Nature of Geography as a Discipline

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***Abstract*—The study of geography explores the relationship between the physical environment and human activities, highlighting the intricate interactions between natural and cultural phenomena. Originating in ancient Greece, geography has evolved from a descriptive field into an analytical science. The term "geography," coined by Eratosthenes, means "to describe the earth," emphasizing the discipline's focus on the Earth's surface and its ever-changing landscapes, influenced by both natural processes and human interventions. Geography's scope spans various fields, including environmental management, disaster response, urban planning, and resource utilization. The two primary approaches to studying geography are systematic and regional, focusing on specific phenomena and spatial distributions, respectively.**

Geography's role in society is vast, aiding in decision-making processes like urban planning, disaster relief, and sustainable development. The discipline uses various methods and techniques such as cartography, GIS, and spatial analysis to analyze and visualize geographical patterns and processes. Sub-branches like physical geography, human geography, and regional geography allow for a comprehensive understanding of Earth's systems, from atmospheric conditions to human settlement dynamics. Geography's interdisciplinary nature, drawing from mathematics, natural sciences, and social sciences, positions it as a field of synthesis that fosters a deeper understanding of our world and its changing spatial configurations.

The proposed course aims at explaining the nature of the subject. It throws light on the importance of geography and describes the nature of geography as a subject. It attempts to enrich knowledge and illustrate basic concepts as well as technical terms which are building blocks of geographic knowledge. Effort, however, has been made to develop the concepts in a graded and sequential manner and deepen the interest in the subject.

Geography is one of the oldest earth sciences and its roots date back in the works of the early Greek scholars. The word ‘geography’ was first used by the Greek scholar Eratosthenes in the third century B.C.

Geo “Earth” and Graphy “to describe” literal meaning of geography is to describe about the earth’s surfaces. In other words, “Geography is largely the study of the interaction of all physical and human phenomena and landscapes created by such interactions.” It is about how, why, and where human and natural activities occur and how these activities are interconnected.

Geography has undergone changes in its approach. The earlier geographers were descriptive geographers. Later, geography came to be developed as an analytical science. Today the discipline is not only concerned with descriptions but also with analysis as well as prediction.

From this discussion you will learn how important geography is in everyday life. This study will encourage you to understand your own place and spaces with greater interest.

You must have noticed that the earth’s surface is ever changing; In general, the natural phenomena like mountains, rivers, lakes etc. change slowly while the cultural elements like buildings, roads, crops, change fast. Travelling from one place to another you notice that the trees number and types of trees change from area to area. All this is because of the continuous interaction between the environment in which we live in and the way we use it. The study of Geography is about observing such patterns. Another aspect of geography is to understand the factors or reason behind areal differentiation, how do social, cultural, economic and demographic factors change our physical landscape and create new or altered landscapes by human interventions. For example, human settlements are transformation of forest or barren lands for living purpose by human being.

Geography is often thought of as the art of making and studying maps. Maps give us a much more correct and graphic view of the way the Earth’s surface looks compared to a picture of drawing. As

earlier, even today geographical information about an area is available through reports, travel diaries and gazetteers. At present maps can be drawn by using satellite images using Geographic Information Systems (GIS) tools. Computers easily convert the information from satellite images into maps to show what changes development can bring about. Such information is of benefit to the society. Such mapmakers are in great demand today. Nowadays geographers, engineers, environmental scientists, city planners, social scientists, and many others learn to use GIS to understand the Earth better.

Geography, not only investigates what is where on the Earth, but also why it is there. Geographers study the location of the activities, carefully identify patterns using maps and find out the reasons for these patterns. The areas are then described based on the distribution of land forms, population, house type and agriculture. They discover the linkages and movements between places and are able to infer the spatial processes that are working in an area.

Today, all over the world there are problems related to providing food security, health, effective energy use and environmental conservation. Equally important are equality issues and sustainable development. All these can be achieved by using our resources in sustainable ways. Study of geography is, therefore, necessary to learn more about environmental processes and to understand how land use planning can help us to overcome problems.

Basic Concepts

Geography has been defined differently through different periods of its history Geographical work in ancient Greece had followed two distinct traditions. One was the mathematical tradition which was focused on fixing the location of places on the earth's surface, and the other was gathering geographic information through travels and field work. According to them, the purpose of geography was to provide a description of the physical features and conditions in different parts of the world. The emergence of regional approach in geography also emphasised the descriptive character of geography. According to Humboldt, geography is the science related to nature and it studies and describes all material things found on earth. Another important school of thought defined geography as the study of man-environment relationships.

I. DEVELOPMENT OF GEOGRAPHY

Ancient Period

The earliest records illustrate the interests of scholars in understanding the physical domain of the earth by making maps and astronomical measurements. The Greeks are given the credit of being the earliest geographers, prominent among them being Hower, Herodotus, Thales Aristotle and Eratosthenes.

Pre-Modern Period

This period starting from the middle of 15^{th} century and continuous with 18^{th} early provides us enormous information about the physical and cultural nature of the world by the travels and explorations of early geographers. The early seventeenth century witnessed the beginnings of a new scientific geography. Christopher Columbus and Vasco de gama , Fesdinend Meghellan and Thomas cook were important explorers and travellers among those. Varenius, Kant, Humboldt and Ritter led the geographers of this period. They contributed in the development of cartography and discovering new lands, and developing geography into a scientific discipline.

Modern Period

Ritter and Humboldt are frequently referred to us the founders of modern geography. Generally, latter half of nineteenth century is considered as a period of modern geography. The first modern geographer in true sense was Ratzel who built the structure of modern geography on the foundations laid down by classical geographers.

Recent Period

The development of geography during the post Second World War period has been very rapid. The American and European geographers such as Hartshorne have contributed the maximum during this phase. Harthshorne described geography as a science dealing with areal differentiation. The present-day geographers look upon regional approach and systematic aproach as complimentary rather than contradictory.

II. SCOPE OF GEOGRAPHY

Geography has now acquired the status of science that explains the arrangements of various natural and

cultural features on the earth surface.Geography is a holistic and interdisciplinary field of study engaged in understanding the changing spatial structure from past to the future. Thus, the scope of geography is in various disciplines, like armed services, environment management, water resources, disaster management, meteriology and planining and various social sciences. Apart from that, a geographer can help in day-to-day life like tourism, commuting, housing and health related activities.

III. APPROACHES TO STUDY OF GEOGRAPHY

Today, geography is the only discipline that brings all natural and human sciences on a common platform to understand the dynamics of the spatial configuration of the earth surface. There are two main approaches in geography:

1. Systematic 2. Regional

1. Systematic Approach

A study of specific natural or human phenomenon that gives rise to certain spatial patterns and structures on the earth surface is called systematic study. Ordinarily, systematic geography is divided into four main branches.

(i) Physical geography,
(ii) Biogeography, including environmental geography,
(iii) Human geography,
(iv) Geographical methods and techniques

(i) It deals earth systems like atmosphere (air), the hydrosphere (water), the lithosphere (earth solid rock) and biosphere, which encompasser all of earth's living organisms.

(ii) It focusses on various kinds of forests, grasslands, distribution of flora and fauna, human nature relationships and the quality of the living environment and its implications for human welfare.

(iii) It describes culture, populations, dynamics of social, economic, and political aspects of space.

(iv) It deals with methods and techniques for field studies, qualitative quantitative and cartographic analysis and Geographic Information System and Global positioning system (GIS and GPS) and remote sensing.

2. Regional Geography

Unlike systematic geography, regional geography starts with the spatial imprints of one or all the systematic geographic processes discernible as regions of different sizes. Regions could be based on a single factor like relief, rainfall, vegetation, per capita income. They could also be multificator regions formed by the association of two or more factors. Administrative units like, states, districts, tehsils also can be treated as regions. The main sub branches of regional geography are:

(i) Regional studies
(ii) Regional analysis
(iii) Regional development
(iv) Regional planning including areas and community planning.

IV. GEOGRAPHY AND SOCIETY

Geographical thinking and concepts affect our daily decisions in a number of ways–

For example, when urban master plans are made or rural development strategies are considered, it is importannt to undersatand the physical structure, climatic conditions and availabilities of resources in an area. The decision to shift industries from city areas would require the extension of industrial land use into farming areas. This would displace farmers and their source of income. Similarly, the construction of a railway line or highway causes ribbon development. Many economic activities concentrate along such corridors. Now a days with the need to provide relief material to all affected persons after a flood or an earthquake requires a good understanding of the geographyof the area. Distribution of relief is functional and related to the needs of people, according to climate or terrain.

V. METHODS AND TECHNIQUES OF GEOGRAPHY

Each branch of systematised knowledge has certain methods / tools and techniques on which it depends to further its basic objectives. Geography too has its tools, techniques and methods. Important among them are globes, maps, diagrams, relief models and spatial analytical methods. Cartography is concerned

with preparation of maps and diagrams to show distribution of geographical phenomena. Important methods in geography are deductive and inductive in nature. Various statistical techniques and models are used for regional analysis and to understand spatial distribution and interaction.

VI. CARTOGRAPHY

Most of us are fascinated with maps. "Cartography" is the study and practice of making maps and diagrams. It represents the earth with maps and abstract symbols. Maps have traditionally been made using pen, ink and paper, but computers have revolutionised cartography and with GIS methods one can prepare maps and diagrams with greater choice and efficiency.

Spatial data is obtained from measurement and other published sources and can be stored in a database, from which it can be extracted for a variety of purposes. Current trends in this field are moving away from drawing with ink or paper type

methods of map making towards the creation of increasingly dynamic, interactive maps that can be manipulated digitally. Most commercial quality maps are now made with map making software that falls into one of three main types; Computer aided data management (CAD), Geographic Information Systems (G.I.S) and Global Positioning systems (GPS).

Cartography has grown from a collection of drafting techniques into an actual science. Cartographers must understand which symbols convey information about the Earth most effectively, and make such maps that will encourage everyone to use the maps to find places or use it for their daily work. A cartographer must learn geodesy and fairly advanced mathematics to understand how the shape of the Earth affects the distortion of map symbols projected onto a flat surface for viewing.

"Geographic Information Systems" deals with the storage of information about the Earth for automatic retrieval by a computer in an accurate manner. In addition to other sub disciplines of geography, GIS specialists must understand computer science and database systems. Maps have traditionally been used to explore the Earth and to exploit its resources. GIS technology, as an expansion of Cartographic science, has enhanced the efficiency and analytic power of traditional mapping. Now, as the scientific community recognises the environmental consequences of human activities, GIS technology is becoming an essential tool in the effort to understand the process of global change. Various map and satellite information sources can combine in ways that recreate the interactions of complex natural systems. Such visualisation can help to predict what will happen to an area if it is repeatedly flooded, or what changes are expected if a particular industry is located or developed in an area.

Next to Survey of India, inherited from the British Ordinance Survey, the NATMO is a premier organisation for mapping in India. Its maps of one million series are well known. The organisation of the Cartographic Unit in 1960s at the French Institute, Pondicherry, brought a significant impact on the development of Geography in India. Its publication of Vegetation and Soil maps at the scale of 1:100000 were very well received for their cartographic appreciation and resource mapping. This Unit was upgraded in 1995 as a Geomatics Laboratory with an emphasis of computer cartography and GIS.

(A) Quantitative methods in Geography

These aspects of geographical techniques deal with numerical methods most commonly found in geography. In addition to spatial analysis, you are likely to find methods like cluster analysis, discriminant analysis in geographic studies. These statistical techniques are introduced to you in later chapters and you will find that when you undertake the local area study, you yourself will see how useful these methods are in finding patterns and identifying relationships between space and the activities that are performed in them.

(B) Regional sciencemethod

In the 1950s, the regional science movement arose led by Walter Isard. This

provided a more quantitative and analytical base to geographical questions, in contrast to the more qualitative tendencies of traditional geography. Regional Science comprises the body of knowledge in which like regional economics, resource management, location theory, urban and regional planning, transportation and communication, human geography, population distribution, landscape ecology, and environmental quality are examined for

regional development.

VII. BRANCHES OF GEOGRAPHY

Variable phenomena on the earth's surface can be treated seperatehy or in association. They are classified and categorised into physical phenomena and human phenomena. Thus, geography has three main branches: Physical Geography, Human Geography and Regional Geography.

Physical Geography

Physical geography is concerned with the study and explanation of physical phenomena, encompassing the other such fields like geology, meteriology, zoology and chemistry. It became a very popular subject during the later part of the nineteen centuries. It has a number of sub-branches which treat different kind of physical phenomena.

(i)Astronomical Geography: It studies the celestial phenomena which cancern the Earth's surface particularly Sun, Moon and Planets of the Solar System.

(ii)Geomorphology: It is concerned with the study of the landforms on the Earth's surface. It includes origin and development of landforms through erosional, transportational and depositional processes of water, wind and glaciers.

(iii)Climatology: Climatology is the study of the atmospheric conditions and related climatic and weather phenomena. It includes the study of atmospheric composition, climatic regions seasons, etc.

(iv)Oceanography: It is concerned with the study of various types of Oceanic formate component and processes related to ocean floor depths, currents, corals reefs, and continental drifts etc.

(v)Soil Geography: It studies various soil forming processes, their physical, chemical and biological constituents, their colour and types, texture, and distribution and carrying capacity etc.

(vi)Bio-geography: It is concerned with the biological phenomena in space, especially in terms of the distribution of various kinds of floral and faunal species. Biogeography may be subdivided into plant or floral geography, animals or faunal geography, and human ecology.

B. Human Geography

Human Geography is the synthetic study of the relationship between human societies and the earth's surface. It is made up of three closely linked components: the spatial analysis of the human population; the ecological analysis of the relation between human population and its environment and the regional synthesis which combines the first two themes in an aerial differentiation of the earth's surface.

Human geography has a number of sub-branches.

Anthropo geography: It largely deals with racial phenomena in their spatial context.

Cultural geography: It focusses on the origin, components and impact of human cultures, both material and non-material.

Economic geography: It refers to the study of the location and distribution of economic activities at the local, regional, national and world scale. Economic geography can be studied under the following heads: Resource geography. Agricultural geography, Industrial and transport geography.

Political geography: It is the study of political phenomena in their spatial context. Main focus remains for creation and transformation of political and administrative region.

Historical geography: Spatial and temporal trends of geographical phenomena are studied in Historical geography.

Social geography: It is the analysis of social phenomena in space. Poverty, health, education, livelihood are some important fields of study in social geography.

Population geography: It is the study of various dimensions of population like its population distribution density, composition, fertility, mortality, migration etc.

Settlement geography: It is the study of Rural/Urban settlements, their size, distribution, functions, hearth, and off various other parameters of settlement system.

(C) Regional geography :

Aspects such as delineation of regions, their

geographical characteristics and processes of change constitute regional geography.

Geography has its strong relation with mathematics, natural sciences, and social sciences. While other sciences deal with distinctive types of phenomena, geography studies several kinds of phenomena, each already studied by another science. In an integrated manner thus, geography has firmly established itself as a discipline of synthesis.