

INTRODUCTION TO GEOGRAPHICAL THOUGHT

Block

2

COSMOGRAPHY TO CHOROLOGY

Unit 3

Classical Period of Modern Geography

Unit 4

Period of Integration

Glossary

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BLOCK 2: COSMOGRAPHY TO CHOROLOGY

This block is about the evolution of geography from cosmography to chorology. It got transformed into a scientific discipline during this period with the beginning of the Classical Period of Modern Geography commenced in the eighteenth century marked by the period of modern philosophy originated by Immanuel Kant- a pioneer in bringing geography into a systematic science and initiated the debate between 'systematic' and 'regional'. It is followed by the period of integration when geographical knowledge was consolidated through a process of systematisation and integration of concepts put forth by eminent scholars like the spatial chorological approach, Environmental Determinism and Possibilism approach, areal differentiation approach, cultural landscape approach and evolutionary approach helping to understand the matter of geography and its methods of analysis.

This Block has two Units – 1. Unit 3: Classical Period of Modern Geography and 2. Unit 4: Period of Integration.

Unit 3: Classical Period of Modern Geography has attempted to acquaint the students with the evolution of geography as a discipline with its field, theories, methodology and approaches during the period, which is known as the Classical Period of Modern Geography or the initial stage of the emergence of modern geography. It covers the contribution of Immanuel Kant with the methodological view and the nature of geography, the impact of Kantian views on geography, the contributions of Alexander von Humboldt (1769-1859) known as the father of modern geography; the contributions of Carl Ritter (1779-1859) and major dichotomies in geography.

Unit 4: Period of Integration deals with the discussion on the integration of various viewpoints given by scholars, which further consolidated the holistic nature of geography and for the first time the foundation for a synthetic approach in the man-nature-society interface was established. It covers the contributions and views of Ferdinand von Richthofen (1833-1905), Friedrich Ratzel (1844-1904), Alfred Hettner (1859-1941), Vidal de la Blache (1845-1898), W. M. Davis (1850-1934), H. J. Mackinder (1861-1947), Harlan H. Barrows (1877-1960) and Carl O. Sauer (1889-1975).

It is expected that the students will have a good idea about the evolution/ progress of geography during the Classical Period of Modern Geography; the contributions of Immanuel Kant, Alexander von Humboldt and Carl Ritter in geography and dichotomies or dualism in geography. It is also expected that the students will have knowledge about the integration of various viewpoints to develop a holistic idea of the nature of geography and approaches to geographical studies with the contributions of Richthofen, Ratzel, Hettner, Blache, Davis, Mackinder, Barrows and Sauer.

CLASSICAL PERIOD OF MODERN GEOGRAPHY

Structure

3.1	Introduction Expected Learning Outcomes	3.4	Contribution of Carl Ritter (1779-1859)
3.2	Contribution of Immanuel Kant Methodological View Impact of Kantian Views on Geography	3.5	Dichotomies or Dualism in Geography
3.3	Contribution of Alexander von Humboldt (1769-1859)	3.6	Summary
		3.7	Terminal Questions
		3.8	Answers
		3.9	References and Further Reading

3.1 INTRODUCTION

In the previous two Units, you learnt about the foundations and geography and its place in the classification of knowledge. We noted that due to its nature, geography shares several characteristics with what is traditionally called arts and science. It may be one among many other factors due to which geography had to struggle for a place in the university system. The emergence of geography as a synthetic science combines elements from varied sources and faculties in order to describe and understand places and people. But this journey was not smooth or linear. During the later quarter of the 18th century, while the search for verifiable facts continued, many concepts and systems continued to set up a priori system of facts. In other words, while our quest for scientifically arrived facts continued, we needed to test many concepts and systems of facts that had intuitive origins. In this direction, the contributions of Immanuel Kant, Humboldt and Ritter provide a firm platform for the development of geography as a modern discipline that was based on facts collated and reflected upon scientifically, rationally and objectively based on observation. This is why historians of knowledge prefer to call the last quarter of the 18th century to the mid-19th century as the Classical Period of Modern Geography that has links with the period of modern philosophy and Immanuel Kant who laid down the theoretical foundation of scientific geography. In this Unit, we will discuss the contributions of Kant, Humboldt and Ritter.

Expected Learning Outcomes

After studying this unit, you should be able to:

- discuss the evolution/progress of geography during the Classical Period of Modern Geography;
- describe the Contributions of Immanuel Kant, Alexander von Humboldt and Carl Ritter in geography; and
- explain dichotomies or dualism in geography.

3.2 CONTRIBUTIONS OF IMMANUEL KANT (1724-1804)

Immanuel Kant was a German philosopher who is considered to be the father of modern philosophy. He also made immense contributions to the field of geography and put geography on a solid foundation with an argument for placing geography as a science discipline. Although it is imperative that Kant never wrote a book on geography during his lifetime, he taught Physical Geography at Konigsberg University for a very long time (1756-1796). His idea of geographical knowledge encompasses an orderly investigation of a really differentiated phenomenon (May, 1970, p. 240).



Kant presented a systematic classification of knowledge for the first time and placed geography as an empirical science based on experience, observation and analysis of the phenomenal world. The concept of space as it existed at that point of time enabled him to recognise geography as a spatial science. Although the concept of space itself has undergone a change from Euclidean space to Newtonian space thence to Einstein's concept of space-time, yet, the very identity of geography as a science dealing with space and spatiality came to be associated with Kantian doctrine in the first place. The Kantian space was absolute, rigid and Newtonian in character. The modern concept of space relates to relational space and its understanding is based on relative attributes. Nevertheless, Kant's concept of space was the beginning of comprehending geography as a spatial science. He defined geography and its relation to other natural sciences. According to him, knowledge can be studied in two ways: a. through pure reason and b. through the senses both inner and outer. He was of the opinion that geography as science was confined to a study of natural phenomena on or near the surface of the earth (May, p. 150). Further, he sought a distinction between physics which is a

theoretical science and geography which is an empirical science but it is a systematic science as it deals with the 'system of nature'. You may see the Kant's classification of science in Fig. 3.1.

Level I		Nature (Outer and Inner Sense)	Man (SOUL or SELF) (Inner Sense)
Level II	THEORETICAL	PHYSICS and OTHER THEORETICAL NATURAL SCIENCES	PSYCHOLOGY?
		GEOGRAPHY and HISTORY OF NATURE	ANTHROPOLOGY and HISTORY OF MORALS
Level III	EMPIRICAL	(SPACE and TIME)	(TIME)
Level IV			

Fig. 3.1: Kant's Classification of Sciences (After May, J. A., 1970, p. 148)

Note: The 'word' man is used in all classical writings to denote humankind.

The first level in the scheme denotes the study of the synthetic a priori principles of ontology and ethics under metaphysics in general either of nature in general or self in general, respectively based on a priori principles of ontological ethics. The second level signifies theoretical sciences aiming at the establishment of universal abstract statements of law considering nature and self which possess empirical contents. The third level represents the empirical sciences aiming at the establishment of particular concrete empirical laws related to nature and self. The fourth level represents the common knowledge and is purely empirical and fact finding (May, 1970, p. 148).

May (1970) further illustrates the point by stating that the more specific laws of geography must also be presented in conformity to universal synthetic, a priori principles of understanding, although they are not deducible from them, nor could such principles be derived inductively from the specific statements of geography. Since the statements of geography, by their very nature, are regional and thereby individually restricted in the extent of empirical coverage, the compilation of geographical statements can never yield more than general statements of limited regional truth (May, 1970, p. 149).

His copious notes based on his class lectures gave a detailed description of physical and regional/human geography. In fact, many scholars put the onus of binary classification of geography into physical and human as well as the matter, content and methodology of geography, its evolution and growth to its present form to Kant.

He also gave fivefold divisions of geography, large parts of which are conceptually still relevant. These are:

- Mathematical (the form, size and movement of the earth and its place in the solar system)
- Moral (the customs and character of man in relation to the environment)

- c. Political
- d. Mercantile (commercial)
- e. Theological (the distribution of religions)

From the above classification of Geography, it becomes evident that this systematisation of the subject is relevant to an extent and the later geographers such as Humboldt considered to be the 'Father of Modern Geography' took his cue from him. Subsequently, Ritter who was a contemporary of Humboldt further elaborated the matter and content of geography as an academic discipline intensifying the debate between systematic and regional geography.

3.2.1 Methodological View

Kant's other significant contribution to the development of the subject was arriving at a logic/methodology, which he said was twofold- deductive and inductive, and *a priori* and *a posteriori*. According to Kant, the methodology practised in understanding geographical phenomena is inductive and empirical. Latter geographers, particularly during post-World War II, however, were the major critiques of this binary approach in geographical analysis. But it is essential to remember that Kant distinguished between rational and empirical; where *a priori* or rational knowledge is absolutely independent of any experience, and on the other hand *a posteriori* or empirical knowledge can be arrived at only through experience (May, p. 90). Thus, one can assume that rational knowledge, which is based on human rationality would be universally valid independent of particularities of space and time; and empirical knowledge, which is based on human senses would be bound by particular occurrences in space and time. It, therefore, emerges that sciences can be categorised into empirical sciences based on data and rational sciences based on *a priori* principles or law formulation. Hence, Geography and Anthropology are empirical sciences based on experience and mathematics and physics are rational sciences based on law formulations.

3.2.2 Impact of Kantian Views on Geography

The impact of Kantian views on geography is profound. For the first time, geographical knowledge became systematised. Although later scholars in the field rejected Kant's views, these views held significance in understanding space and its multiple attributes. Later researchers differentiated between absolute, relative and relational spaces.

His division of geography into several branches helped later scholars to define elaborately the multiple sub-branches of geography during the subsequent periods. Kant's contribution is also significant in giving rise to the spatial chorological approach.

There are some points, which need to be mentioned in this context. First, Geography being an empirical science is incapable of developing theoretical bases. Second, as geography deals with natural phenomena, it also has rational laws of nature, based on which deductions are made. Thirdly, geography is also a law-finding discipline as it tries to establish causality between phenomena, and therefore introduces an element of rationality.

Fourthly, since geography is concerned with studying the relations among things in space, it presupposes the principle of community.

From the above analysis, it is evident that a great field of investigation is open and as the subject evolves more and more advanced, scientific and rational views are put forth by scholars resulting in the emergence of geography as a mature academic discipline during the subsequent periods. With the advancement in knowledge, the later scholars have rejected Kantian views to a great extent but Kant's doctrine is still held by many experts in the field to be insightful and relevant for understanding geography.

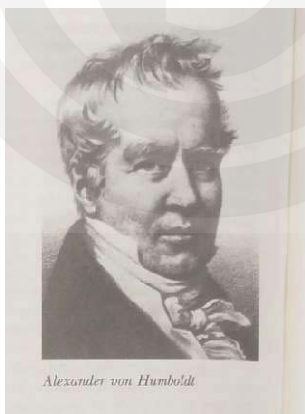
SAQ I

What has been the impact of Kantian views on geography?

3.3 CONTRIBUTIONS OF ALEXANDER von HUMBOLDT (1769-1859)

The Classical Period of Modern Geography commences with two eminent stalwarts and their seminal works belonging to the first half of the 19th century. They are considered to be the founders of modern geography. The names of these two scholars are Alexander von Humboldt (1769-1859) and Carl Ritter (1779-1859).

The two represent two different approaches in the study of Geography. They both had many views in common and their exchange of views was of critical importance in the development of geography.



Humboldt studied at the University of Frankfurt, Göttingen, and Hamburg. He was trained as a mining engineer. He also studied Geology and Botany. He travelled to various countries in Europe and Latin America. He minutely observed natural phenomena and this made him interested in studying Geography.

His contribution to developing geography as a systematic academic discipline was seminal. He is considered as a versatile scholar. His interests covered a wide span of multi-disciplinary fields, namely, geology, mineralogy, vulcanology, earth magnetism, meteorology, botany and geography (Dickinson, pp. 22-25). His methodology was inductive and empirical based on scientific observation of phenomena in the physical world. He accepted the

view that the earth is one inseparable organic whole, all parts of which are mutually interdependent. He travelled extensively and established his theories on the basis of intensive field work. He collected extensive data on various aspects of the landform and physical phenomena, then classified and analysed such data for arriving at his conclusions. His field of inquiry was an observable world of phenomena. He distinguished between '*Physiographia*', the systematic natural sciences, '*Naturgeschichte*', a natural history where the emphasis was on the development of things in time, and '*Geognosie* or '*Weltbeschreibung*', which discussed spatial distribution. He published '*Geognosia*' in 1793 where he established the interrelationship of organic and inorganic phenomena on earth. This book is considered to be a model of modern geography. This concept of interdependence of things and phenomena is known as '*Zusammenhang*' in German. He made a composite study of rocks, animals and plants with respect to their origins and geographic distribution. It reflects the causal relationships in an areal combination of both natural and organic phenomena at a particular place or region

His major publication was *Kosmos* (1845). His other publications include *Atlas Geographique et Physique du Nouveau Continent* (1814-19). According to him, divisions of knowledge can be categorised into three: First, the phenomena should be examined taxonomically as in botany, zoology, and geology, which are *physiographic*. These were the systematic sciences. Second, is the historical sciences, which dealt with existing phenomena, such as the history of the development of animals, plants, and rocks. Third was geognosy or earth science, which he variously defined as *Erdkunde*, *theorie de la terre*, *geographie*, *physique*, *physique* *Erdbeschreibung*, or *physical geography*' (Dickinson, p. 23).

This is concerned with the distribution or arrangement of phenomena on the earth's surface. He always emphasised the areal association of natural and organic phenomena. He made a significant contribution to various sub-branches of geography, such as climatology, plant geography, orography, oceanography, cartography, etc. He invented the term 'climatology'. In his analysis of facts, he used the comparative method.

Humboldt included (hu)man and his works in his study of nature and natural areas, but he did not consider them to be the primary determinant in shaping the landscape. He did mention towns, villages, fields and crops as the elements of landscape viewing in its totality, which was to mean holistically. He developed a scientific method of investigation to understand the spatial variation of both physical and cultural phenomena occurring in different parts of the world. Throughout his study, he focused on the interrelation and interdependence of one element on the other. During his travel to Mexico, Venezuela and Cuba, he studied native civilisations and wrote political essays, which are considered as a model for human geography. In all his studies he adhered to the principles of unity and causality. He is the founder of the concept of humanism in geography.

The contributions of Humboldt and his erudite scholarship remain incomplete without discussing his book entitled *Kosmos* Vol I & II (1845 & 1847), Vol III & IV (1850 & 1858), and the unfinished Vol V (1862). The main theme of the book is portraying unity in diversity and depicting human beings as a constituent part of nature. This book is a huge compilation of the author's

experience in travel and observation of phenomena in the physical world.

Humboldt believed in the balance of nature of which (hu)man was an integral part (Dickinson, p. 30).

SAQ 2

What was the centrality of Humboldt in the man-nature relationship?

3.4 CONTRIBUTIONS OF CARL RITTER (1779-1859)

Carl Ritter was born in Quedlinburg in Germany in 1779 and studied at the University of Halle. Later he joined the University of Gottingen for studies and became a Professor of Geography at the University of Berlin in 1820 and also at the Royal Military Academy in Berlin for the rest of his life.



Carl Ritter was another great scholar of the contemporary period, who influenced geographical thought for a considerable period of time and has immense contribution to the foundation of modern geography. His thoughts and ideas of geography as an empirical and descriptive science initiated the great debate of dichotomy within the subject during the subsequent decades. His methodology was inductive and empirical. He emphasised the interdependence of things and phenomena. Ritter further clarified that there is a hierarchy in the spatial arrangement of terrestrial phenomena. He held the view that the “uniqueness of geography lies in characterising and explaining the areal associations of terrestrial phenomena in unit areas of different orders beginning with the smallest areas and ending with major generic regions” (Dickinson, p. 41). According to Dikshit, “His scientific geography was guided by the concept of unity in diversity in nature, and his purpose was not merely to prepare an inventory of phenomena occurring together in particular parts of the earth surface, but to understand the interconnections and the causal interrelations among the diverse phenomena that made the areal associations cohesive...According to Ritter, the geographer’s task was to trace causation and interdependence of the spatially distributed phenomena on the earth’s surface” (Dikshit, 1997, p. 54). He insisted that geography must be an empirical science. Ritter held a holistic view with

respect to the content and purpose of the geographic study and his entire focus culminated on human beings. He also believed in areal synthesis and description. Carl Ritter was a regionalist as he completed through his works an interpretation of regional geography with complete details of areal units through a thorough sifting and synthesis. He pursued the idea of *zusammenhang* (Dickinson, p. 42) meaning harmonious unity and interconnection among diverse phenomena on the earth's surface.

Ritter published two volumes of work on the geography of Europe. Six years later first of the two volumes of '*Erdkunde*' (1817 and 1818) was published. He intended this book to serve as a text on "The Science of the Earth in Relation to Nature and History of Mankind or General Comparative Geography as the solid foundation for the study of and instruction in the Physical and Historical Sciences". Between the years 1832-1838, he added six more volumes to the *Erdkunde* series. Eleven more volumes were published between 1838-1859. These nineteen volumes covered Africa and Asia when Ritter died in 1859.

Ritter's Geographical Concepts

- Ritter believed that the methodology of geography is essentially based on a posteriori principle (inductive reasoning) and not on a priori principle.
- He highlighted that the geographical phenomena are unique, which gives geographical regions a distinct identity.
- He emphasised the spatial arrangement of phenomena.
- He tried to establish interconnections between sets of phenomena in the same area (areal association) and between one place and another (spatial interaction) (Dickinson, p. 42).
- His philosophical viewpoint was teleological (Dickinson, p. 44).

Teleology refers to the understanding of events or phenomena in relation to their underlying purpose. Ritter believed that God is the planner of the universe, and scientists must uncover the God-given purpose for humanity to follow and develop. On the contrary, Humboldt remained rooted in scientific explorations relating events in relation to their environment. Ritter's teleology was criticised widely, but apart, his scholarship was impeccable based on observations both recorded by him personally and collated from previous studies. He once said: 'My system builds on facts, not on philosophical arguments' (Tatham, 1951) (Holt-Jensen, p. 32).

Ritter and Humboldt both were responsible for the systematic collation of facts and their interpretation, which was remarkably different from studies hitherto available that presented a mindless accumulation of unsystematised data. While both the founding fathers of modern geography believed in the unity of the universe, they were alive to the diversities around them. This compelled Ritter to compare continents and regions in order to find similarities and differences and explore the underlying causes. He is, therefore, seen as the founder of the comparative method in regional geography, although Ritter himself felt that credit for the comparative method should go to Humboldt. Ritter was strongly in favour of incorporating historical factors, both physical and human, in order to understand and explain the relationship between

human society and nature in different settings. 'He, therefore, made historical development in geographical space the main theme of his educational task' (Holt-Jensen, p. 33).

SAQ 3

What is the major contribution of Carl Ritter in Geography?

3.5 DICHOTOMIES OR DUALISMS IN GEOGRAPHY

Geography as an academic discipline exhibits a wide range of dichotomous thoughts and ideas since its inception. From the early years, in the process of its emergence from celestial science to terrestrial science, two different streams of ideas encompassed the subject matter of geography. Dualisms emerged during its evolution with respect to its subject matter, approach to study and methodology to study (hu)man-environment relationships in geography. In terms of subject matter, the dualism or dichotomy was whether geography should study only the physical set-up of space or/ and human beings who inhabit the space: popularly called dualism between physical versus human. In terms of approach, the dualisms cover issues such as whether geography should seek general principles or describe unique and particular phenomena/events. It also includes dualisms such as regional versus systematic or ideographic versus nomothetic; determinism versus possibilism; and in terms of methodology deductive versus inductive, and quantitative versus qualitative, etc. These many contradictions indicate that there can be diverse ways in which one could interpret and analyse events and phenomena.

The founding fathers underlined the defining attributes of geography as a spatial science dealing with the phenomenal world. Both scholars highlighted the anthropomorphic nature of the subject. In essence, geography deals with the spatial differentiation and explanation of physical as well as human factors or phenomena. Anything that occurs on the surface of the earth, be it relief, climate, soil, drainage, or natural vegetation on the one hand and people, their distribution, racial, linguistic, economic activities or cultural variation on the other are the contents of geography. The focus of geography is on humans in relation to their habitat and environment. The geographical view is expressed through the study of human-environment interaction, adaptation and integration in diverse ecological setups. Since the beginning of the 18th century, this concept has been emphasised by experts and scholars. However, Geography has two divisions namely, Physical and Human, each focusing on their individual characteristics. Earth is the abode of both humans and non-humans, and therefore, both are the parts of the environment. The environment is one, which exhibits spheres namely physical components and cultural components. The components are called spheres such as the atmosphere, lithosphere, hydrosphere, and biosphere on one hand, and the economic sphere, cultural sphere, social sphere and political sphere, on the other. The vastness of nature has necessitated the study of Geography into two primary divisions so that an 'accurate, orderly, rational'

and systematic analysis of the contents of the subject can be dealt with. Moreover, as the earth surface is diverse in terms of physical characteristics, so are the socio-cultural characteristics of humankind complex, diverse, differentiated in space and time.

In actual reality, there is no dichotomy between physical and cultural environments because the environment is one. The phenomenal and the perceived environment is constantly presenting issues and challenges which are to be overcome by man in all ages of technological development.

Thus, the views of environmental determinism and possibilism, which largely overshadowed the research themes of the 19th and early 20th century geographers, today stand invalidated. In the 21st century, the binaries between physical and human, systematic and regional, quantitative and qualitative, and man and nature, which generated dichotomy and dualism have given way to holistic metaphors like (hu)man-environment coupling, society-man interface, hybrid geography, 'socialising nature'. All these metaphors have been attempts to project an integrated view of geography where there is no scope for dichotomies. The environment is to be studied at multiple dimensions in which humans in their diverse capacities are acting and interacting in different contexts giving rise to multiple spaces and producing multiple geographies. It is the singularly important aspect of modern geography that is to be focused on in the subsequent phases of geographical ideology. Humans and nature are now viewed as an extension of one into the other. There is no scope for a dichotomy between the aspects/branches of study. However, having stated that, the study of geography must be specialised, technical and based on scientific knowledge, which has to be synthesised in the correct perspective so that the subject in its totality can be advanced.

The discussion can be summed up as very revealing in the sense that geography was established as an academic discipline. The domain of geography was stated by Kant, Humboldt and Ritter. A systematic study of both physical and human geography was made by the scholars, although it must be stated that the genesis of dualism in geography was also started from this classification of the subject into 'physical' and 'human' geography.

SAQ 4

What is Dichotomy or Dualism?

3.6 SUMMARY

In this unit, you have studied:

- the evolution of geography during the Classical Period of Modern Geography;
- contributions of Immanuel Kant;
- contributions of Alexander von Humboldt;
- contributions of Carl Ritter; and
- Dichotomy or Dualism in Geography

3.7 TERMINAL QUESTIONS

1. Give a classification of Sciences as given by Immanuel Kant and state its relevance in modern geography. How did it give direction for placing geography in the classification of sciences?
2. Critically examine the contributions of Alexander von Humboldt in geography.
3. Critically assess the views of Carl Ritter in the foundation of geography.
4. Give a detailed account of Dichotomy or Dualism in geography.

3.8 ANSWERS

Self-Assessment Questions (SAQ)

1. Kantian views of geography have a significant impact on the foundation of geography as for the first time geographical knowledge became systematised. His division of geography into several branches helped later scholars to define elaborately the multiple sub-branches of geography during the subsequent periods.
2. Humboldt distinguished between '*Physiographia*', (the systematic natural sciences), '*Naturgeschichte*', (natural history emphasising the development of things in time), and '*Geognosie* or *Weltbeschreibung*', (spatial distribution). His ideas and works reflect the causal relationships in the areal combination of both natural and organic phenomena at a particular place or region. In all his studies he adhered to the principles of unity and causality. He is the founder of the concept of humanism in geography.
3. Ritter believed that the methodology of geography is essentially based on a posteriori principle and not on a priori principle. He highlighted that the geographical phenomena are unique, which gives geographical regions a distinct identity and emphasised the spatial arrangement of phenomena. He also tried to establish interconnections between sets of phenomena in the same area and between one place and another.
4. Dichotomy or Dualism is studying (interpretation and analysis) the same object or phenomenon from two different viewpoints, methods or approaches. Dichotomy emerged during the evolution of geography in terms of the subject matter of study, approach to study and methodology to study (hu)man-environment relationships in Geography. In terms of subject matter, the dualism or dichotomy emerged as physical versus human; in terms of approach the dualism is general versus special, regional versus systematic or ideographic versus nomothetic, determinism versus possibilism; and in terms of methodology deductive versus inductive, quantitative versus qualitative, etc.

Terminal Questions

1. Discuss the classification of sciences proposed by Immanuel Kant linking its relevance with geography in terms of its place among the various sciences. Refer to Section 3.2.
2. Critically write the contributions of Alexander von Humboldt to geography as he is regarded as the Father of Modern Geography. Refer to Section 3.3.
3. Present a critical review of the views of Carl Ritter on the foundation of geography. Refer to Section 3.4.
4. Discuss what is Dichotomy or Dualism in geography and various Dichotomies existing in geography. Refer to Section 3.5.

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UNIT 4

PERIOD OF INTEGRATION |

Structure

4.1	Introduction Expected Learning Outcomes	4.7	Halford J. Mackinder (1861-1947)
4.2	Ferdinand von Richthofen (1833-1905)	4.8	Harlan H. Barrows (1877-1960)
4.3	Alfred Hettner (1859-1941)	4.9	Carl O. Sauer (1889-1975)
4.4	Friedrich Ratzel (1844-1904)	4.10	Summary
4.5	Vidal de la Blache (1845-1898) Doctrines of Vidal	4.11	Terminal Questions
4.6	William Morris Davis (1850-1934)	4.12	Answers
		4.13	References and Further Reading

4.1 INTRODUCTION

The period of integration is considered to be an attempt to channelise geographical knowledge through a process of systematisation of concepts put forth by eminent scholars, particularly as geographers seemed to have got divided between dichotomies that we have already studied in the previous Unit. The concepts are spatial chorological approach, Environmental Determinism and Possibilism approach, areal differentiation approach, cultural landscape approach and evolutionary approach.

These thoughts and approaches in geography helped in clarifying the subject matter of geography and its methods of analysis.

The basic principles advocated by geographers during this period brought in integration among the various viewpoints of scholars and further consolidated the holistic and synthetic nature of geography. For the first time, the foundation for a synthetic approach in (hu)man-nature-society interface was established. In this Unit, we will discuss the major contributions made by various geographers about the subject matter of geography, approaches to study and methods during the period of integration.

Expected Learning Outcomes

After studying this unit, you should be able to:

- critically discuss the diverse views given by the following geographers:
 - Ferdinand von Richthofen (1833-1905)

- Alfred Hettner (1859-1941)
- Friedrich Ratzel (1844-1904)
- Vidal de la Blache (1845-1898)
- William Morris Davis (1850-1934)
- Halford J. Mackinder (1861-1947)
- Harlan H. Barrows (1877-1960)
- Carl O. Sauer (1889-1975).

4.2 FERDINAND von RICHTHOFEN (1833-1905)

Richthofen is considered to be a pioneer in advancing the concept of chorology which literally means the science of space. As geography is primarily a study of space in multiple dimensions and scales, the initial study is focused on spatial variation of phenomena in relation to man (the word 'man' signifies humanity at large). He was a geologist and was engaged in the study of rocks and physical landforms of various continents and countries arising out of the underlying structure. Subsequently, he became a Professor of Geography at the University of Bonn in 1877. He then came to Leipzig in 1883 and devoted himself to the study of geography and made a great effort in systematising the subject. Richthofen came to the University of Berlin in 1886 to accept a new chair in geography and continued to work there.

The primary focus of his research was physical geography. His definition of geography runs as follows: 'Geography is the science of the earth's surface and the things and the phenomena that are causally interrelated with it' (Dickinson, p. 82). Thus his emphasis was on the earth's surface. His methodology involved observation of phenomena and their intensive investigation in a scalar dimension from the smallest to the largest unit of space. He also stressed a comparative study of the larger areas. It can, therefore, be assumed that he highlighted both special geography, which is descriptive (regional geography) and general geography which is analytical (systematic) and concerned with the explanation and formulation of general laws and principles as suggested by Varenus, a Medieval European scholar before him. The approach is two-fold; the special geography deals with synthetic and the general geography deals with analytical approach. According to him, the combination of these two approaches gives rise to the third approach, which takes into account the selected groups of things and phenomena in a particular area and seeks to understand their interrelations and causes. This he mentions as a chorological approach (Dickinson, p. 83). He made a distinction between chorology and chorography. The first one is the study of spatial units and the second is the study of these discrete units in their totality. According to him, chorography does not go beyond the systematic assembly of all the appearances of individual land areas. It is 'comprehensive, eclectic and inexhaustible' (Dickinson, p. 83). The description of the small areas would include all aspects of society and man including population distribution, racial distribution, languages, religion, trade and commerce so on and so forth as man is included in all this. The chorological approach, on the other hand, is concerned with registering all the facts that are existing within the small areal units but also takes into consideration the causal interrelationships of the phenomena of every single portion of the earth surface. This second approach was adopted by Strabo

(64 B.C -20 A.D) and also Humboldt and Ritter. From the distribution of particular sets of phenomena arises the field of general geography. When a study goes deeper into the process aspect, chorological methods become redundant. According to Richthofen, chorographical studies are didactic. After breaking down the whole area into parts, the study becomes analytic although the synthetic approach dominates. He further clarifies that general geography is regressive since it passes from the particular to the general, from the condition to the cause (Dickinson, p. 84). General geography can be studied on earth-bound phenomena from four aspects - the forms; the material; forces and causes of change and movement.



Chorology- Science of space relating geography as chorological science concerned with the systematic study of various facts in a region.

Chorography- Holistic (regional) study of a region including all aspects in areal combination as a study of reality. (regional geography).

Richthofen stated that the main focus of geography is to establish the relation between phenomena and Humboldt focused on this but Ritter focused on (hu)man, therefore, geography fell from the domain of analytical and chorological science. Ritter focused on the chorographical approach. Richthofen tried to bring back the focus of geographical research methodology on chorological and analytic approaches. It was he, who attempted to establish geography as a unifying discipline linking the problems of various sciences in unity.

His contribution to the field of human geography is also significant. In this also, he advocated a four-fold approach namely, the outer form or aspect, interrelations, causal relationships, and genetic development (Dickinson, p. 85). He first coined the term 'anthropogeography' which was later taken up by Ratzel. He understood the depth of influence of (hu)man on nature and vice-versa. Overall, Richthofen's categorisation of six realms of nature namely, the lands, the hydrosphere, the atmosphere, the plant and animal world, (hu)man and his material and spiritual culture as well as his emphasis on their interrelationships was immensely valuable for future research in geography.

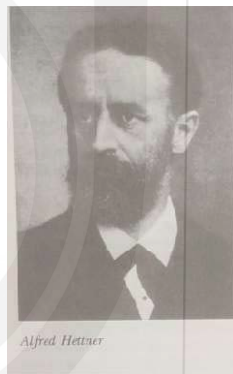
SAQ I

What are the basic tenets of Richthofen's philosophy?

4.3 ALFRED HETTNER (1859-1941)

Alfred Hettner was interested in geography from the very beginning and studied under Richthofen at the University of Bonn. He submitted his thesis under Ratzel. His focus of the research was on physical geography. He travelled widely in South America, Russia, North Africa and Asia for a considerable period of time and obtained knowledge about the field techniques in geography. He remained at Heidelberg University till his

retirement in 1928. Hettner had a profound influence on the development of regional geography. But he focused on the systematic method also and was of the opinion that both systematic and regional methods are equally important in the study of geography. He founded a periodical entitled *Geographische Zeitschrift* in 1895. This journal continued publishing for the next forty years the ideas and scope of geography and its methodology. "His first detailed methodological study of 1903 was limited to the fundamental concepts and principles of systematic physical geography; in that of 1907, he considered incorporating systematic human geography. Since 1905, he stressed the importance of systematic, or general geography, as a co-ordinate part of the field' (Hartshorne, 1939, p. 94). He also published detailed systematic treaties covering different categories of geographic features, first on surface forms, then on climate and finally, a four-volume work covering a wide range of issues in systematic geography (Hartshorne, p. 94). Hettner had an immense contribution in establishing geography on a firm philosophical and scientific basis. Hettner also harped on the significance of unity or '*Ganzheit*' in geography. In 1907, he published a large volume on the regional geography of Europe and extra-European areas in 1924 (Dickinson, pp. 114-115). These two books carry the title of 'Foundation of Regional Geography'. He later published Comparative Regional Geography in four volumes in 1933-35.



Hartshorne in his book 'The Nature of Geography' (1939) comments that geographers were influenced to make systematic studies of the earth as a whole in which the chorological point of view was lost. According to him "Geography became even more dualistic in nature; studies in systematic geography did not produce general concepts and principles concerning the interrelation of phenomena that were needed for regional geographic studies" (Hartshorne, p. 95). Hettner made chorological view dominant in both systematic and regional studies. He also maintained that geography is not the general science of the earth. He emphasised differentiating the micro-level or regional differences existing at the continents, lands, districts and localities. This is a very clear indication of regional studies at hierarchic levels, which he thought was crucial for acquiring geographical knowledge. Therefore, one can say that his method was inductive and empirical. He also laid great importance on the spatial arrangement of phenomena. Dickinson (1969) thus is of the opinion that the study of the differential association of phenomena over the earth is the keynote to Hettner's concept of geography. He, therefore, made a distinction between the distribution of particular phenomena which are concerns of systematic sciences and the regional association of elements that give character to an area are the concerns of geography. This

principle holds good in the study of plants, animals, minerals, landforms and atmosphere (Dickinson, p. 117). So the thrust is on the spatial association of phenomena either physical or human that is the subject matter of geography.

Later geographers, however, differed with Hettner, particularly, W.M. Davis, a geologist, who primarily founded geography in America.

SAQ 2

What was the main thrust of Hettner?

4.4 FRIEDRICH RATZEL (1844-1904)

Friedrich Ratzel was a German geographer, who contributed immensely during the foundation periods of geography. His views are also extremely important in the evolution of geographical thought and geography. His book 'Anthropogeographie' or 'Outline of the Influences of the Geographical Environment upon History' published in 1882 referred to as 'Anthropogeography' had a significant impact on geography reflecting the human adaptation to the environment and cultural forms determined by natural conditions. His book Political Geography influenced by the Darwinian Theory of Evolution or Social Darwinism published in 1897 clearly reflects his ideas about Environmental Determinism. In 1891 he published Anthropogeography II, which discussed the concentration and distribution of settlement forms, migrations and diffusion of cultural characteristics. Ratzel is generally associated with a major stream of and propagator of the idea of Determinism.



Friedrich Ratzel has been the greatest single contributor to the development of the geography of man along with contributions to ethnography (Dickinson, p. 64). It is said that his work in German was not properly interpreted in the English speaking world. Ratzel was of the view that man-land relationships exist consistently in response to each other. Though Ratzel is known for Environmental Determinism, he recognised the limitation of environmental control through human factors believing man as an end product of evolution and survival of the fittest or natural selection of species to the physical environment.

Ratzel studied zoology and reflected Darwin's work in his writings. He published Travels of a Naturalist on the experience of travel to Europe. After travelling to America, he wrote two volumes on the physical and cultural geography of the USA. He returned to Germany and became a lecturer in

geography in 1875, got promoted later on and continued as professor till 1886.

Some of his ideas were prominently taken ahead by his American disciple Ms Ellen Churchill Semple, who emphasised and popularised environmental determinism. Among others, in her major work 'Influences of Geographical Environment' published in 1911, she said, "Man is a product of the earth's surface" with strong support for environmental determinism. She believed that the environment influences every aspect of human beings including human behaviour.

SAQ 3

What was the main idea of Ratzel on the man-environment relationship?

4.5 PAUL VIDAL de la BLACHE (1845-1918)

Paul Vidal de la Blache is regarded as a pioneer in human geography and initiated the concept of humanism in geographical studies. He was the first to establish an integration between physical and human attributes that are so interlinked together to become inseparable while analysing the impact of one upon the other. He brought out the innate influence of the environment on man's physical and social survival on the surface of the earth. His principles of *genres de vie* (cultural milieu way of living or local culture which includes traditions, institutions, language, habits, foods, etc.) and *raison d'être* (reason for existence) have paved the way for modern Human Geography. He stressed the importance of viewing man in relation to the natural environment, and, therefore, his unit of research was *pays* (natural regions with some homogeneous physical characteristics in France) in their relation to its distinctive *genres de vie* (cultural milieu).

He had close links with Annales Schools of Historians. He had initial training in ancient history and literature. French geography had strong early connections to mapping and history and these were sustained by Vidal in his study of small regions in relation to their inhabitants, and in this, he was inspired by Ratzel's *Anthropogeographie* (Johnston & Sidaway, 2004, pp. 48-49). His important works include *Atlas* (1894), *Tableau de la Geographie de la France* (1903), *Geographie Universelle* in fifteen volumes, which were finished in 1948 posthumously and *La France de l'Est* (1917).

He adopted inductive and empirical methods of research in evolving geographical knowledge and gave a definite shape to geography as an academic discipline. He was influenced by both Humboldt and Ritter. He also actively communicated with other geographers namely, Richthofen, Peschel and Ratzel. He was the first geographer to occupy the Chair as Professor of Geography at Sorbonne in 1898 where he continued to teach till his death, though he was the first Chair Professor of Geography in 1875 in the University of Nancy (Unwin, p. 81). He was the champion of advocating the regional method in geography. His principles were steeped in chorology. He recognised geography's interrelation with sciences both natural and social,

but emphasised geography's identity as the study of human beings and their activities in relation to the environment.



4.5.1 Doctrines of Vidal

Geography for him was natural science, which is concerned with terrestrial unity. His interests ranged from history to biological and physical sciences and this helped him to expand his views to man – environment relations with respect to a region that forms the basis of geographical knowledge. In effect, the modern geographical doctrine holds this view of humans' enormous influence in shaping their surroundings by altering and modifying the landscape to suit their needs. Vidal is credited with providing a regional theory, which highlights the man-land relationship with regard to social and cultural development. But he avoided the language of 'ecocentrism'. He advocated the thesis of Environmental **Possibilism** given by Lucian Febvre and refuted the ideas of Environmental Determinism. He emphasised the role of man as an active agent in shaping his immediate and larger environment and delegated the environment to that of a passive agent. He points out that humans can selectively respond to any factor in a number of ways. He said how people react and develop is a function of the choices they make in response to their environment. He acknowledged that the environment does play a role in setting limitations and offering possibilities for personal and cultural development.

His major postulates are as follows:

- Geography provides a new conception of the interrelationships between earth and (hu)man, a conception resulting from a more synthetic knowledge of the physical laws governing our earth and the relations between the living beings which inhabit it.
- He considered humans as a geographic factor.
- Vidal did not give stress on natural laws.
- He repeatedly emphasised how societies had humanised nature for their own ends.
- He looked favourably upon colonisation.
- He highlighted the progressive nature of human civilisation.

He lists the following distinctive concepts of the discipline (Dickinson, p. 211):

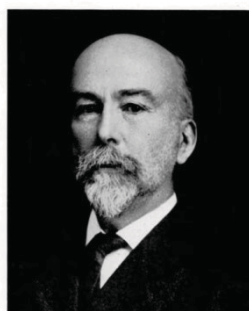
1. Geography recognises the unity of terrestrial phenomena. It, therefore, pursues a worldview and consideration of causes and generic types of groupings of terrestrial phenomena.
2. Terrestrial phenomena are localised in varied combinations and modifications of different sets of phenomena.
3. Geography seeks to describe, localise and explain these co-variations.
4. Geography seeks to measure the influence of the environment, especially climate and vegetation on man.
5. Geography, therefore, seeks scientific methods of defining and classifying terrestrial phenomena.
6. Geography seeks to measure and localise the great part that human plays in modifying the face of the earth.

SAQ 4

What was the central idea of Blache in Possibilism?

4.6 WILLIAM MORRIS DAVIS (1850-1934)

W. M. Davis was a renowned American Geographer whose main contribution was in the field of physical geography, particularly landforms, their origin and development, the cycle of erosion and peneplanation. His method was empirical. His area of study included geography, geology and meteorology. In America, he is considered to be the father of modern geomorphology. In 1876 he obtained a position at Harvard University where he taught till 1912. He published a book on meteorology entitled *Elementary Meteorology* in 1894. He devoted several years to studying landforms from the 1870s onward and published a book entitled *The Rivers and Valleys of Pennsylvania* in 1889. He propounded a system of explanatory descriptions of landforms. His basic concept of the evolution of landforms is based on the concept of structure, process and time or stage. According to Dickinson (1969, p. 120), he presented a scheme of the evolution of landforms in 1903, which he termed as 'youth', 'maturity' and 'old age'. Davisian concept of landscape reduction is envisaged as a cycle distinctively recognised as having three stages- youth, maturity and old age. His concept of the normal cycle of erosion was severely criticised by German scholars. Their main criticisms were that he ignored other factors like weathering, variation in underlying structure and lithology, and climatic factors (Dickinson, p.120). Also, his idea of the beginning of erosion after the upliftment of landmass was severely criticised.



In spite of the criticisms, his theory is still recognised as one of the pioneering theories in the field of geomorphology.

SAQ 5

What was the model given by W.M. Davis for landscape evolution?

4.7 HALFORD J. MACKINDER (1861-1947)

Halford J. Mackinder was an English geographer who was trained as a natural scientist at Oxford. His area of specialisation was in zoology. Later he took an interest in history and was a firm believer in geography as having both physical and human components under one unified discipline. He received a degree in biology in 1883 and one in modern history in 1884. In 1887 he published a book entitled 'On the Scope and Methods of Geography, a Manifesto for the New Geography.' In the same year, he was appointed as a Reader in Geography at Oxford University, where he introduced the teaching of the subject. In 1893 he established Geographical Association, which disseminates geographical knowledge. He served as the President of the Geographical Association from 1916. He was an important propounder of Regional School in Geographical thought. One of his important articles entitled 'The Physical Basis of Political Geography' was published in 1890 in Scottish Geographical Magazine. In 1892 he became the first Principal of University Extension College, Reading. In 1895 he was one of the founder members of the London School of Economics. In 1902 he published 'Britain and British Seas' which is still considered a seminal work in Regional Geography.

Heartland Theory is a geopolitical theory given by H.J. Mackinder, which supported the dominance and said that whosoever controls the Eastern Europe would win and control the Heartland.

Mackinder is associated with the introduction of geopolitical thought in Geography with the publication of his famous article entitled 'The Geographical Pivot of History' in 1904 by the Royal Geographical Society. In this work, he put forward the **Heartland Theory** encompassing a global geopolitical order. He is also known for his geostrategic views. His next major work, 'Democratic Ideals and Reality: A Study in the Politics of Reconstruction' was published in 1919. Here he presented his modified theory of Heartland fully considering the geopolitical factors and world political reality after the end of the First World War.



Mackinder was also a politician and statesman and his last major work was an article entitled 'The Round World and the Winning of the Peace' published in

1943. In this book, he portrayed a post-war world order. He also stressed his Heartland Theory and expanded it further by envisioning the role of the United States of America in the Atlantic region. He stated China's role in the Indo-Pacific region. In a way, he can be considered as one of the founding fathers of Geopolitics and Political Geography. His contributions are enormous in these two fields. He helped build geography as a distinct modern discipline and at the same time took great effort in extending the teaching of geography at various academic levels. His contribution to fostering the teaching of geography may be greater than any other single British geographer. He became a Professor of Geography in 1923 at the London School of Economics. His classical geopolitical and geostrategic views largely influenced the foreign policy of the USA during the cold war period and even later.

SAQ 6

What is Heartland?

4.8 HARLAN H. BARROWS (1877-1960)

Harlan H. Barrows was an important American geographer who is associated with the introduction of the concept of Human Ecology in geography. In fact, geography was synonymous with human ecology for him. He understood geography in the light of ecology, which is fairly coterminous with the modern view of geography with little modification. He started teaching in Michigan in two institutes namely, Ferris Institute and the Michigan State Normal College before moving to the University of Chicago. In these two institutions, he taught both history and geography. He received a Bachelor's degree in Geology in 1903 and became a Professor of Geography in 1914 and then chair of the department from 1919 until his retirement as Professor Emeritus in 1942. He propounded his thesis "Geography as Human Ecology" in 1922 in his Presidential address to The Association of American Geographers. In this view, he tried to correlate man in relation to his biotic and abiotic elements. This view was a paradigm shift from the earlier views of Environmental Determinism. He has contributed immensely to the field of Historical Geography and the conservation of the environment and of natural resources. He is also known as an environmentalist. He advocated the central role of man in man-environment relationships. He had a long teaching career and most of his works are documented in collections in the form of course notes, research papers, maps, etc., categorised into several phases.



4.9 CARL O. SAUER (1889-1975)

Carl O. Sauer was an eminent American Geographer who is known as the founder of the Berkeley School of Geographers. He worked at the University of California, Berkeley as a Professor of Geography in 1923 and remained there till becoming Professor emeritus in 1957. He graduated from the University of Chicago and obtained his PhD from there in 1915. For several years he taught at the University of Michigan. He is considered to be the propounder of Cultural Geography and the cultural landscape school of thought emerged from his seminal contribution to the field of cultural geography. His paper entitled 'The Morphology of Landscapes' published in 1925 is still cited today. One of his best-known works entitled 'Agricultural Origins and Dispersals' was published in 1952. He directed more than forty Ph.D. dissertations in geography and many of his students made immense contributions to the field of cultural geography.



Sauer's work is characterised by a focus on the physical landscape and its modification by humans in their long process of interaction. According to him, man is the agent of the transformation of a physical landscape into a cultural landscape. He understood the cultural landscape as a genetic evolving entity (Benko & Stromayer, 2004). He also emphasised the cultural history of man. He, in fact, initiated the discipline of evolutionary landscape science. His method was inductive and empirical. He also focused on the detrimental impact of man on nature. He was one of the chief proponents of the Environmental Possibilism concept. He made valuable contributions to the development of Historical Geography also.

SAQ 7

- i. What is the human ecological model envisaged by H.H. Barrows?
 - ii. What is the cultural landscape conceived by Carl O. Sauer?
-

4.10 SUMMARY

In this unit, you have studied the contributions of the following geographers to the progress of geography during the period of integration:

- Ferdinand von Richthofen (1833-1905)
- Alfred Hettner (1859-1941)

- Friedrich Ratzel (1844-1904)
- Vidal de la Blache (1845-1898)
- William Morris Davis (1850-1934)
- Halford J. Mackinder (1861-1947)
- Harlan H. Barrows (1877-1960)
- Carl O. Sauer (1889-1975).

From the discussion of the works of eminent scholars, it becomes evident that this period is considered to be a period of integration as the various concepts in geography were being evolved and ultimately crystallised to give shape to the geographical understanding of natural as well as human/cultural phenomena. The following are the major points:

- chorographic regional analysis, particularly micro-regional unit analysis of land use as well as human activities in relation to the physical environment;
- thrust for spatial-chorological analysis of human activities;
- understanding of political phenomena in a regional framework;
- application of human ecology model in understanding geographical phenomena;
- study of cultural landscapes which are modified due to prolonged human interaction. As such, various aspects of geographical methodology and approaches were defined by the eminent scholars who contributed through their research to the development of modern geography; and
- (hu)man-environment relationship as an approach to geographical studies, especially through Environmental Determinism and Possibilism.

4.11 TERMINAL QUESTIONS

1. Differentiate between chorological and chorographical approaches as given by Richthofen.
2. Assess Hettner's contribution to geography. What are the basic principles of his philosophy?
3. Discuss the contributions made by Friedrich Ratzel in geography with special reference to the study of man-environment relationships.
4. Give an account of the contribution of Paul Vidal de la Blache to geography.
5. Discuss in detail the contributions of W.M. Davis with his concept of the evolution of landforms and the Cycle of Erosion.
6. What was the main contribution of Mackinder? Elaborate.
7. Explain the human ecological model as envisaged by H.H. Barrows.
8. Analyse Sauer's model of cultural landscape model in geographical studies.

4.12 ANSWERS

Self-Assessment Questions (SAQ)

1. Richthofen's basic philosophy was the emphasis on interrelationships among land, hydrosphere, atmosphere, plant and animal world, and man and his material and spiritual culture in a complete areal combination. His main thrust was chorology- the holistic study in geography as a unifying discipline linking the problems of various sciences in a unity.
2. Hettner's main thrust was on systematic geography but he equally emphasised both systematic and regional methods as equally important methods in the study of geography. He made a distinction between the distribution of particular phenomena which are concerns of systematic sciences and regional association of elements that give character to an area are concerns of geography. Hence the thrust is on the spatial association of phenomena either physical or human that is the subject matter of geography.
3. Ratzel's main idea of (hu)man-environment relationship is that environment plays an active role in determining and shaping human activities and progress or culture is dependent on nature or environment, where (hu)man is seen as a passive receiver of nature's dictate.
4. Possibilism is the antithesis of Determinism, which advocates that humans are active and nature is passive, unlike Determinism, where in Possibilism humans have many opportunities amidst constraints posed by the natural environment due to humans' technological advancements.
5. W.M. Davis propounded the Cycle of Erosion in explaining the evolution of landforms.
6. Heartland Theory is a geopolitical theory given by H.J. Mackinder, which supported the dominance and said that whosoever controls Eastern Europe would win and control the Heartland.
7. (i) Burrows introduced the concept of Human Ecology in geography and considered Geography as Human Ecology. He advocated the central role of man in man-environmental relationships.

(ii) Cultural landscapes are the landscapes produced/created or shaped by human activities.

Terminal Questions

1. Chorology means the science of space considering geography as the chorological science concerned with the systematic study of various facts in a region, whereas chorography means the holistic (regional) study of a region including all aspects in areal combination as a study of whole reality. Refer to Section 4.2.
2. Write about Hettner's contribution to geography and elaborate on his focus on systematic method with his idea that both systematic and regional methods are equally important in the study of geography. Refer to Section 4.3.
3. Write a critical essay on the contributions made by Friedrich Ratzel in Geography with his central approach "Determinism" to study the human-environment relationship in geography. Refer to Section 4.4.

4. Discuss the contribution of Vidal de la Blache in Geography who gave an antithesis of Determinism in the form of Possibilism where he said that man was an active agent and nature was passive in choosing his options. Refer to Section 4.5.
5. Write in detail the concept of the evolution of landforms and the cycle of erosion given by W.M. Davis. Refer to Section 4.7.
6. Mackinder's main contribution to geography was his geopolitical theory – Heartland Theory. Elaborate his contributions. Refer to Section 4.8.
7. Barrows considered geography synonymously with human ecology and tried to understand geography in the light of ecology. Elaborate your answer. Refer to Section 4.9.
8. Explain Carl O. Sauer's model of the cultural landscape under cultural geography. Refer to Section 4.10.

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GLOSSARY

A Posteriori	: Denoting reasoning or knowledge which proceeds from observations or experiences to the induction of probable cause from observation or experience.
A priori	: Denoting reasoning or knowledge proceeds from theoretical deduction rather than from observation or experience.
Chorography	: Holistic (regional) study of a region including all aspects in areal combination as a study of reality.
Chorology	: Science of space relating geography as chorological science concerned with the systematic study of various facts in a region.
Cycle of Erosion	: The Cycle of Erosion is a process of landform development from a highland to a flood plane meeting the base level of erosion.
Determinism	: It is one of the approaches to human-environment relationships or interactions popularised by Friedrich Ratzel, which advocates that the natural or physical environment dictates and shapes the complete functioning of human beings, their lives and cultures. According to this approach, nature is the active agent and human beings are the passive ones completely controlled and guided by nature.
Dichotomies in Geography	: Dichotomies or Dualism in geography is the different kinds of geographical studies based on approaches, subject matters or methodologies since its inception. For example, determinism and possibilism are such examples where approaches to geographical studies of man-environment relationships are studied both ways- determinism keeps nature in the centrality projecting nature as the sole factor governing humans and their activities and possibilism keeps humans in the centre saying humans modify nature. There are other dichotomies like regional vs systematic, physical vs human, general vs. special, ideographic vs nomothetic, etc.
Ecocentrism	: Ecocentrism is a much wider view of the world than anthropocentrism. It takes into account the intrinsic values of all species in nature both human and non-human.
Ecology	: Study of living organisms and their environment with their interactions.
Erdkunde	: A study of the physical structure and inhabitants of the Earth.
Evolution of	: Landforms evolve due to their interaction with factors

Landforms	and processes including human factors.
Geognosia	: The science that studies the natural distribution of minerals in each type of rocks, their geographical distribution and the way they lie.
Heartland Theory	: The theory is given by H.J. Mackinder, which argues that the interior lowland of the Euresia, which forms a heartland and has potential to control the world meaning thereby controlling the rimland is the key to controlling the world.
Human Ecology	: Interdisciplinary and transdisciplinary study of humans and their relationships with their natural, social and built environments.
Naturgeschichte (Natural History)	: Natural history is a domain of inquiry involving organisms, fungi, plants, and animals in their natural environment, leaning more towards observational than experimental methods of study.
Physiographia	: Systematic natural sciences.
Possibilism	: Possibilism, the antithesis of Determinism, is an approach to study human-environment studies in geography, which suggests that human beings are active agents and nature is passive in relationships. In this approach, humans are seen as the modifiers of nature for their needs. This approach was advocated by Lucian Febvre and Paul Vidal de la Blache.
Rimland Theory	: A theory is given by N.J. Spykman emphasising rimland (the nations surrounding the heartland as a belt) as the controlling region for Eurasia and the world.
Weltbeschreibung	: Spatial distribution.
Zusammenhang	: Interdependence of things.