
SYLLABI-BOOK MAPPING TABLE

Environment and Society

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<p>1. Approaches to the Study of Man-Environment Relationship Approaches: Deterministic approach, Teleological approach, Possibilistic approach, Ecological approach.</p>	<p>Unit 1: Approaches to the Study of Man-Environment Relationship (Pages 3-23)</p>
<p>2. Environment and Society Society-environment interaction, Population-environment interaction, Technology-environment interaction, Relationship between environment and development.</p>	<p>Unit 2: Environment and Society (Pages 25-44)</p>
<p>3. Environmental Degradation Deforestation, Depletion of water resource, Water pollution, Soil pollution, Air pollution and noise pollution, Their causes and consequences. Pollution control, Board measures to control pollution.</p>	<p>Unit 3: Environmental Degradation (Pages 45-81)</p>
<p>4. Environmental Planning Strategies for a forestation, Water conservation, Soil conservation, Treatment of wastes and controlling environmental pollution.</p>	<p>Unit 4: Environmental Planning (Pages 83-104)</p>
<p>5. Environmental Protection and Promotion National policy on environment, Laws on environmental protection, Role of Pollution Control Board, Environmental Movements and Non-Governmental organizations in the promotion of environment.</p>	<p>Unit 5: Environmental Protection and Promotion (Pages 105-131)</p>

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INTRODUCTION

The natural environment includes various elements like location, water bodies, landforms, climate, soil and mineral deposits, natural vegetation, forests and wildlife. All these elements are provided by the environment and humans have to utilize these resources in the best possible and sensible manner to suit their present and future needs.

This book, *Environment and Society*, explains the man–environment relationship and explores the importance of protecting and preserving the environment.

Unit 1 explains different approaches and ideas of thinkers—from the ancient times to the present—about the environment. This unit explores the importance of protecting the environment.

Unit 2 focuses on the interactions and interrelations of environment, society, technology and development, with one another.

Unit 3 explains the causes and effects of deforestation, as well as of water, soil, air and noise pollution. It also examines the role of pollution control boards.

Unit 4 draws attention to afforestation and water conservation and the various strategies for implementing these. The unit also explains the meaning of soil conservation, the various strategies for soil conservation and suggests measures to manage waste and environmental pollution.

Unit 5 discusses the National policy on Environment, and the laws on environmental protection, the role of pollution control board. It also analyses including Central and State Pollution Control Board. This unit examines the role of environmental movements and non-governmental organizations in promotion of the environment.

Each unit is supplemented with Summary, Key Terms, Questions and Exercises and Further Reading sections to help students to understand the concepts.

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UNIT 1 APPROACHES TO THE STUDY OF MAN- ENVIRONMENT RELATIONSHIP

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Structure

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1.0 INTRODUCTION

The relationship between man and his environment has from early times been a focal point of inquiry. In this context, 'environment' refers to the sum total of conditions which surround man at a given point in space and time. Thus, the environment of early man was dominated by natural factors such as climate, soil, vegetation and other animals, whereas modern man has increasingly surrounded himself with an environment of his own design and construction which is geared to the provision of food, shelter and access. There are a number of ways in which the man-environment relationship can be perceived. In this unit, we will look at the relationship between man and environment from five different perspectives.

The first perspective in the unit explains the deterministic approach of the man-environment relationship. The approach stresses that man is subordinate to, and hence largely controlled by, the natural environment. While describing the approach, as a learner you will come across with the views of several renowned scholars and thinkers of different eras.

The second perspective is the teleological approach of man-environment relationship which stresses that man is superior to nature, and he thus has the potential and right of complete control over all aspects of nature.

The third perspective describes the man-environment relationship from the possibilistic approach. According to this approach, the physical environment tends

to provide the opportunity for a range of possible human responses and that people have considerable direction to choose between them through their creative genius and creativity.

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The fourth approach is economic determinism, how economy determines the man-environment relationship. The approach addresses man's mastery over increasingly larger parts of the environment. This approach favours continued economic and industrial expansion, and it sees in scientific research and industrial development the opportunity for increasing control over individual parts of the environment.

Our last perspective of man-environment relationship is the ecological approach. This approach is the latest approach in understanding the man-environment relationship. According to this approach, man is an integral part of nature and his relationship with the natural environment should be symbolic and not exploitative or suppressive.

Thus, different perspectives are relevant under different circumstances and conditions, and since environmental problems are multidimensional, each approach has its own valuable contribution to the man-environment debate.

1.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Explain the deterministic approach of man-environment relationship
- Explain the teleological approach of man-environment relationship
- Analyse the possibilistic approach of man-environment relationship
- Understand the economic deterministic approach of man-environment relationship
- Explain the ecological approach of man-environment relationship

1.2 APPROACHES OF MAN-ENVIRONMENT RELATIONSHIP

Since the origin of mankind, man has been closely associated with his environment. In fact, the man-environment relationship has been one of the central themes of many social sciences. Here, 'environment' refers to the surrounding conditions, influences or forces that mould or modify; as the aggregate of social and cultural conditions (such as religion, custom, language, law, and economic and political organization) that influence the life of an individual. It has been emphasized by most early scholars and thinkers that given a particular region, the physical environment leaves a lasting imprint on human life in that region.

Hardly anyone can say that human activities and the spatial patterns produced by humans are immune to the physical environment. Human beings have always

tried to adjust to their physical environment and create their own social-cultural environment. It will be true to say that cultural and technological achievements have helped human beings a great deal in this adjustment and today humans can not only adjust to their environment, but are also capable of adjusting their environment according to their needs. The methods of adjustment often become cultural elements and habits of human groups and societies.

In general, man's environment is divided into two broad categories:

Natural Environment

The natural environment includes elements like location, water bodies, landforms, climate, soil and mineral deposits, natural vegetation, forests and wildlife. All these elements are provided by the environment and humans have to utilize these resources in the best possible and sensible manner to suit their present and future needs.

Cultural Environment

The cultural environment comprises man-made features and human talents. It is human skills applied to the natural environment or surroundings that constitute the cultural landscape. The elements of cultural environment are religion, race and systems of political government, density and distribution of population.

It has been found that this extensive man-environment relationship has resulted in the emergence of many different approaches. But the premise is that man, either as a part of or apart from nature, is greatly affected by the environment or affects the environment. To understand this relationship between man and environment, scholars and thinkers have presented several approaches which trace the theoretical development of the man-environment relation.

1.2.1 Deterministic Approach

This approach focuses on the man-environment inter-relationship. According to this approach, man is the slave of his environment. All the activities of human beings are affected by environmental controls and determined by them. Thus, man is not free to have his own choices and his achievements are to be explained as consequences of natural conditions.

The main features of the deterministic approach are:

- The environment provides certain forms to human society. Man's needs of food, shelter and clothing, lifestyle, settlement pattern, etc., are all determined by the environment.
- Aborigines and ethnic racial groups everywhere in the world are slaves of the environment.

Evolution of the deterministic approach

The deterministic approach, can be traced back to classical antiquity. To ancient scholars, a group of people and their country were inseparable, and whenever

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some unusual customs or strange physiognomies were encountered, a cause was sought in the physical elements, climate, relief or soil. According to them, the physical environment of an area determined the actions, ways of living and level of development in that area. Among the ancient scholars, Plato, Aristotle, Eratosthenes, Strabo, and Ptolemy propounded the deterministic approach to understand the man-environment inter-relationship.

Plato (428-348 BC)

He insisted that the observable things on the earth were only poor copies of ideas or perfect predicates from which observable things had degenerated or were in the process of degeneration. However, he was not an extreme determinist like his predecessors; rather, he missed the chance to change the whole history of speculation concerning the man-land relation by identifying man as the destructive agent.

Aristotle (384-322 BC)

Aristotle is credited with the most speculative concept of environmentalism of his period. He markedly differed from Plato, who was rather hesitant to accept the extreme form of determinism. Aristotle tried to conceptualize varying habitability with differences of latitude. He contended that parts of the earth that were close to the equator—the torrid zone—were uninhabitable; that parts of the earth far away from the equator—the frigid zone—were constantly frozen and also were uninhabitable; and that the temperate zone in between constituted the habitable parts of the earth.

Emphasizing the importance of climate in shaping human skills and their sustainability, Aristotle observes in his *Politics*, that ‘The inhabitants of the colder countries of Europe are brave, not deficient in thought and technical skills, and as a consequence of these they remain free longer than others, but are wanting in political organization and unable to rule their neighbours. The people of Asia, on the contrary, are thoughtful and skilful but are without spirit, whence their permanent condition is one of subjection and slavery.’

Eratosthenes (c. 234 BC)

Eratosthenes redefined Aristotle’s zones of habitability, but he also emphasized climatic determinism while describing the *ekumene*, the inhabited earth. Posidonius, who lived shortly before the time of Christ, however, contradicted Aristotle’s assertion that the equatorial part of the torrid zone was uninhabitable because of heat. The highest temperatures and the driest deserts, he said, were located in the temperate zone near the tropics and the temperatures near the equator were much less extreme. It is not clear whether he refuted the contemporary assertion of climate control on human activities because his belief concerning the habitability of the equatorial region was overlooked.

Ptolemy

Ptolemy, who lived in the second century after Christ, repeated Aristotle's heritage of equating habitability with latitude, and the effect of the position of the celestial bodies on human affairs.

Strabo (64 AD-20 BC)

Strabo carried forward Aristotle's standpoint on habitability in his book *Geography*. Like Eratosthenes, he also redefined the habitable part of the earth, the ekumene, but held the view of environmental control on human activities. He sought to explain how shape, relief, climate and space relation of Italy affected the rise and strength of Rome.

Deterministic Approach in the Middle Ages

The first medieval writer to make use of Aristotle was Albertus Magnus, whose book on the nature of places combined astrology with determinism. The Greek theory of equating habitability with latitude became popular in medieval writings.

Scholars of the Arab world in the medieval period greatly subscribed to the Greek idea of deterministic approach. Al-Masudi was more clear in his assertion on environmental control. He was quite emphatic in describing the effect of environment on the mode of life and attitude of people. To him 'the powers of earth vary in their natural vegetation and topography'. He prepared a new division of the world into fourteen climatic regions, described human activities, particularly in the torrid and temperate regions, emphasizing the importance of climate on human action.

Al-Biruni in his book on India also made implicit references to the impact of the monsoon on the Hindu culture, particularly while describing the cultural landscape and the socio-economic institution of contemporary India. His view was deterministic and idealistic in nature and was based on his visit to India.

Ibn-Khaldun was the last Arab scholar to have contributed to and enriched the medieval deterministic approach. He repeated the old idea of climatic determinism that people turned black when they live too close to the sun and that when black people move to the temperate zone they gradually turned white and produced white children. Thus, the physical environment impressed its characteristics on people in many subtle ways.

Deterministic Approach in the 19th Century

Scholars and thinkers in the nineteenth century were more involved in framing the deterministic approach and attempting at empirical validation of such hypotheses through field observation and experience. Some well-known scholars of the 19th century who presented the deterministic approach on the man-environmental interrelation are Ritter, Humbolt, Frederic Le Play and Demolins.

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Ritter

Ritter's view of science sprang from his firm belief in God as the planner of the universe. He regarded the earth as an educational model of man, where nature had a God-given 'purpose', which has to show the way for man's development. He believed that the unity of nature would be severely jeopardized if nature was regarded as dominant and man as subordinate to it; he felt that there was a mutual interaction between the two.

Humboldt

He viewed the problem of determinism in a remarkably clear and scientific manner. He realized that environment influenced man. Humboldt did not consider man as a primary determinant in environmental change probably because he worked in an area in which nature was so overwhelmingly dominant.

Frederic Le Play

Frederic Le Play, the renowned French sociologist, provided a broad portrayal of the socio-geographic structure of human societies. He postulated that the development of the European people took place in three very different geographical environments, namely, the Steppes, the maritime shores and the forested lands. The Asiatic Steppe was the home of stable nomadic families under the control of patriarchs. Along the maritime shores of Europe, fishing resources, the boat and habitation were the patrimony of the family which was made up of parents, all unmarried children and the eldest son with his family. Forested land covering with its variety of grass openings, heath and varied soils, was the birth place of the unstable family that had also developed in the urban environment.

Demolins

Demolins, a pupil of Le Play, provides an analysis of the social structure of the world's people on the basis of what he calls their 'geographical environment', their resultant type of work and their resultant type of social organization.

The basic idea of Demolins is expressed in the preface to the first volume as follows:

The primary and decisive cause of the diversity of people and races is the route which has been followed by the peoples. It is the environment which created the race and social type. It has not been an indifferent matter for a people which environment they followed: that of Great Asiatic Steppes, or of the Tundras of Siberia, or the American Savanas, or African forest. Unconsciously and fatally these routes fashioned either the Tartar Mongol type, Eskimo-Lapps, the Red-skin or the Negro. In Europe, the Scandinavian type, the Anglo-Saxon, the French, the German, the Italian, and the Spanish are also the result of the route through which their ancestors passed before arrival at the present habitat.

Modern and New Deterministic Approach

Friedrich Ratzel is considered the founder of new determinism. In his approach, he gave more importance to location than to topographical features. He argued that similar location leads to similar modes of life. He regarded cultural forms as having been adapted and determined by natural condition. He did not merely explain phenomena in human geography in terms of natural conditions but stressed the significance of the historical development and cultural background of the population.

By the beginning of the twentieth century, determinism had become a most popular approach in the United States. The names of Ellen Semple and Elsworth Huntington stand prominent among the proponents of this approach.

Ellen Semple

Semple's study is an examination of the influence of physical environment on man. The opening paragraph of her book states,

Man is a product of the earth's surface. This mean not merely that he is a child of the earth, dust of her dust, but that the earth has mothered him, fed him, set him tasks, directed his thoughts, confronted him with difficulties that have strengthened his body and sharpened his wits, given him his problems of navigation, or irrigation, and at the same time whispered hints for their solution. She has entered into his bones and tissues, into his mind and soul.

According to Semple's thesis, man is a product of the earth's surface. In mountainous areas he does not develop leg muscles and in coastal areas he does not develop his chest and arms because nature gives them to him; he is the plastic form which nature moulds. According to her, even religious ideas are not exempted from nature's control. 'Buddha born in the steaming Himalayas piedmont, fighting the lassitude induced by heat and humidity, pictured his heaven as Nirvana, the cessation of all activity and individual life'. This is the psychological effect of environment. The opening paragraph of Semple's book sets the tone of the whole book and every chapter includes examples of deterministic interpretation.

Elsworth Huntington

Elsworth Huntington was also a strong protagonist of the deterministic approach. He developed the idea of the importance of climate in the advancement of human civilization. He believed that climate was the fundamental factor in the rise of a civilization. According to him, the northeastern parts of the United States had the best environment. On the basis of his opinion of North Americans, he concluded that temperate climates had the highest level of health and energy and civilizations. He estimated that an inhabitant of the temperate belt produces, on an average, five or six times of what inhabitants of any other part of the world produce. According to him, the supreme achievements of civilization in any region were associated with a particular type of climate, and variations in climate led to pulsations in the

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history of culture. He divided the world into the mild and the harsh climatic zones and emphasized that ancient civilizations like the Egyptian, Mesopotamian and Indus Valley civilizations flourished in fertile river valleys which had mild climates. He also attributed the advancement of Europeans in the field of science and technology to climatic conditions.

Besides Huntington, a number of other scholars like Mackinder, Chisholm, Bowman, Robert Mills, Geddes and Herbertson also interpreted the progress of societies on the deterministic approach. A number of scholars emphasized that climate influences the physical properties of soil, which ultimately determine the cropping patterns, dietary habits, physique and attitudes of people.

Objections to the Deterministic Approach

The major objections to deterministic approach are the following:

- Similarity in natural environment does not necessarily result in similarity in human activities.
- Physiological adjustments need not agree with tropical climate in all instances.
- Man influences environment, just as environment influences man.
- This approach does not stress on the religious and cultural influences on environment.
- It fails to explain the distribution of population.
- This approach also fails to explain the influence of industry and industrial development on environment.

Although there is no denying the fact that physical environment affects human actions and patterns of life in various parts of the world, yet it cannot be said that man is a total slave of nature. Therefore, the deterministic approach as advanced by scholars like Semple and Huntington could not hold for long in its original form. A closer look at human activities reveals many facts for which environmental forces provide no satisfactory explanation. Similarly, environments do not always evoke the same response. Eskimos differ markedly from the Tundra tribes of Siberia, although they live in similar environments. Thus, similarity in natural environment does not necessarily result in similarity in human activities.

Further, though environment does influence man, man in turn changes his environment and the interaction is so intricate that it is difficult to know when one influence ceases and the other begins. Many landscapes that appear natural to us are in fact the work of man.

Religious and cultural factors often leave a strong imprint on economic activities in different regions. Buddhist objections to killing life, for example, set a man-made limit to the cultivation of mulberry and rearing of silkworms. Hindu religious beliefs have similarly hampered the development of a meat industry in India. Thus, the deterministic approach does not consider

such cultural or religious factors nor does it take into account the influence of man on environment.

Industry and industrial development also cause serious problems for the environment. It is man and not nature that decides the development of industries. Thus, the deterministic approach ignored the influence of industry and industrial development on environment.

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CHECK YOUR PROGRESS

1. The modern view of the deterministic approach was presented by
 - (a) Ellen Semple
 - (b) Karl Ritter
 - (c) Demolins
 - (d) Frederic Le Play
2. The founder of new determinism is
 - (a) Friedrich Ratzel
 - (b) Ellen Semple
 - (c) Karl Ritter
 - (d) Demolins
3. According to the deterministic approach, man is the slave of his
 - (a) Economy
 - (b) Society
 - (c) Environment
 - (d) Culture

1.2.2 Teleological Approach

The word, teleology is from the Greek word *telos*, which means 'end, goal, aim, purpose'. The teleological approach in environment-man interrelation reflects that nature is the gift of God and that it affects man's development. The teleological approach shows events which can only be explained as stages in a movement towards a preordained end; the end may be defined by those involved in the event or it may be externally defined as in many religions. It seeks to understand events in relation to their underlying principles. In order to understand the relation between man and environment from the teleological approach, various scholars and thinkers came up with different views. Some of the famous ones are Karl Ritter, Alexander von Humboldt and Immanuel Kant.

Karl Ritter (AD 1779-1859)

Karl Ritter used the teleological approach as a framework for his presentation of data and as a means to arrive at some simple empirical generalizations. According to him, the concept of spatial unity presumed a casual interrelation of all the individual

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features in nature. He wrote, 'The phenomena of nature had to be studied in order to establish the coherence and unity'. His teleological philosophy cannot be tested empirically and does not qualify as scientific explanation because religion cannot provide explanation of natural phenomena. Ritter's concept of unity of nature was shaped by his deeply religious outlook and by the accepted natural philosophy of his time.

He studied the working of nature in order to understand the purpose behind its orders. His views of science sprang from his firm belief in God as the planner of the universe. He regarded the earth as an educational model for man, where nature had a God-given purpose which was to show the way for man's development. To him the shape of the continents was determined by God, so that their form and location enabled them to play the role designed by God for the development of man.

The teleology in Ritter's view seems to be an attempt to interpret, philosophically, that which science could not explain. Ritter found that these were the fundamental facts of the environment for which science could not offer any explanation. These were the unique features of the earth in the universe; the earth as the home of that unique creature, man; and finally, the explanation of a host environments facts—the differentiation in the character among the major land units of the world.

The idea of a geographical whole, as in the integral nature of place and people, reflects Ritter's attempt to develop a more scientific holism. His philosophy seems to have an all-embracing explicatory holism, particularly in the notion of teleology—the theory that the evolution of anything can be validated by the consideration of the purpose to which it is in the end directed. His philosophy seeks to understand the whole, rather than the parts, and suggests that the whole is greater than the sum of its parts; that is, it has emergent properties not predictable from knowledge of its constituent parts.

Criticism

Ritter's teleological standpoint was criticized by his contemporaries who felt that religion could not provide an explanation of natural phenomena, especially in the arrangement of the major regions. His view that 'among all creatures of the earth only man could comprehend the existence of the divine plan and so could adjust his life to it and make maximum use of God's gift' was also criticized as being valueless and unscientific because it did not take into account the concept of struggle and survival.

CHECK YOUR PROGRESS

4. The famous philosophers who contributed to the teleological approach on man-environment relationship are
 - (a) Karl Ritter
 - (b) Immanuel Kant
 - (c) Montesquieu
 - (d) Plato
5. The teleological approach to environment-man interrelation reflects that nature is the gift of
 - (a) Human development
 - (b) God
 - (c) Technology
 - (d) Economy

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1.2.3 Possibilistic Approach

The possibilistic approach holds that the physical environment tends to provide the opportunity for a range of possible human responses and that people can choose between them through their creative genius and ability.

Some thinkers who contributed to the possibilistic approach of man-environment relations were Plato, Montesquieu and Comte De Buffon.

Plato (429-347 BC)

According to Plato, the observable things on the earth were only poor copies of ideas, or perfect predicates from which observable things had degenerated or were in the process of degeneration. Proceeding from the general to the particular, Plato sought to infer that men tended to make changes in the land they occupied; and soil erosion and land destruction were outcomes of their material culture. It was he who formulated the idea of man as an agent of change on the earth's surface. The view expressed by Plato about capabilities of man was very close to the philosophy of possibilism. It can, therefore, be said that a philosophy resembling possibilism had its origin in the classical antiquity which Plato did not describe very clearly.

Montesquieu (AD 1689-1755)

Montesquieu developed a philosophy resembling the paradigm of possibilism. According to him, the interplay of 'physical' and 'moral' causes was extended to be the factor which established the character of a society or nation which guided the choice of the society or nation to operate freely in the environment.

Montesquieu held the view that men did possess free will and were able to make, consciously or subconsciously, choices from among a series of avenues of escape or adaptation. He also held that even though the physical environment

remained relatively static, man had been growing in ability and becoming more complex. Montesquieu's view of man's freedom vis-à-vis the physical environment was too crypto-possibilistic to allow easy assimilation by later readers.

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Comte De Buffon (AD 1707-1788)

Comte De Buffon believed in the creative power of man. According to him, man was commended to conquer the earth and transform it. He thought that man had changed the face of the earth in the process of developing a civilization. According to him, man is an agent of change and possessed the free will to make desired changes on the landscape. He insisted that man could adjust to any climate on the earth. According to him, 'Man was not compelled to react to any climate the way uncivilized native people would react. With proper clothing he could protect his skin color.'

Buffon also speculated on climate changes mostly as a result of man-made changes in the landscape and suggested that the removal of forests and the draining of marshes might lead to increase in temperature. In fact, he insisted on the conservation of forests.

1.2.4 Possibilistic Approach in the 19th and 20th Centuries

Some famous thinkers of this period are Lucien Febvre, Jean Brunches, Paul Vidal de La Blache, Isaiah Bowman and Carl O. Sauer.

Lucien Febvre

The critical French philosopher Febvre was a great supporter of the possibilistic approach. He also endorsed the Vidalienne tradition of possibilism and carried forward the 'heritage' in a more neo-Kantian way. According to him, man is not a passive being but an active force.

Through centuries and centuries, by his accumulated labours and the boldness and decision of his undertakings, he appears to us as one of the most powerful agents in the modification of terrestrial surface. And this action of man on his environment is the part which man plays in geography. There are no necessities, but everywhere possibilities; and man as the master of these possibilities is the judge of their use. This by the reversal which it involves puts man in the first place, man and no longer the earth, nor the influence of climate, nor the determinant conditions of localities.

Febvre, probably the most caustic of the possibilists, discussing the matter of uniform regions of physical and human geography within which everything had identical—or merely identical—characteristics, enunciated this possibilist viewpoint: 'And this is a Ratzelian dogma. If the space is limited and not greatly differentiated, the physical and human types found there are monotonous. Our contention is quite otherwise. We admit regional frames in a general sense, but in the collection of physical features they represent, we see only possibilities of action'.

Febvre, speaking for the possibilists, stated their case that a homogeneous region did not necessarily produce, for all time, a homogeneous society. The inhabitants of any region were able to choose, from time to time and in the quantity they desired, some of the benefits, or chances for benefit, which the region possessed. However, the number of choices or opportunities for choice was not infinite in each region; each region had an upper limit.

Jean Brunches

Jean Brunches spread the philosophy of possibilism into a philosophical and methodological framework. According to him, in this terrestrial unity, a greater emphasis is placed on the works of man by the possibilists than by determinists. The works of man, not the earth and its influence, are the starting point of study according to the possibilistic viewpoint. Brunches divided the essential facts of human geography into three categories:

- **Unproductive occupation of soil:** Houses and roads (including rural habitations, urban agglomerations and circulation pattern).
- **Plant and animal conquests:** The cultivation of plants and the raising of animals.
- **Destructive exploitation:** Plant and animal devastation, mineral exploitation.

He also established a link between earth and man. According to him, it is not influences that are sought but 'geographical relations between physical facts and human destinies'. His approach, therefore, seems to be more conducive to unbiased research.

According to Brunches,

Everything on the earth's surface is for men a matter of habitat, of sound understanding, of physical facts, and of skilful adaption to these facts. Moreover, the adaptations takes place promptly and at the right time, proceeded, prepared for, and brought about by exact scientific investigation. These investigations should also tend to moderate our ambitions and turn us away sometime from undertakings that would mean such bold opposition to the forces of nature that man would run the risk of seeing sooner or later his patient work annihilated at a single stroke. The more imposing and glorious the man's conquest, the more cruel the revenge of the thwarted physical facts.

Isaiah Bowman and Paul Vidal de La Blache

Isaiah Bowman and Paul Vidal de La Blache have also stressed Brunches's viewpoint. They stressed that by interacting with his environment, man gradually replaces the variety of nature by uniformity. Blache set forth a conceptual framework of 'possibilism'. According to him 'Nature sets limits and offers possibilities for

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human settlement, but the way man reacts or adjusts to these given conditions depends on his own conditions and traditional way of living'. What he meant was that the physical environment provided a range of possibilities which man turned to his use according to his needs, wishes and capabilities, in creating his habitat. He also said that in a human settlement, nature changed significantly because of the presence of man, and these changes were greatest where the level of material culture of the community was highest. He further added that through his occupation and imprint on the land, man created distinctive countries, be they states or minor unit areas.

Blache emphasized the concept of a way of living in supporting and furthering his philosophy and possibilistic view. According to him, the same environment has different connotations for people with different *genre de vie* which literally means 'way of life'. According to de la Blache, man chooses from a variety of choices offered by nature to shape his life.

In respect of the possibilistic approach, Bowman argues, 'There are no necessities but everywhere possibilities; and man as a master of these possibilities is the judge of their use. This by the reversal which it involves puts man in the first place, man and no longer, the earth, or the influence of neither climate nor the determinant conditions of localities'. He further argues that 'even plant societies, which are less adaptable to environment than human ones, do not suffer exclusion from external conditions. The elements of the environment are fixed only in the narrow and special sense of the word. The moment we give them the human associations they are as changeful as humanity itself'.

He also stated that 'each fact does not determine the form and nature of human society in development. They condition it. New earth facts are continually being discovered and old earth facts given new significance as human knowledge, thought and social action develop. The relations are reciprocal'.

CHECK YOUR PROGRESS

6. Jean Brunches extended the philosophy of possibilism into a
 - (a) Philosophical and methodological framework
 - (b) Cultural and methodological framework
 - (c) Philosophical and social framework
 - (d) Environmental and methodological framework
7. The famous thinkers of the 19th and 20th centuries who presented their thoughts on the possibilistic approach are
 - (a) Lucien Febvre
 - (b) Aristotle
 - (c) Plato
 - (d) Jean Brunches

Contd. ...

8. 'The more imposing and glorious man's conquest, the more cruel the revenge of the thwarted physical facts' was stated by
- (a) Zelinsky
 - (b) Lucien Febvre
 - (c) Plato
 - (d) Jean Brunches
9. The physical environment tends to provide the opportunity for a range of possible human responses and that people have considerable direction to choose between them through their creativity. This view is a part of the
- (a) Deterministic approach
 - (b) Social approach
 - (c) Possibilistic approach
 - (d) Ecological approach

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1.2.5 Economic Deterministic Approach

In order to understand the various aspects of society, various thinkers formulated an approach called the economic deterministic approach. This approach addresses man's mastery over increasingly larger parts of the environment. This approach favours continued economic and industrial expansion, and it sees in scientific research and industrial development the opportunity for increasing control over individual parts of the environment.

'Economic Determinism' is one of four phrases which is used interchangeably by modern writers in referring to a sociological law which is the joint discovery of Karl Marx and Frederick Engels. Engels in his *Dialectics of Nature*, presented the view that natural phenomena are not unchallengeable but form an ever-changing current. This attitude became the basis of the radical environment-man model wherein information about the natural world is monitored by the system's executive and can be interpreted by social man to produce an ever-revised view of nature which will play a role in processing social vision and in promoting action leading to an enhancement of the human circumstance. For Marxists, human occupation of land is a dialectic symbiosis in which society faces nature and, by a nature of force and coercion, achieves power.

According to the famous thinker Zelinsky, the economic deterministic approach offers a more sound explanation for understanding the size and distribution of human population than does the direct impact of the physical environment, but he also identifies two fallacious assumptions inherent in this line of thinking. These are: (i) the number of inhabitants in a region is positively correlated with the level of economic development and activity and (ii) universal economic principles govern the interaction of people, resources and society.

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CHECK YOUR PROGRESS

10. According to Zelinsky, the economic deterministic approach offers an explanation for understanding the size and distribution of
 - (a) Plants and animals
 - (b) Economic structure
 - (c) Ecological structure
 - (d) Human population
11. 'Dialectics of Nature' was produced by
 - (a) Engels
 - (b) Karl Marx
 - (c) Darwin
 - (d) Aristotle

1.2.6 Ecological Approach

Man's relation to the natural environment is one of intricate and perpetual association historically, culturally and biologically. The very conception of the natural environment is moulded by human history and culture. The natural environment is not to be understood as a causal factor but rather as an all-pervading and all-enveloping condition of human life. The history of the world with all its complexities and the culture of the world with all its constituent varieties belongs only in the environment of this world and its region, even as living things, including man, are biologically conditioned by their natural environment. The natural environment can be understood only in terms of human life and history and culture can be understood fully only in the natural environment.

Human life and environment are intimately interwoven in every aspect of their being, biologically and culturally, from the beginning of life on earth. Both nature and man are intrinsic to the particular characteristics of areas, and indeed in such intimate union that they cannot be separated from each other. It is also in this relationship that the subject has faced two of its most difficult methodological problems, of the dualism between man and environment and that between human and the physical environment. The ecological viewpoint has been used to overcome these problems. It provides an alternative approach to a central theme in geographical inquiry, that of the relationship of man and environment in an area.

In the man-environment relation, the ecological approach is the latest approach cutting through the theme of possibilism and determinism. The ecological approach stresses that man is an integral part of nature, and his relationship with the natural environment should be symbiotic and not exploitative nor suppressive.

Here, ecology signifies the relationship between organisms and their environment and among the various ecosystems in the biosphere. The word 'ecology' is derived from the Greek word *oikos* meaning household or place to live and *logos* meaning study or teaching about the habitat. The word was developed

by German naturalist Ernst Haeckel in 1869. In socio-environment study, the word ecology suggests the relation between man and his environment, and does not allow one to be the supreme power over the other or to exert his/its influence. It describes the cause-and-effect interplay between cultural and physical environment. Man and nature are acting and reacting together. Man is modifying nature, for instance, by deforestation, by setting up industries and causing pollution and changing the ecosystem. At the same time, nature or the environment is modifying man, for example, in high altitude areas by giving many hardships to him and making him bold enough to face them.

Thus, according to the ecological approach, man and environment are equally important. The ecological approach is the most scientific approach and at the same time most commonly accepted by most thinkers and scholars. With the adoption of the ecological viewpoint, scholars have rid themselves of native determinism and misinterpretation in both physical and human environments. According to Eyre and Stoddart, 'the ecological concepts provided a research method that scholars so badly lacked. The concept of "Ecosystem" lies at the base of the philosophy of ecological viewpoint'. In the year 1972, famous scholars Ward and Dubos propounded the view that man must accept responsibility for the stewardship of the earth and apply appropriate environmental management strategies based on ecological principles.

The term ecosystem was formally proposed by Tansley, a plant ecologist, in 1935 as a general term for both the biome that is the whole complex of organisms including animals and plants naturally living together as a social unit, and their habitat. All the parts of such organic and inorganic ecosystems or biome or habitat ecosystems may be regarded as interacting factors that, in a mature ecosystem, are in equilibrium. It is through their interactions that the whole system is maintained. Tansley's concept of ecosystem effectively broadens the scope of ecology itself, which is no longer purely biological in content.

The ecological concept has four properties, which are discussed below:

1. The ecosystem is monistic, that is it brings together environment, man, plant and animal worlds within a single framework, within which the interaction between the components can be analysed. The ecosystem being functional in design, offers a sound principle for geographical analysis of man-environment interaction in specific areas and regions. Besides, since the ecosystem concept combines both the physical and the biological environments in a single interacting system; it helps to resolve the age-old problem of dualism.
2. The ecology is structured in a more or less orderly, rational and comprehensible manner. The essential fact here is that once the structure is recognized, it may be investigated and studied, in sharp contrast to the transcendental properties of the earth, and its regions as organisms or organic wholes.
3. The ecosystem is the functioning system involving continuous throughput of matter and energy. The system involves not only the framework of

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the communication net, but also the goods and people flowing through it. Once the framework has been defined, it may be possible to qualify the interaction and interchanges between component parts and at least in simple ecosystems, the whole complex may be quantitatively defined.

4. The ecosystems are a type of 'general system', and the ecosystem processes the attributes of this general system. In general system terms, the ecosystem is an open system tending towards a steady state and obeying the laws of open system thermodynamics.

An ecosystem may be conceptualized at different levels of complexity; for example, from a single farm unit to the national agriculture system in any country. The ecosystem possesses structural properties of theoretical models so that a first approximation of system structure may be reached by selection, simplification and ordering of data at a series of levels. Accordingly, with the adoption of the concept of an ecosystem, the geographical system may be examined at a series of levels or scales, beginning with the framework level, to simple information systems focused on analysis of the mechanisms of supply and demand, to the still more complex levels of social organization.

Thus, the emergence of the ecological concept as a tightly knit interacting complex of man and environment awaited the development of the growing body of systems theory. In the last few years, it has begun to be applied by many scholars both as a research tool and as a methodological instrument. In the ecosystem concept, the ecology makes its most profound and powerful contribution to many social sciences.

CHECK YOUR PROGRESS

12. According to ecological approach, man is an integral part of
 - (a) Technology
 - (b) Economic society
 - (c) Society
 - (d) Nature
13. The term ecosystem was formally proposed by
 - (a) Tansley
 - (b) Isaiah Bowman
 - (c) Paul Vidal de La Blache
 - (d) Febvre
14. 'The concept of "Ecosystem" lies at the base of the philosophy of ecological viewpoint' was proposed by
 - (a) Isaiah Bowman and Paul Vidal de La Blache
 - (b) Eyre and Stoddart
 - (c) Febvre
 - (d) Tansley