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WHAT IS GEOGRAPHY?*

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TO the educated mind confusion is always annoying. Its effort is toward definite conception and clear thinking. The progress of human knowledge is accomplished not alone by the discovery of new facts, but quite as much by the comparison, classification and orderly arrangement of all facts. This tendency to classify and define, to bring order out of chaos, is so fundamental that we often draw sharp lines of distinction where they do not exist in nature. If we undertake to divide our acquaintances into good and bad, smart and dull, handsome and ugly, tall and short, young and old, there will always be a certain number which are intermediate and do not fall into either class. If we decide to form a third or intermediate class our difficulties are doubled, because we have then to draw two dividing lines instead of one. If we accomplish the task it will be by making some artificial and arbitrary distinction. This is true in every department of human thought, and in none more so than in the definition of the various sciences or subjects of study. The attempt to erect a wall around the field of any science, to keep its contents absolutely separate from all other sciences, may as well be abandoned at the outset. The best that can be done is to find a central view point from which the field stretches away in every direction to a dim and indefinite horizon.

It is a notable fact that doubt, discussion and controversy concerning the limits of a science seldom arise among the men who are actively engaged in creating and perfecting it. The astronomer, the chemist, the botanist, are each too busy in cultivating the field which clearly belongs to him to waste time in debate over the border lands. He knows that his field overlaps those of his neighbors, that their fields overlap his and that there are wide areas held by all as tenants in common. The unity and interdependence of all science underlies and makes possible the division and specialization of sciences.

And so the question, What is geography? is a question of academic rather than of scientific interest. It is discussed much more among schoolmasters than among geographers, and the fact that it has been agitated most by those less fitted to decide it has contributed largely to confusion and disagreement. Who is so competent to say what botany is as the bot-

*Abstracted from an address before the Southern Illinois Educational Council, and printed in the *Teachers Journal*.

anist who knows the science from the inside, and by personal work and experience has helped to create it? Is not this right generally conceded to him? Have you ever heard of a school teacher or superintendent or professor of pedagogy who undertook to define botany, or chemistry, or physics unless he was at the same time a reasonably expert botanist, chemist or physicist? Every science should be defined and organized by its own workers, by the men who have the most intimate knowledge of it, and no outsider has a right to be heard on the subject.

Here lies the trouble with geography, and the reason why we are still discussing its central idea, the limits and content of its subject matter, the number and nature of its divisions and their organic relations to one another. Geography in the schools has, as a rule, been defined and organized by people who were more interested in teaching than in the science itself. Hence the discrepancy between geography "as she is taught" and the geography of the geographers. It is the province of the pedagogue to take a science as he finds it and to determine what portions and aspects of it are most important, most profitable, most available for school instruction in various grades and conditions, and in what order and by what methods these ought to be presented to students. To do this well the pedagogue must have a broad view and some first hand knowledge of the subject. The only persons who have a right to an original opinion as to what geography is are the scientific geographers. A review of the birth and development of geography and an examination of expert opinion upon the subject will go far to clear up confusion, to end discussion and to show that there is reasonable agreement upon this much mooted question.

The dictionary tells us that the word *geography* means earth-description. Before a thing can be described it must be known; therefore geography implies a knowledge of the earth and of everything that belongs to it, from the unfathomed depths 4,000 miles below us to the unfathomed heights of the upper air, perhaps as many miles above us. Geography would thus divide with astronomy the whole realm of physical science, the one dealing with all the heavenly bodies in the universe, the other with this one terrestrial body upon which we live. Primitive geography had this broad scope, and traces of it have not entirely disappeared from text-books still in use.

"The foundation of geography," as Bain puts it, "is the conception of occupied space." Not only men but most animals have some consciousness that they occupy space, and that other objects have certain space relations to them and to one another. That sense of locality, direction and distance which many animals possess is of the very essence of geography. The

squirrel has an intimate and practical knowledge of the geography of his hollow tree, the ant of its nest, the bee of its hive, while migratory birds extend their geographical knowledge across continents and zones, from Hudson Bay to Mexico and from Norway to Africa. The beginnings of geography are not only prehistoric, but prehuman. Primitive man learned the same kind of geography as the animals and in the same way. His very existence depended upon his knowing where he could find food and water, a cave or thicket for shelter, what roots and fruits are nutritious or poisonous, what animals he could use for food, and what animals could make a similar use of him. He was compelled to become acquainted with his surroundings. Every child to-day and forever must acquire the same knowledge in the same way, by personal exploration. To understand what geography is at the bottom it is necessary only to watch a bright and active child as he makes himself acquainted with his environment, whether it be a room, a door-yard, a farm or a city square. It does not take him long to find the way to the book case, the flower bed, the brook, the calf pen, or the candy store.

Geography primarily involves in the mind a sense of space relations with other objects, a consciousness of surroundings, a knowledge of some portion of the face of the earth and its contained features. The everlasting geographical questions are concerning any feature, Where is it? concerning any region, What is there in it? concerning any creature, What are its surroundings? Locality, contents, environment, constitute the subject matter of descriptive geography. * * * * *

It will hardly be questioned that geography includes in its subject matter, the following topics:

1. The earth as a planet: its form, dimensions, motions and relation to the sun.
2. The land: its outline and relief: the distribution of its surface forms including streams and lakes.
3. The sea: its outline, depth and contents: the properties and movements of sea water.
4. The atmosphere: its properties, conditions, and movements and their results as manifested in climate.
5. Plants and animals: their distribution.
6. Man: the distribution and movements of peoples: human conditions, industries, structures and to some extent institutions.

However elementary or exhaustive may be our knowledge of any of these groups of the phenomena the science of geography must consist in a synthesis of all of them, in a study of their relations to one another. Com-

pare with this the scheme of organization insisted upon by many eminent educators in this country. Prof. Charles A. McMurry says: "Geography is the study of the earth as the home of man. The study of the earth alone; its phenomena and forces, its vegetation and animals, its rocks and atmosphere, is natural science, pure and simple. The study of man in his work and progress in his struggles and representative deeds, is history. The study of the earth as related to man is geography." This seems to be a statement of the Ritterian view, in its extremist form. According to this view, if the student studies the rocky frame of the globe and the effect of the atmosphere upon it, the process of weathering, degradation, erosion, he is not studying geography at all unless he considers them in their relation to human life, activities and institutions. According to the principles which prevail in all other "natural sciences pure and simple" he is studying the anatomy and physiology of the earth, which form the foundation chapters of geography, the first links in the chain of the geographic argument. If he never goes any farther, never brings human affairs into consideration, he has still been studying, not the complete round of geographic science, but a very important and essential part of it.

It is difficult to see what reason there is in the nature of things why the relation of the land to the sea and the air, the air to the sea, plants and animals to land, sea and air, are not as much a part of geography as any other relations; or if they are not geographical, to what science they do belong. It is also difficult to see why geography should be exclusively a human science any more than chemistry or geology. How would it do to define chemistry as the science of the relations between man's institutions and the composition and specific properties of bodies? or geology as the science of the relations between man's institutions and the life history of the earth?

Evidently the number of relations which exist between the phenomena of the same group and between the different groups themselves is very large, probably beyond the capacity of any one mind to grasp. But there are a few major relations which include the minor, and which can be made clear to primary students. These are the relations of land masses and ocean basins, the relations of relief and climate, and the relations of man to his whole physical environment. They form a cumulative series of increasing complexity everywhere traversed by other threads of relationship growing out of the phenomena of the earth as a whole. These form the "connected chain of geographical argument of which the earth's surface and man are the terminal links," the bridge which connects the purely natural sciences with the humanities. It is evident that the human relation is but

one out of many links in the chain, yet it is the last link, the crowning relation, without which the argument is incomplete, and its largest meaning missed. If an intelligent inhabitant of Mars had paid a visit to the earth before the advent of man he would have found enough material for a science of geography to occupy him during several centuries. He would have found the round earth, lighted and warmed by the sun, diversified by oceans and continents, mountains and rivers, and inhabited by a million forms of life. If he had observed the distribution of all these, and had discovered and recorded their relations, would he not have been a great geographer? Yet man would have been unmentioned and unknown. If a man should accomplish a similar task to-day, or any considerable portion of it, even though he should omit all consideration of human affairs, could we deny his claim to the title of a geographer?

The innumerable facts which modern geography holds in solution may be crystallized along the thread of distribution, or mutual dependence in space, and this is the normal and legitimate development of the science from its primitive and popular form. That this is the view which prevails among eminent European geographers is evident from the following formal statements. Probably the most authoritative definition of geography ever made was formulated by the International Geographical Congress at Venice in 1881. It is not so clear and concise as an American educational committee would have made it, but it manages to say that "geography includes the study of the surface forms of the earth and the reciprocal relations of the different branches of the organic world," and is distinguished from other sciences by "indicating the distribution of beings, organic and inorganic, upon the earth."

Professor Hettner of the University of Leipsic, wrote in 1895: "The geography of to-day starts from the point of view of diversity in space, and aims at a scientific explanation of the nature of regions, inclusive of their inhabitants. Its task is to investigate the distribution of phenomena in mutual dependence."

Professor Neumann of the University of Freiberg, has recently declared as follows: "General geography deals with the general laws of the distribution of every class of phenomena on the earth's surface. Special geography describes and explains the various countries in their characteristic peculiarities of land and water forms, climate, vegetation, animal life, human settlements, and their conditions of organization and culture."

Professor Ule of Halle, defines the scope of modern geography to be "the investigation of the reciprocal effects of the several phenomena of a country, and their causal connection."

Mr. Mackinder of the University of Oxford, says "distribution is of the essence of geography."

Mr. Scott Keltie says: "Geography is the science of the topographical distribution of the great features of the earth's surface, and of all that it sustains, mineral, vegetable and animal, including man himself."

Prof. H. R. Mill, in his introduction to the *International Geography*, a recent work produced by the collaboration of seventy different authors from all parts of the civilized world, publishes the following formal definition which presumably bears the approval of his colleagues: "Geography is the exact and organized knowledge of the distribution of phenomena on the surface of the earth, culminating in the explanation of the interaction of man with his terrestrial environment."

If it be desirable to condense all these views into a concise formula, perhaps none better can be found than this: Geography treats of the distribution of all terrestrial phenomena in mutual dependence. Or to crowd all possible meaning into the word 'science,' *geography is the science of distributions*. If this be too indefinite by reason of brevity, it may be expanded by specifying that geography is the science which deals with the mutual relations of relief, climate, and life. This is essentially the same thought which Guyot expressed more figuratively when he said that geography views the earth as a living organism.

The field of geography then is the face of the earth, or that thin shell which includes the surface of the land, the lower portion of the atmosphere and the whole of the sea; for it is only within this shell that all the geographic factors, land, water, air, plants, animals and men exist and react upon one another. The business of geography is first to determine accurately the distribution of each and all of these factors; and second, to discover the causes which have brought about the distribution of each; and third, to explain the relations of each factor and group of factors to all the rest.

The development of geography has been traced through two stages: (1.) the descriptive, and (2.) the scientific. The descriptive stage consists of an accumulation of facts, an inventory of the large features of the face of the earth. Its results are best expressed by means of maps showing the distribution of land and water, relief forms and drainage systems, temperature and rainfall, forests and prairies, steppes and deserts, people and nations, cities and towns, roads and sailing courses, products and institutions. These must always form the foundation courses of geography. The descriptive stage is not yet completed, and is not likely to be soon. New discoveries are being made every day, not only in the less known regions, but in those which have been most thoroughly studied.

In the scientific or explanatory stage geographic study is extended to other relations than those of position and to the causes which have brought about the distribution of features and phenomena shown on the maps. This stage is now in the full tide of progress and its completion lies in the indefinite future. The teacher who would himself receive and give to his students the best fruits of geographic study must not shrink from any portion of this task. It is not enough to learn where the Appalachian mountains are, their trend, length, breadth and height, but it is equally the business of geography to know how they came into existence and why they possess the peculiar characters which distinguish them from other mountains. It is not enough to describe the Mississippi river, its course, length, volume and tributaries, but the causes and conditions which make it what it is, must be attacked. It is not enough to know the names, locations, areas and connections of the Great Lakes, but how their basins came to be there must be explained. This is as essential to good geography as their relations to commerce. It is not enough to say that Chicago is a city of two million people near the head of Lake Michigan, but the question, what made it grow to such dimensions? must be answered. This principle must be applied to all geographic features alike. The causes of plains and plateaus, valleys and mountains, lakes and waterfalls are as much a part of scientific geography as the causes of night and day, winter and summer, winds and rains, waves and currents, farms and factories.

Geography is now entering upon a third stage of development which promises to carry the science on to a higher dignity and value. In the time at command I can only briefly and imperfectly indicate its character.

According to a theory once very popular, an omnipotent creator had, for his own amusement or glory, made out of nothing a mass of earth, water and air, whether round or flat was of trifling importance, had suspended it in space, had made sun, moon and stars to revolve around it at various distances and speeds to throw their shifting lights upon the mundane stage, had provided a vast array of scenery and properties, and had placed upon it a motley company of actors to play, each for one night only, the drama of life. Among these the bright consummate star was man, for whom the whole play, with all its leading and subordinate parts, supporters and supes, settings and costumes, was especially designed. In fact, man was the only real actor, the rest being little more than marionettes, wire-worked puppets, under the mechanical control of the stage manager. This theatrical statement is something of a caricature, but it serves to exaggerate and bring out one characteristic, that the relation between man and his surroundings, as well as between the various elements of the surroundings

themselves, was conceived to be as purely mechanical as that between the actor and the stage setting. This theory, of course, assumed in different minds and times various degrees of childish crudity and philosophical refinement, but this one element of mechanical arrangement of parts, was never absent.

But since the days of Copernicus and Galileo our knowledge of the starry heavens has widened until we no longer think of the universe as made for man or man for the universe. We no longer think of the earth as merely a stage setting for the play of human life. The stage has not been arranged by the manager for the actors, but the actors have been fitted to the stage. They are what they are and no other, where they are and not elsewhere, and playing each his own peculiar part, because they have been molded, trained and adapted by means of that particular scene and part. The metaphor of the stage here breaks down and may be finally abandoned. Everything on earth, from a butte to a beetle, from a pebble to a pope, is in a large sense, the product of its environment. No one has put the case more clearly than Redway: "Indeed it would not be a very great breach of truth to say that a camel is a camel because of the desert; a fish, a fish because of the water; a bird, a bird because of the air;" and he might have added, a man, a man because of the world he lives in. The evolutionary interpretation of nature has wiped out of scientific minds the last vestige of the mechanical theory of the universe. It still lingers in some schools. The environment has not been adapted to man, but man has become partially, but still imperfectly adapted to his environment.

Professor Ratzel, acknowledged to be the greatest modern master of geography, does not hesitate to call the earth a vast workshop in which all living creatures, including man, have been constructed. "The predominant position which man occupies," he says, "is possible only on this earth and under these natural conditions, and therefore the earth has a far deeper significance in the history of mankind than it would have merely as the ground upon which men walk and labor and in which their graves are finally dug." Man appeared as the child of the earth and the earth mother has brought him up by means of a struggle with all her forces and creatures.

According to this view, the earth is not only the home of man, but the factory in which he has been made, the garden in which he has grown, the school in which he has been educated. The doctrine of evolution has laid its hand upon geography and is transforming it, as it has transformed every other subject of human study.

Environment is not responsible for the whole of anything, but for a part of everything, and nothing can be understood apart from the environment.

Hence the explorer and the map maker, with their completed description and schemes of distribution, have not attained an end but achieved a beginning, have laid a foundation upon which the true geographer may build his science of the relations of every feature and creature to its environment. Distribution, although still essential is ceasing to be the central idea of geography, and the light of the science is being focused upon environment.

The vast importance of physical environment is beginning to be appreciated and the whole scientific world is turning to physical geography for a solution of some of its greatest problems. We find the botanists of late paying a great deal of attention to ecology, which being interpreted, is the science of dwelling places. They find that certain groups of plants, which differ widely in every other respect, are in the habit of living together peacefully in localities of a certain character. For instance, the shallow water around the edge of a pond is filled with submerged plants like the water lily. A little higher where the ground is less deeply covered with water, other groups like cattails and reed grass, flourish. Outside of these in very damp soil is a thicket of willows and alders, and around this in soil a little more dry, grow trees like the elm and soft maple, while a dry sand ridge near by is covered with scrub oak. Evidently this ring-within-ring arrangement of vegetation is determined by the amount of water in the soil, that is by the physical environment of the plants. The zoologists are discovering that physical conditions exert a similar control over the distribution of animals, and so a new branch of science, geographical biology or biological geography, is coming into existence. The physicians have discovered that malarial fever and yellow fever are dependent for their propagation upon certain species of mosquitoes. No mosquitoes, no fever, and so the geographical distribution of mosquitoes has become a burning question in medicine, in commerce, and in politics. Malarial fever is the chief obstacle which has thus far prevented civilized men from colonizing and occupying the tropical regions. If malarial fever can be wiped out by destroying the mosquitoes, a large and extremely valuable portion of the earth will be thrown open to civilization and will support a dense population.

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However simple a thing may be, its environment is sure to be complex, and in dealing with the science of environment, subdivision and organization at once become necessary. The smooth round pebble on the beach is the product of the waves which roll it over and over against its neighbors a thousand times. A volcano may be said to be wholly the creature of its environment, of the internal forces which have acted beneath to build it up and of the air, frost and rain which are tearing it down. But

the most complex, important and interesting results of environment will be found among plants, animals and men. Professor Davis has recently proposed to define geography as the relation between the earth and its living inhabitants, between the physical environment and the environed organism. That part of geography which deals with the physical environment and is familiar to us all under the name of physical *geography* he would call *physiography* and for that part which deals with the environed organism he proposes the name *ontography*, reserving the name geography for the grand combination of the two.

In the First Year Book of the National Society for the Scientific Study of Education, he elaborates this idea with a philosophic grasp of principles and great wealth of illustration. "Thus understood," he says, "geography involves the knowledge of two great classes of facts; first, all those facts of inorganic environment which enter into relationship with the earth's inhabitants; second, all those responses by which the inhabitants from the lowest to the highest, have adjusted themselves to the environment. Neither physiography nor ontography alone is geography proper, for geography involves the relation in which the elements of its two components stand to each other."

The relations involved in geography, as thus understood, are extremely numerous and varied and many of the large and more general relations have long formed familiar items in the geographical stock. The relation between the irregularity of coast lines and the civilization of peoples, the relations of population and industries to rugged sea-girt New England, to smooth fertile prairies, to the arid plateaus of the Great Plains, and to the deserts of the Great Basin are standard geographical problems. But there are innumerable smaller details of relationship which belong to geography. I have compiled partly from Professor Davis's article the following list:

The rotation of the earth producing day and night, controls short periods of activity and rest, while the revolution of the earth and the inclination of its axis, producing the seasons, control long periods.

The size and density of the earth determine the force of gravity, to which the strength and rigidity of plant stems and the skeleton and muscular system of most animals have become adjusted. Only fish and other aquatic animals buoyed up by the water, escape this condition and are constructed on a different plan.

The absorption of carbon dioxide by plants for food and the respiration of oxygen by plants and animals are responses to the omnipresence of air; as also are organs of hearing and voice. The upward growth of plant

stems and the organs of sight in animals are responsive to certain portions of solar radiation.

Mountains are barriers to the migration of plants, animals and men, which men have overcome by following stream valleys up to passes, by tunnels, zigzags and switchbacks. Mountains are often inhabited by the sweepings of the plains, while difficulty of communication, sparseness and isolation, lead to lack of progress or degeneration, as well as to love of liberty, independence and freedom from social vices.

The contrasts between the inhabitants of an island in the ocean and those of the surrounding waters is obvious, but no greater than that between the inhabitants of a lake and those of the surrounding land. An isolated group of mountains, like the Black Hills, presents an almost equal contrast with the surrounding plains. These elevations bring rainfall, which brings forests: denudation exposes veins of ore, and forests and mines bring population.

All creatures must adapt themselves to the available food supply: therefore in the South Sea Islands men live upon coconuts, in Greenland upon blubber, in North Africa on dates, in Indiana on beef, pork and cereals.

The earth worm gets food from the humus of the soil, the deep sea fish from the organic matter in the bottom mud, the supply of which falls through miles of water from the plant life on the surface. Many birds live upon insects caught only on the wing in the air, some upon fish or submerged plants for which they dive. Bees are so specialized as to depend upon the nectar of flowers.

In the matter of shelter again physical environment controls. There are brush huts in the jungle, grass huts in the savannahs, dug-outs and sod houses on the prairies, log houses in the timber, skin tepees on the plains. In China people excavate houses out of loess bluffs, and here martins have holes in sand banks. Men and beasts use rocks, crevices, caves and overhanging ledges. The muskrat and beaver build houses in the pond; woodchucks, gophers and prairie dogs burrow almost anywhere. Squirrels and wood-peckers use dead or hollow trees. Wasps use mud, and birds an endless variety of material for their nests.

A land covered with ice and snow has made the Esquimaux good sledgers and kayakers, and a land covered with dense forest has made the natives of equatorial regions expert canoe-men, the rivers being the only passable roads. The location of roads between neighboring villages on a plain, or a ford, bridge or ferry, of railroads along stream valleys, of trestles and tunnels through mountains, of ship channels in harbors, paths beaten down by wild animals in a jungle, trails worn by cattle to watering places,

the lanes followed by herds of pillaging ants, are all equally good examples of the control exerted by physical environment over living creatures.

The fleetness, endurance and venom of desert animals are in direct response to the hard conditions of life there. Cattle cannot live in certain parts of Africa on account of the tse-tse fly, and white men can hardly live there on account of the mosquitoes which transmit malarial fever.

These are a few, taken almost at random, of the endless variety of examples of the control which physical environment exerts over the structure, habits and lives of plants, animals and men, and of the response or reaction which the living creature has been obliged to make. In every case the creature has taken advantage of some condition of its physical environment, has become especially adapted to that, has survived and continued its race. Those who failed to respond effectually and to take advantage of some condition, have disappeared in the struggle for existence.

These relations are all geographical, and I like this kind of geography. It stands upon solid ground and may lift its head as high in the air as any one cares to build it.

If you asked me to come here to talk about, "What is Geography?" expecting me to give a simple, direct, and authoritative answer to the question, you have been disappointed. I hardly think that any man or body of men is in a position to do that at present. I can only say that geography has passed through a long period of development and the end is not yet. In the early stage it was a description of the earth. In the scientific stage which now prevails everywhere outside of some schools, it is "the exact and organized knowledge of the distribution of phenomena on the surface of the earth." In a third evolutionary stage which is just beginning it is, "the relation between the physical environment and the environed organism, between the earth and its inhabitants." This third and perhaps final stage of geography is based "not upon the old doctrine of the adaptation of the earth to man, but upon the modern evolutionary principle of the adaptation of all the earth's inhabitants to the earth," and the definition of the future may come to run something like this:

Geography is the science which deals with the distribution of every feature and the environment of every creature on the face of the earth.

Like every other science, geography is dependent upon its sister sciences, as they are dependent upon it. At every turn it calls upon physics and chemistry, for they alone can tell of the intimate properties of the matter with which it deals. Biology is equally dependent upon them, for they are the substrata of all natural science. The relations between geography and astronomy are intimate because the earth is one of the heavenly bodies and has relations with the rest. Their relations have always been peaceable

and coöperative. Some portions of pure astronomy, such as the names, sizes, distances and motions of other planets, have occasionally strayed into geography, but they are disappearing. Confusion here is absurd. That the sun emits radiant energy is a fact of astronomy; that the energy is distributed over the earth in the form of heat and light is a fact of geography.

The largest overlap lies on the side of the other earth-science, geology. A wide domain of phenomena belongs to both sciences equally; but the spirit and purpose of the two are different. The aim of geology is to determine the life-history of the earth—the method of its creation in time—of geography to determine the present distribution and relation of earth features in space. "One reads the past in the light of the present, the other reads the present in the light of the past." The geologist is absolutely dependent upon geography for a knowledge of present features and processes, by which alone he is able to read the past history of the earth. The geographer cannot understand present features without knowing something of their history. The field of the geographer is the face of the earth, but he does not hesitate to go inward to the center, or outward to the remotest star, if he can find anything there which will help him to understand geographic features. Geology and geography are twin sisters which vie each with the other in offices of mutual help.

Geography and biology have similar relations. When the biologist studies the relations of plants and animals to soil, water, air, and climate, he is studying the geographical side of biology, and when the geographer studies the distribution of plants and animals, he is studying the biological side of geography. There is no occasion for contention or quarrel over boundaries which do not exist, but opportunity for friendly rivalry in a contest as to which can help the other most. And so it is with the relations between the geographer and the anthropologist, historian, political economist, statesman. Everything knowable has an environment and consequently a geographical phase. Human knowledge is not divided into a certain number of thought-tight compartments. As knowledge increases old dividing lines shift and fade or break down altogether and permit their contents to coalesce like two drops of water.

As Mr. Mackinder suggests, the different sciences are only different standpoints "from which to view, to analyze, and to group the facts of existence." A tree, a house, a mountain, a landscape, presents a very different appearance from different standpoints. Some features and relations are best seen from one standpoint, some from another. The most complete knowledge is gained by observation from all possible standpoints. All the sciences in existence and the many more which are sure to come, are but so many different standpoints.