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SPACE

Learning objectives

1. **To understand** Location, Space And Time In Human Geography.

Introduction

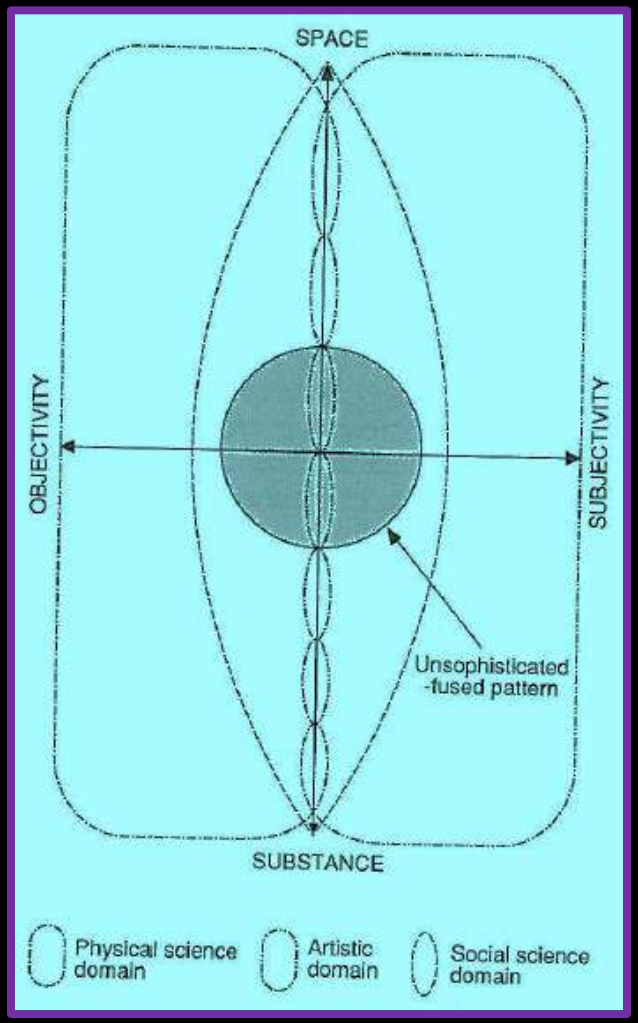
- “Space” is the “fundamental stuff of human Geography”.
- The concept of "space" is one of the most fundamental of geographical concepts. There is no work in geography that does not certain it. Nevertheless, geography has not as yet formulated an explicit and unambiguous definition of geographical space.
- This fact has had negative consequences for geographical theory, methodology and application. In the effort of contributing to its elimination we will try to outline the basic connotations of the concept. The concept of 'geographical space" is a relational one. It acquires meaning and sense only when related to other concepts.
- The concept of "space" may be conceived as a supplement to things, i.e. substantively conceived objects. Space conceived in this way is the synonym of emptiness. The concept of "space" may be also conceived in relation it individual landscape elements as their 'environments".

Definition

- The concept of space is more complex and it subsumes the concept of place. ***Blaut*** called space as "a treacherous philosophical word"' and distinguished between the concepts of "absolute space" and "relative space".
- According to ***Yi-Fu Tuan*** space can be described as a location which has no social connections for a human being. People don't ad value to this space.
- ***Michel Foucault*** defines space as; "The space in which we live, which draws us out of ourselves, in which the erosion of our lives, our time and our history occurs, the space that claws and gnaws at us, is also, in itself, a heterogeneous space…..we live inside a set of relations.
- ***Nigel Thrift*** also defines space as; "The outcome of a series of highly problematic temporary settlements that divide and connect things up into different kinds of collectives which are slowly provided with the meaning which render them durable and sustainable."

Sack's Framework of Space Conceptions.

(Source: Sack 1980:25)



Characteristics of space

1. It is physical and active.
2. It is existing and it is an orderly manner.
3. It is transformed because it is part of physical or human processes of short, medium and long duration that modify it incessantly.
4. It is measurable and can be described.
5. space in the world has a location, be it absolute (that is defined by its geographic coordinates: latitude, longitude and altitude) or relative (that is determined by its situation regarding other spaces and taking as a reference the cardinal points: North, South, East and West).
6. It can be a point or line on a map.
7. It is the degree of connection between the natural and human components of the geographic space.
8. It is classified by density, which describes the number of times a component appears on a specific surface (for example, people per square kilometer, people/km2).
9. It refers to the variety and differences regarding quantity, characteristics and organization of natural, social, economic, political and cultural components that distinguish a geographic space from another.

Knox and Marston (2007) describe three ways of measuring space. Space can be measured in absolute, relative and cognitive terms. The difference between absolute and relative space has been a long-running debate in Human Geography.

Absolute Space:

It is a container which holds all the earthly matters. For example village, city, factory, forest, roads, and railways etc. Absolute conceptions of space in which space is a distinct, physical and elementary real or empirical entity in itself.

"Absolute space" is a mathematical space described through points, lines, areas, planes and configurations whose relationships can be fixed precisely through mathematical reasoning. Space is for example described in kilometers or miles. There is also another mathematical space, the topological space. This space is defined as the connections or connectivity between points in space.

Characteristics:

1. It is physical, real which can be perceived through experience.
2. A framework within which objects can be located.
3. Independent of the objects.
4. Contiguous and whole.
5. The concept of absolute space associated with German Philosopher Immanuel Kant.
6. Geographer divided the absolute space into small fragments and when these fragments are divided unevenly then it is called an area, but when these fragments are divided on a fixed parameter then it is a called as a region.
7. Everything occurs within this space.
8. It is an empty space. This concept embodies the idea of emptiness and the idea of absence of any object.
9. Such spa e is qualitatively empty, immobile, homogenous.
10. It may be arbitrarily subdivided into areas. The unified division may be carried out using a constant scale (Harvey 1970).

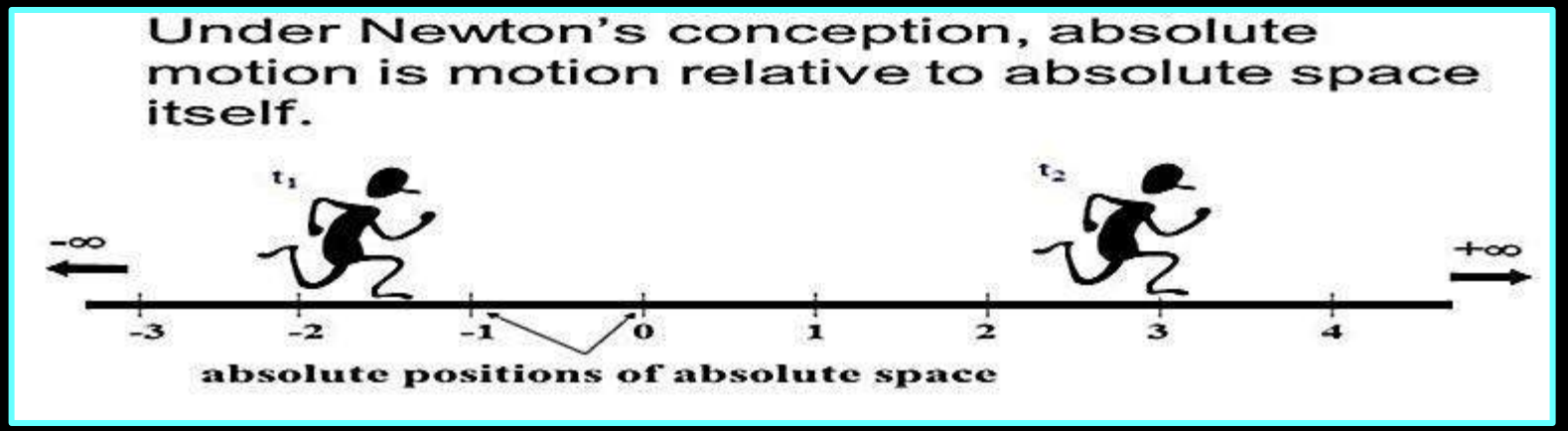
Relative Space:

Relative concept of space in which space is merely a relation between events, or aspects of events and thus bound to time and process.

The relative measurements of space can take the form of socioeconomic or experiential or cultural space. The socioeconomic space consists of sites, situations, routes, regions, patterns. The experiential or cultural space consists of a space where groups live and interact.

Characteristics:

1. discuss the relationship of different events.
2. Space cannot be judged only through absolute viewpoint. Space is depended on what people see, what he thinks and in which way it can be used. It means relative space is social space.
3. A set of relationships between objects.
4. Based on sensory inputs (intrinsically non-spatial).
5. It is of various types, like, social space, economic space and relational space.
6. Does not exist independent of objects.



Cognitive space:

The cognitive space is defined and measured in terms of values, feelings, beliefs and perceptions. Therefore it is described in terms of behavioral space, like landmarks, paths, environments.

Types of Geographical Space

There are three types of geographical space. These three types of space are independent of one another.

1. Real Space: This is the common geographical space which can be reflected by maps or remote sensing images and so forth.

2. **Phase Space:** It can be described by time series of the geographical system. The concept of phase space taken from physics, but it is very helpful in reflecting the regularity in the temporal series of geographical evolution.

3. Order Space: It is defined by referring to the definition of phase space. It is characterized by hierarchical data including the geographical data based on rank order.

Space Type	Attribute	Phenomena
Real Space	Space	Form, network, pattern, distribution etc.
Phase Space	Time	Process, evolution etc.
Order Space	Class	Size distribution, hierarchical distribution.

Table: Three Types of Geographical Spaces – RPO Framework

Other Space

Other insights arise from a view that different notions of space form an ordered sequence, as outlined in this presentation.

1. Mathematical Space
2. Physical Space
3. Socioeconomic Space
4. Behavioral Space
5. Experiential Space

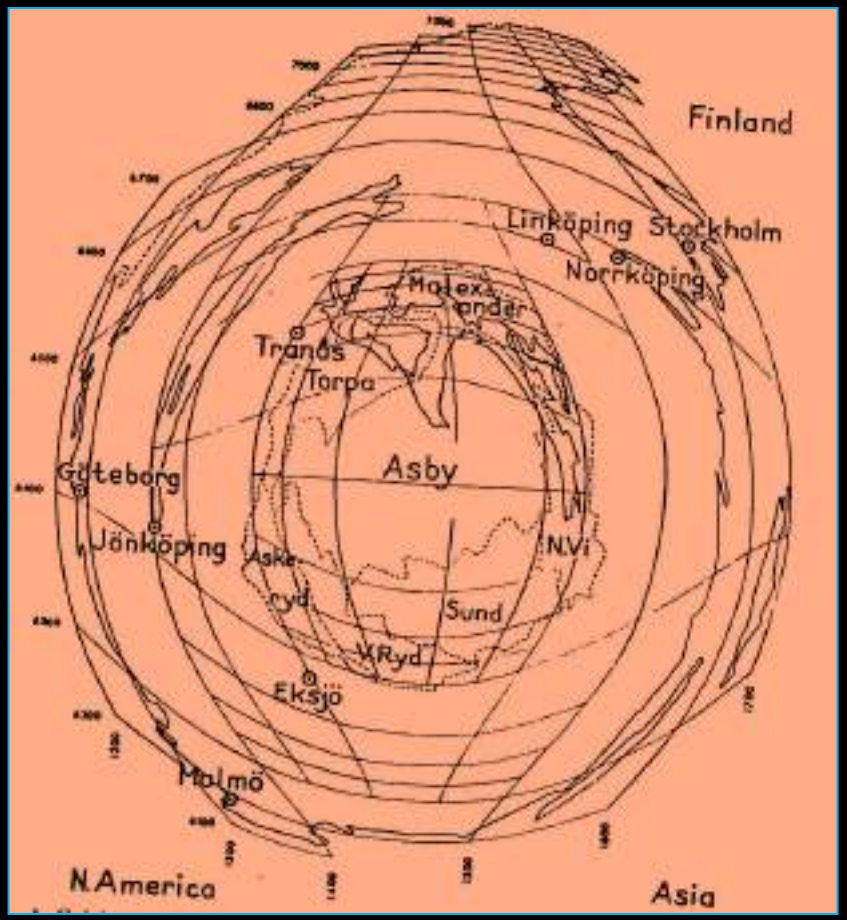
1. Mathematical Space:

- ***According to Glacken 1967*** in his Epigraph, "It is said of the Socratic philosopher *Aristippus*, so Vitruvius wrote in the preface to the sixth book of his ***De Architectura***, that being shipwrecked and cast on the shores of Rhodes and seeing there geometrical figures on the sand, he cried out to his companions, 'Let us be of good hope, for indeed I see me traces of men." For the ancient Greeks, and for much of the Western intellectual tradition that followed their lead, Geometry was the signature of human intelligence.
- Geometry, in Greek, means measurement of the earth, just as Geography means description of the earth. Literally, then, geometry was the oldest and purest form of what modern geographers think they have only recently invented – quantitative geography. It was, and remains, the formal science of space and spatial relations. It was, and remains, the formal science of space and spatial relations.
- ***David Harvey (1969)***, one of the foremost scholars to discuss space in the context of geography, called geometry "the language of spatial form."
- Now there are many more geometries, and inventing new ones is within the reach of today's generation of doctoral students in mathematics. But the geometry of two-dimensional and three-dimensional Euclidean space and its extension to the curved surface of the earth remain the foundations of geographical description. This is the geometry represented in most ordinary maps and the one underlying most mathematical models of geographic processes. But geographers have explored and made creative use of several other kinds of formal spaces as well. I mention here only two : Discrete and Fractal spaces.
- Imagine a space made up of tiny grans that cannot be decomposed any further. These grains or cells make up s space that is discrete.
- ***According to Mandelbrot, 1982***, Fractal spaces became widely known only in the past decade, and their exploration has been closely linked with the analytical and display capabilities of modern computers. Fractal geometry knows no straight lines, smooth shapes, or tidy, regular volumes.

2. Physical Space:

- Space station, space capsule, space travel, outer space, intergalactic space. Space is a term readily associated with the physical world, especially with the unthinkable vastness of what lies beyond.
- We conceptualized space as a container of objects: things are in space just as oranges are in a box or fish are in water. Space is a neutral background against which the positions of objects can be pinpointed and their motions described. The classical scientific view of space is compatible with human experience of the everyday world, which is also the world of the geographer.
- Relativistic space is a space whose structure both influences the distribution and motion of matter and is governed by it.
- Cartographic expressions of the relative –space idea soon appeared in the form of map transforms and cartograms. In these, distances between points on a map are made proportional to some measure that expresses the phenomenon under study, rather than to actual geographical distance.
- For example, cities can be placed on a map in such a way that the distances between them on paper are proportional to travel time or travel cost, which in many cases are more relevant measures of distance than actual mileage. In this way, a relative space can be mapped that represents more accurately than Euclidean space some of the key constraints governing interactions among places.

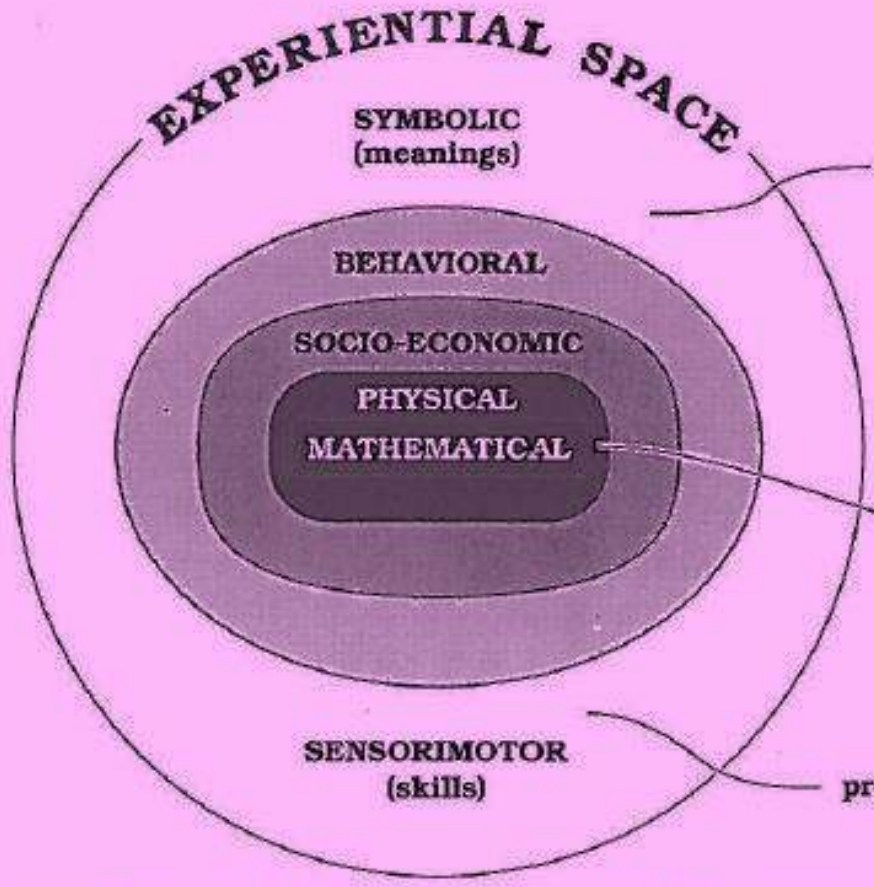
A celebrated Relative space cartogram: Hagerstrand's Logarithmic Map of Distances from Asby, Sweden.



Source: Tobler 1963:65; by courtesy or Torsten Hagerstrand and the American Geographical Society.

3. Socioeconomic Space:

- The concept of economic space can be extended to other kinds of problems not explicitly concerned with economic factors but that also focus on the relative location of human activities. In such cases geographers speak more generally of socioeconomic space. As with economic space, the insights gleaned from an analysis of socioeconomic space are usually consistent with intuition.
- For Example, all other things being equal, there will be more exchanges among places that are near each other than among places that are far apart, and more among large cities than among small villages, and the farther a commodity has to be transported the higher its cost will be to the producer or the consumer. By developing analytical models of socioeconomic space it is possible to figure out not only the general thrust of these intuitively obvious relationships, but also their relative importance in quantitative terms (Haynes and Fotheringham 1984)
- The towns, the villages, and the mines are so compact that they are virtually points in the landscape. The transportation network is so homogeneous and dense that travel is equally easy in all directions, and you can always take a straight line between two points.
- That unlikely landscape could be anywhere or rather, nowhere at all. It is an instance of an abstract economic space, defined by the spatial relations between consumers, producers, labor , and raw materials. It is a relative space, the properties of which (for example, the existence of points where total transport costs are minimized) arise through two features: the location of other critical points relative to each other, and certain economic conditions and principles assumed to bold in that space. The value of thinking about the world as an economic space is that such a view allows us to develop general theoretical statements about the effect of geographic factors such as distance on economic activity.
- Within spatial analysis, location theory looks at socioeconomic space from the spectral perspective of trying to determine optima; locations for specific services, facilities, or functions.
- Socioeconomic space, the relative space defined by social and economic activities and relations, is also of interest to geographers who do not espouse the quantitative methodology of spatial analysis.

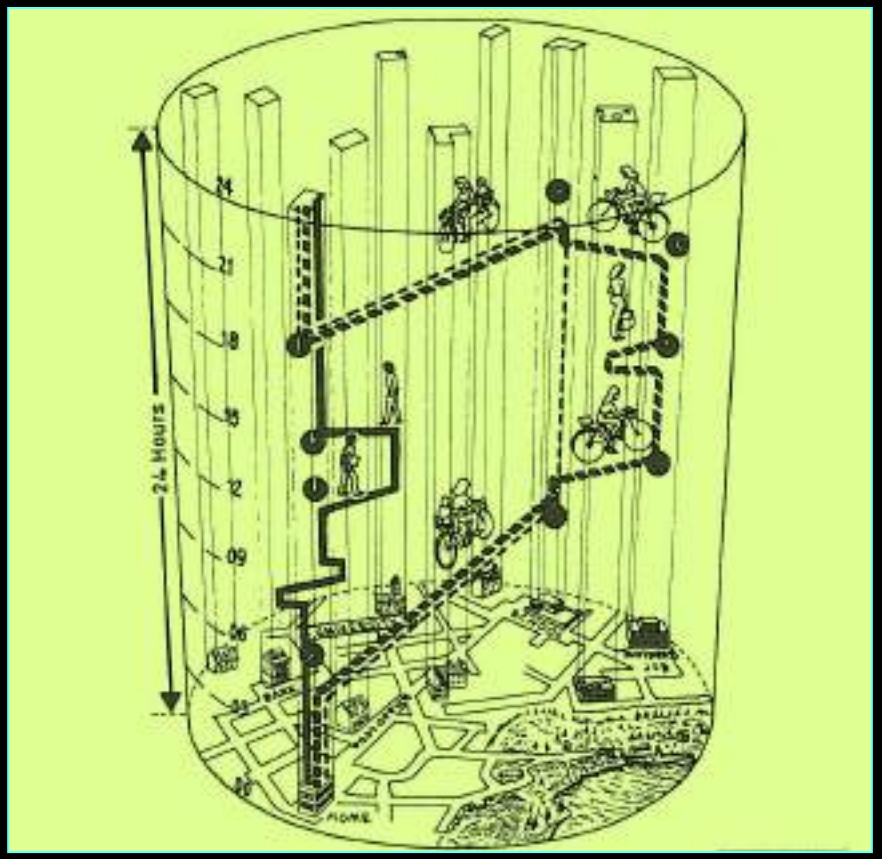


Mathematical, Physical, Socioeconomic, Behavioral, and Experiential Space as a Nested Hierarchy.

4. Behavioral Space:

- The space people experience and in which they make daily decisions differs from the objectively definable, theoretical spaces that fall under the rubrics of mathematical, physical, and socioeconomic space. According to behavioral geography, individuals function in a subjective world – a world in the head. Numerous empirical studies have explored behavioral space, documenting its properties with experiments involving subjects from different population subgroups: young and old, female and male, disabled and able, well-educated and illiterate.
- ***According to Downs and Stea (1973),*** Major insights into the structure and properties of behavioral space gleaned from such studies and found in the extensive literature on cognitive maps.
- One popular method is to observe the spatial choices of a group of people say, where they go shopping, where they search for a house to buy, or where they migrate – and they try to find a relationship between that spatial behavior on the hand, and socioeconomic and other personal characteristics on the other.
- ***According to Golledge and Rushton (1976),*** Issues of behavioral space that may arise within such a framework are the ways in which income, education, race, and gender affect the extent of the urban space within which a person's daily activities unfold, or whether increased length of residence in a community produces less distorted perceptions of local distances.
- Another approach to the study of behavioral space is the at of time geography, where individual movements are observed not only across space but also through time. In typical time geography experiments, participating subjects agree to keep daily records of when they go where and how long they stat at each place. Each day, the space –time paths of different individuals come together in shared activities, then separate, then regroup elsewhere in different combinations, and then separate again, giving rise to what one geographer has called the daily choreography of existence.

The "Daily Choreography of Existence" of a Typical Family.



Source: Parkes and Thrift 1980:252

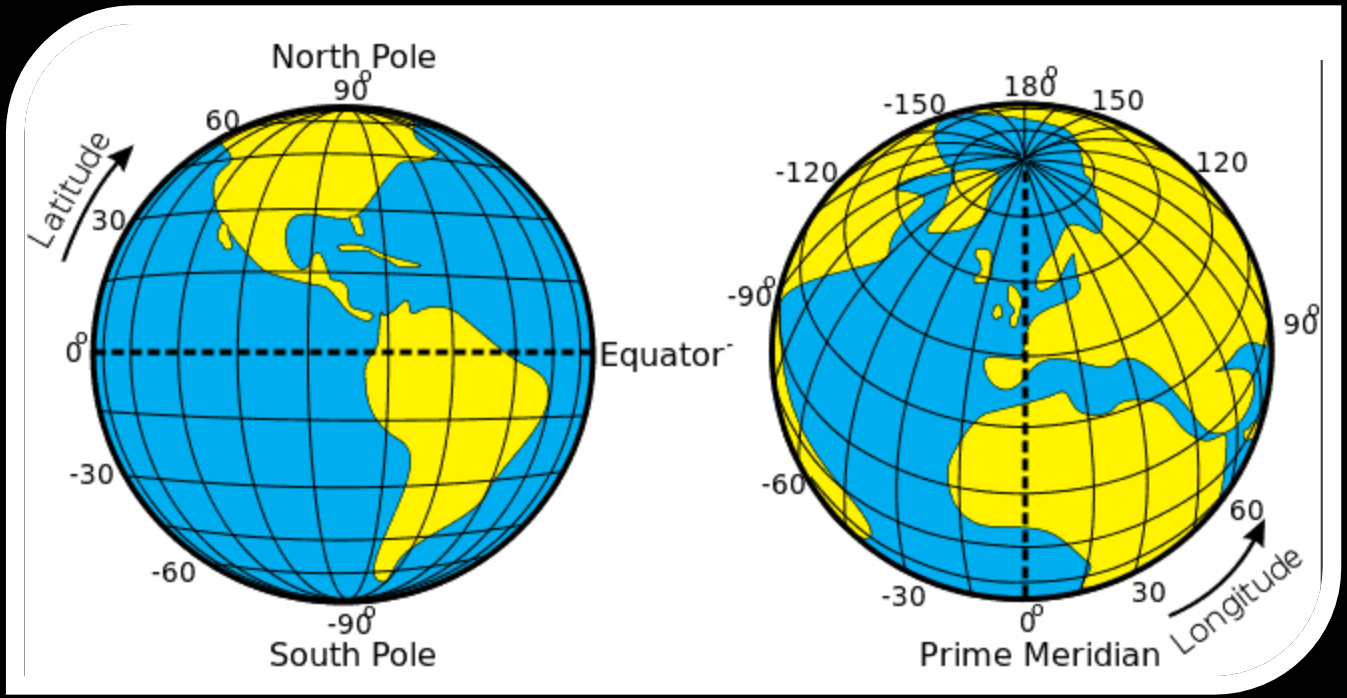
5. Experiential Space:

- Experiential space, on the other hand is the space human beings actually experience before it is passed through the filters of scientific analysis. It embraces all he intuitive, unanalyzed, unexamined, or unarticulated forms of spatial understanding, including the practical, commonsense understanding of space in everyday life, the imperfect but growing understanding of the infant and the small child, that of the disabled, that of the alien culture the tribe that time forgot.
- This spaces also include the contemplative kinds of spatial experience inherent in the apperception of sacred and mythical spaces, as well as the aesthetic experience of symmetry proportion, balance, and so on that is central to the creation and appreciation of art.
- That part of experiential space that we know with our bodies rather than with our minds is called sensorimotor space. An aspect of sensorimotor space important enough to merit separate consideration is perceptual space, the space deriving from sight, hearing, and the other senses.
- Thanks to humanistic geography the part of geography that considers itself a scholarly pursuit rather than a science, these most elusive and subtle of spaces are not lost to the discipline. For many cognitive scientists and linguists these days, experiential space is considered fundamental enough to underlie all human thinking and language (***Lakoff 19878).*** Perhaps other traditions in geography will find experiential space increasingly relevant to what they study.

Table: Four Spaces and Their Terminology

Mathematical	Socioeconomic	Behavioral	Experiential
Point	Location	Landmark	Place
Line	Route	Path	Way
Area	Region	District	Territory
Plane	Plain	Environment	Domain
Configuration	Distribution	Spatial layout	World

Location


North Pole
90°
60
30
0°
-30
-60
-90°
South Pole
Latitude
Equator
180°
-150
150
-120
120
-90°
90°
-60
60
-30
30
0°
Prime Meridian
Longitude