and urbanised centres
    - Regional specialisation
    - Transnational corporations (TNCs) operate in multiple countries
  - Culture globalisation
    - Spread of cultural values, practices, and products across the world
    - Leading to homogenisation
    - People in different regions consume similar goods

        - Enhanced communication through the internet
        - Unequal access to goods and resources
            - Globalisation often benefits wealthy people
        - Loss of traditional cultures

D) Three Categories of "World System"

- Core countries
    - Industrialised capitalist centres
    - High standards of living
    - Manufacture raw materials from peripheral and semi-peripheral countries to make a profit
- Periphery countries
    - Least developed & economically powerful
    - Low wages, poor working conditions
    - Provide raw materials
- Semi-periphery countries
    - Buffer zone between core and periphery
    - Cheaper labour
    - Significant economic inequality

E) Classifications of methods to study geo-features

- Nomothetic: universal & for systematic study
    - E.g. erosional processes work in similar climates
- Idiographic: personal, unique & for regional study
    - E.g., the Canyon Lands region in southern Utah
- Qualitative: cultural geography, based on features
- Quantitative: economic, population, political geography, etc. Use numbers, datas…

Chapter 1 Issue 4: Why are Some Actions Not Sustainable?

A) Geography, Sustainability, and Resources

- Resource: a substance in the environment that is useful to people, economically and technologically feasible to access, and socially acceptable to use
- Sustainability: the use of Earth's resources in ways that ensure their availability in the future
- Earth's resources
    - Renewable resources: produce I nature more rapidly than humans consume it
    - Non-renewable resource: produced in nature more slowly than humans consume it

- Human actions are damaging the sustainability of resources
    - Humans deplete non-renewable resources
    - Humans destroy otherwise renewable resources through pollution of air, water, and soil

B) Three Pillars of Sustainability

- The environment pillar
    - Conservation: the sustainable use and management of Earth's natural resources to meet human needs
        - Compatible with development, but only if natural resources are utilised in a careful rather than wasteful manner
    - Preservation: maintenance of resources in their present condition, with as little human impact as possible
        - Nature does not derive from human need and interest but from the fact that every plant and animal living on Earth has a right to exist and should be preserved, regardless of the cost
        - Doesn't regard nature as a resource for human use
- The society pillar
    - Consumer choices can support sustainability when people embrace it as a value
    - Society's values are the basis for choosing which resources to use
- The economy pillar
    - The price of a resource depends on a society's technological ability to obtain it and to adapt it to that society's purposes
    - The resources that we do not yet know how to extract or use might be potential resources for the future

C) Geography, Sustainability, and Ecology

- Ecology and the biosphere
    - Biosphere: Earth and its interactions with the biotic systems
        - Lithosphere: where most plants and animals live and where they obtain food and shelter
        - Hydrosphere: provides water to drink and physical support for aquatic life
        - Atmosphere: provides the air for animals to breathe and protects them from the sun's rays
    - Ecosystem: a group of living organisms and the abiotic spheres with which they interact

    - Ecology: the scientific study of ecosystems
        - Interrelationships between living organisms and the three abiotic environments
        - Interrelationships among the various living organisms in the biosphere
    - Human geographers study the interaction of humans with the rest of the biosphere and the three abiotic spheres
    - Human actions are sustainable if they preserve and conserve elements of the four spheres
    - Human actions are unsustainable if they cause destruction
- Cultural ecology
    - Cultural ecology: the geographic study of human environment relationships
    - Humboldt and Ritter's thinking
        - Environmental determinism: physical environment causes social development
        - Human geographers should apply laws from the natural sciences to understand relationships between the physical environment and human actions
        - The scientific study of social and natural processes is fundamentally the same
        - Urged human geographers to adopt the methods of scientific inquiry used by natural scientists
    - Possibilism: the physical environment may limit some human actions, but people can adjust to their environment
        - People can choose a course of action from many alternatives in the physical environment
    - Possibilism and sustainability
        - People can adjust to the capacity of the physical environment by controlling their numbers, adopting new technology, consuming different foods, migrating to new locations, and taking other actions

D) Sustainable Environmental Change

- The Netherlands: a sustainable environment
    - Polder: a piece of land that is created by draining water from an area
        - Constructed primarily by private developers
        - The Dutch government has reserved most of the polders for agriculture to reduce the country's dependence on imported food

        - Some polders are used for housing
    - Dikes
        - Prevent the North Sea from flooding
        - A dike completed caused the Zuider Zee to be converted from a saltwater sea to a freshwater lake
    - Delta Plan
        - Dams to close off waterways
    - Widespread use of insecticides and fertilisers on Dutch farms has contributed to contaminated drinking water, acid rain, and other environmental problems
- California: an unsustainable ecosystem
    - Groundwater is being removed more rapidly than it is being replenished
    - California's residents and businesses have been required to reduce water usage by 25%
    - 80% of water use is for agriculture
        - California's rainfall isn't sufficient for its agriculture