

Areal Differentiation and spatial organization

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Introduction

Areal Differentiation is the study of the distribution of phenomena both human and physical and how they are causally related to other phenomena in proximity, in a geographical region or area expressed in the space. The concept of areal differentiation, which later on translated into a regional approach, is considered one among the three significant approaches to understand or study the discipline of human geography. The other two may be considered as Spatial Analysis and Landscape approach. Both, the spatial analysis is also known as systematic science approach and morphology of landscape approach were quite popular and claimed themselves to be the science of the study of geography. An influential modern statement of geography as areal differentiation, drawing from arguments of Hettner in particular, was made in Richard Hartshorne's 'The Nature of Geography' (1939). According to him the concept of areal differentiation in geography is about showing how unique regions reveal the co-variance of phenomena that can only be understood through identifying regions. A central concept of areal

differentiation is that the surface of the earth may be divided into regions, which may be distinguished and categorized using various spatial criteria.

The areal differentiation, which is among the few significant classic approaches to study Geography, traces its origin to the ancient period in the works of Strabo to Ptolemy. The idea of variable characteristics of the surface of the earth found a more pronounced expression in the works of Bernhard Varenius substantial work 'Geography Generalis'. Varenius is credited with the initiation of another debate/ dichotomy or controversy in geography related to the approach or methodology of the subject. This debate between Regional Geography and Systematic Geography continued for long and found new advocates in Richard Hartshorne and Prof. Schaeffer for and against the regional approach, respectively. From Varenius to Richthofen and Hettner the idea of uniqueness found fresh vent in the concept of chorological science. Hettner who espoused and advocated the study of geography as a chorological science found some resistance from his colleague Otto Schluter. Schluter departing from the popular Hettnerian view claimed that geography should be considered as the science of morphology of the landscape. The concept of landscape graduated from natural landscape concept to the Cultural Landscape of Carl O Sauer, who argued that geography should confine all its field of enquiries to cultural landscape, for it is an all-encompassing concept. Though morphology of landscape idea started off as another form of regional study, it gradually drifted towards the systematic science as it argued for generalized statements having universal applicability and reach, later in its academic persuasion. The chorological outlook of the geography which transformed into regional approach found its strongest champion in the writings of Richard Hartshorne. Regional geography in America reached new heights during the period sandwiched between the First and Second World War. The advent of Richard Hartshorne (1899-1992), who studied under the stalwarts like Hettner and influenced by the Kantian school of thought, on the geographic academic horizon, further contributed to the repository of geography in the form of areal differentiation. His ideas saw the concept of areal differentiation and uniqueness of regions occupied the core or the central position of enquiry in geography

The term is used and popularised by Richard Hartshorne, who defined Geography as the science of the study of Areal differentiation. He viewed that geography is concerned with the differences or variations of different areas/ regions of the earth surface. Richard Hartshorne in his seminal work 'The Nature of Geography' (1939) emphasized that the fundamental focus of the geographical inquiry is the study of differential characteristics of the earth surface, which he called areal differentiation. According to Hartshorne, the concept of areal differentiation entails three concepts; interrelations of different kinds of phenomena, the variable characteristics of these phenomena and the complex they form, in the different areas of the earth and last but not the least the areal manifestation or expression of phenomena/complexes. Hartshorne is credited with the use, patronage, and propagation of the concept of Areal differentiation, which appeared in his seminal work 'the Nature of Geography'. Hartshorne maintained that concept of areal differentiation as mainstay of geographical enquiry holds water with common knowledge of the fact that things are different in the different part of the surface of the earth. It is also a common

understanding that these variations enjoy causal relation with each other. Hartshorne's clear emphasis on the distribution of phenomena and the underlying causal relationship among them on the face of the earth in a given specific/ particular space and indifference and apathy towards the phenomena themselves lead to idiographic interpretations. Areal differentiation, in other words, is about establishing the degree of sameness/homogeneity as well as differences between regions the exponents of the spatial analysis/ systematic science accused him of seeing locations as unique and justifying a traditional regional geography in which areal differentiation dominated geography at the expense of areal integration. (Haggett, 1965). Areal differentiation Unfounded reliance on the idiosyncrasies of the regions at the cost of attendance or focus extensive geographical form and pattern and process as well as the cause of such spatial distribution, made spatial science/ systematic science drag the subject away from a central concern with regions as spatial clusters of linked phenomena.

One of the challenges before the geographer is to figure out the nature and characteristics of the difference spatially spread in the different area of the surface of the earth and how these variations are related. The exercise becomes necessary to understand the character of the different areas of the variable earth. The concept of areal differentiation argues that the surface of the earth can be divided into various regions on the basis of spatial arrangements of the phenomena over a piece of land. Demarcation of a geographical region is on the basis of unifying factor of homogeneity in one or more than one geographical attribute or event or phenomena and which is unique in itself. The division of earth surface into regions with an expression of some degree of homogeneity in terms of spatial arrangements of phenomena within the given boundary and which is distinct and unique from other such regions is the central idea of the concept of areal differentiation. Areal differentiation along with chorology became the conceptual and theoretical background for regional geography, by conceptualizing space as consisting of identifiable units that may be distinguished from one another on the basis of a set of phenomena or criteria. These two concepts which are used interchangeably became synonymous with the regional approach in geography. The regional approach focuses on the study of the study of regions which is demarcated on the basis of homogeneity of geographical phenomena spatially concentrated in space/ surface of the earth within a given boundary.

The spatial organization is the study of geography expressed in the pattern and process of the phenomena. It is to understand the form or nature and cause of the areal differentiation or variation on the surface of the earth. American Science Congress 1965 defined geography as the study of 'Pattern and Process'. This definition is an attempt to reinstate the past glory of time and space perspective in the study of the subject. The concept of spatial organization talks about the spatial dimensions and manifestations of phenomena. The process is the temporal aspect of the result of the certain explicit expression. The face of the earth divided into various units/ regions/areas/ natural landscape at times cultural and social landscape on the basis of areal differentiation, present a spatial synthesis. Spatial synthesis here concerns the 'complex whole made up of a number of parts unified. The spatial synthesis of a whole comprises various

distinct and unique regions and the spatial processes include spatial arrangements, organization and spatial interaction of the phenomena. The distribution of geographical attributes interrelationships and interdependence among them and the resultant expression in the space thereof forms a region. The spatial synthesis of space requires comprehending distinct individual geographical regions (which have intra regional homogeneity and inter-regional heterogeneity) in one whole, the idea or the concept of spatial organization emphasizes the distribution and arrangements of phenomena in the space. The two distinct enquiries 'Why' things are arranged in a manner they are and 'How' this arrangement is organized or the pattern of the spatial expression: are two very simple yet challenging posers before the geography.

Interestingly, the basic underlying challenge before the geographers had always been to find order in the seemingly chaotic and haphazard distribution of phenomena on the surface of the earth, has the genesis of 'why' a certain kind of arrangement and 'how' of these arrangements of phenomena.

'Why' is related to the process incorporating the time spent or temporal perspective, while the 'How' is the form or the pattern, the physical manifestation of the underlying process. The regions are actually the interplay of these two forces which go hand in hand. Spatial organization or spatial interaction is associated with extensive geographical patterns and to the causes of such spatial pattern/ form or distributions. So, the areal differentiation focuses on division of the surface of the earth in the form of regions on the basis of sameness or homogeneity in terms of distribution of phenomena the concept of spatial organization connects and observes differences of different places in holistic and comprehensive perspective. The concept of areal differentiation interchangeably used with 'chorology' gradually translated itself into the 'Regional Approach' in Geography whilst the systematic approach seems to have evolved and graduated from the concept of spatial synthesis in general and particularly from spatial organisation/integration, leading to one the most celebrated debate in Geography; Systematic Geography vs. Regional Geography.

Regional Geography vs. Systematic Geography Idiographic vs. Nomothetic Deductive vs. Inductive argument:

Geography as areal differentiation seeks to describe and interpret the variable character of the distinct and unique regions sprinkled on the face of the earth. Phenomena occur in association on the surface of the earth and exhibit a complex ensemble of the interplay of causal relationships among them, making each location/ region or a specific area on the surface of the earth unique simultaneously enjoying a great deal of sameness or homogeneity within the boundary of the region. The uniqueness is in regard of an assemblage of phenomena on individual regions. Regional geography, therefore, attempts to organize the knowledge of all interrelated forms of areal differentiation in localized individual units of the area which it must organize into a system of division and sub-division of the total earth surface. A regional approach is interested in the creation of the division of earth surface into unique areas /regions on the basis of the description

of the areal distribution of the phenomena with an ensemble of the complex interplay of the causal relationship among the phenomena, spatially located within a boundary of a region. However, paradoxically within the region, homogeneity and sameness in one or more than one geographical attributes/ event or phenomena is the central or cardinal theme of the regional geography. The region is the indispensable component of the approach is homogeneous within its boundary but being unique and distinct differs significantly from others, dissecting the face of the earth in various regions. Regionalization or demarcation of the region is dynamic in nature. Any number of regional divisions can be made owing to the need and requirement of the academic inquiry, based upon the parameters of Uniqueness, Homogeneity, and bounds and limits (boundary – to demarcate one region from another.). Regional geography investigates the relationships of phenomena in the individual region but at the same time, the explanatory description of features in the past must be kept subordinate to the primary purpose because that facilitates comprehension of the present (Adhikari).

Methods of regional geography do not confine to the study of physical environment and forms only but also incorporates human environmental characteristics of individual regions, which includes the demographic characteristics, occupational structure, socio-economic conditions and also cultural and political behavior.

To understand the interrelationship of phenomena of a region, the elements of physical and human environments, including socio-economic and cultural shades along with economic activities and occupational structure are identified. The spatial analysis and synthesis of all recognized interrelationships of phenomena help portray the unique picture of the region under consideration.

Sometimes the stress is laid over the stability and instability of the regional structure over time to assess that those being described (the spatial distribution and the underlying causal relationships of the phenomena) are static or dynamic in nature.

The regional geography is not compatible with the formulation of general laws and universal theories, for it deals with description and elaboration of the complex organization in unique regions. Moreover, nature of geography makes it field science where it is impossible to have only dependent and independent variables without the interference of external variable affecting the outcome. In other words controlled the experimental situation in Geography is not possible, hence, formulation general laws is not possible, according to this approach. A regional approach in lieu of scientific laws seeks to:

1. Describe assemblage of phenomena with precision based on empirical and objective observation.
2. Categories the phenomena into generic concepts
3. Interpretation of phenomena and their spatial pattern in a region on the basis of analysis and spatial synthesis.
4. Arrange these findings in an orderly manner.

Regional analysis encourages the study of all the phenomena and their spatial arrangements in an orderly manner concentrated in one particular place or individual unit/ region of a given area. Regional approach divides the world into the distinct regions which are unique on the basis of arrangements of phenomena and the manifestation of the complex as a result of the interplay of the causal relationship among the phenomena. Regionalization is done keeping in mind the academic and intellectual requirement and then thoroughly studying each and every aspect of a particular region is the cardinal method in regional geography. In other words, regional geography attempts to study 'All about one' and is diagrammatically opposite to systematic approach which is for 'One about all'.

Systematic geography, on the other hand, is organized in terms of particular phenomena of general geographic significance, each of which is studied in terms of the relations of its areal differentiation with the other. Systematic geography is similar to systematic sciences, for it also explains description and generalization.

Systematic geography endeavored to formulate laws on the basis of empirical observation. Such generalization or laws formulated are sought to have universal applicability in terms of significance to areal differentiation. In systematic geography, each particular element or element – complex that is geographically significant is studied in terms of its relation to the total differentiation of areas, as it varies from place to place over the world or any part of it.

Systematic geography is concerned with the study of one or few aspects of human or physical environment and analyses their varying performance over space, cutting across the regions. Systematic geography, therefore, is concerned with 'one about all'. Simply putting a phenomenon or group of phenomena is studied over the whole world or a predefined geographical stretch, notwithstanding the individual units or regions. In other words, the spatial organization over the space connected via the phenomena being studied is the central idea of the systematic geography.

Systematic approach as spatial analysis grew in stature a fierce opponent of areal differentiation or regional geography. The basic conceptual difference regarding the way the geography as a subject needs to be studied. Regional approach riding high on the waves of chorology and areal differentiation focused on the study earth's variation at different places in terms of regions. Whereas, the systematic approach advocated for more holistic all-encompassing spatial organization approach, which subsumed in itself not only the spatial interaction and integration but also the areal differentiation in its fold. Geography is concerned as a science by systematic geography and therefore, propagators of this approach advocated for the formulation of universal laws for Geography in line with the other sciences. Laws and universal applicable generalization provide credibility and if geography needs to come out of subjective and empiricism folds it has to frame laws to make the discipline more objective and scientific. It is in this backdrop Prof. Schaeffer vehemently argued for the formulation of laws in geography. According to him 'it is the spatial arrangements of phenomena or features, and not the phenomena themselves, about which geographer should make a law like statements. Hence geography has to be conceived as

the science concerned with the formulation of the laws governing the spatial distribution of certain features on the earth's surface. (Schaefer 1953).

The systematic approach also attempts to frame set of hypotheses, whose confirmation give them empirical validity.

Systematic geography staunchly believed in nomothetic approach whereas Regional geography argued in favour of idiographic approach.

The nomothetic is concerned with the universal and general. Nomothetic approach states that geography should focus itself on the formulation of scientific laws and should not confined only to the mere application of such laws. On the other hand to the contrary to the nomothetic, idiographic approach is concerned with the unique and the particular. Both the approach came into prominence after the Hartshorne – Schaefer debate over exceptionalism, when traditional regional geography was represented as essentially idiographic and incapable of contributing towards effective generalization. Both these approaches remain relevant with the changing paradigm in geography. The gradual focus shifting towards spatial analysis rather than on clinging to the 'uniqueness' saw a revival of the fresh urge to look for generalization and formulation of laws like statements. David Harvey one of the most celebrated social critic and prolific writer leading the galaxy of geographers in the modern period re-emphasized the importance of nomothetic approach by saying 'by our theories, you shall know us'. Throughout the sojourn of the discipline from the middle of the twentieth century (Hartshorne – Schaefer debate over exceptionalism), there have been sporadic and individual efforts to make a generalization and formulate scientific laws in geography. Such efforts are also met with an equal strong voice claiming that taking off the 'Uniqueness' from geographical enquiry shouldn't be the objective of the science. Geographers like Guelka believed that human geography does not need their own models and theories, whereas Haggett and Ullman not radically departing from the original concern and definition of geography given by Hartshorne, are best known for postulating models and theories to address the locational studies in geography. The regional geography claim that sense, it is a study of areal distribution of phenomena focused on the uniqueness of the region, cannot have general and universal laws, for it is incapable to study causal relationship in the form of dependent and independent variable, without ruling out the interference of external variable, found compatible with the idiographic approach. However, the nomothetic or the law-making approach found suitability in systematic sciences which strive towards the formulation of generalized and universal laws to make their disciplines more objective and scientific. The regional approach subsumed in itself the inductive logic whereas systematic approach co-opted deductive logic as a potent method and tool to collect information/ data. Carl Ritter adopted the deductive logic as a methodology in his regional approach while Humboldt a widely considered a systematic geographer adopted inductive logic as his methodology for information collection.

Inductive logic extends from individual to general while deductive from general to individual. In other words, in inductive logic, a general statement or law-like statement is made on the basis of the studies of the individual units/ cases. These generalized statements become the precursor for

the formulation of theories, general laws, and models thereof, in the social sciences. However, deductive logic speaks of deducing inferences from general statements/ theories or universal laws and applying them to the individual units. These two maneuvering of intellectual exercise to study, interpret and analyze the areal differences (Regional Geography) and spatial organization, inseparable component of spatial synthesis and analysis (Systematic Geography) played a significant role in methodology/approach related dichotomy in geography. He further elaborated in his rebuttal through the monograph 'The Perspectives on the Nature of Geography' which he intended to be studied as an extension of his earlier work 'The Nature of Geography' that by the sheer nature of its subject matter, geography must confine to the description and explanation separate individual cases (regions)

Richard Hartshorne and Prof. Schaeffer Debate:

An economist turned geographer at Iowa University, Prof. Schaefer wrote a paper entitled 'Exceptionalism in Geography' which was published posthumously in 1953. The paper was largely seen as a strong opposition of regional approach doing rounds in the contemporary geography. It soon became a rallying point for a young lot of geographers who were feeling caged in the stagnant, myopic and sterile academic atmosphere of regional / chorological paradigm. The publication of the paper was a breeze of fresh air.

Schaefer strongly criticized the 'exceptionalist' claim for regional geography, which debilitated geography against making scientific laws. He advocated for the adoption of philosophy and methodology of scientific positivism. He completely rejected the contention that geography is incapable of formulating laws and generalized statements owing to its intrinsic nature of uniqueness of the regions. The chorological paradigm championed by Hartshorne maintained that geography is a unique field science having a complex interplay of many variables which cannot be controlled (as necessary for performing experiments in laboratory science) and therefore, controlled experiments to study the outcome cannot be undertaken in geography rendering the discipline incompatible with formulating generalized and universal laws, as required in the systematic sciences. Demolishing this mental construct, Schaefer argued that most sciences, including physics and economics deal with unique phenomena and geography, could claim no special status on that account. All sciences study unique events which they seek to explain in terms of general laws, and geography should be no exception. He strongly pleaded in his paper in favour of formulating laws pertaining to the spatial distribution of phenomena (arrangements and pattern of distribution) on the surface of the earth and not the phenomena themselves. The spatial arrangements of the phenomena he reminded are the special concern of geography as a science, not the phenomena themselves.

According to Schaefer Geography is a science of spatial distribution and elaborated on the difference between nature of laws developed in geography in comparison to the laws of the other social sciences. He claimed that the geographical laws are pattern or form laws whereas the laws of the other social science are process laws. He emphasized the need for opening up more channels of communication between geography and other social sciences for interaction so that understanding the assemblage of phenomena on the surface of the earth in a specific area could be better be understood with the help of the process laws governing their functions.

In a sense, Prof. Schaefer like Akerman was also an advocate of an interdisciplinary approach in the study of social sciences.

The rebuttal from Richard Hartshorne came in the form of letter to the editor of the *Annals* (where Schaefer's paper was originally published) a journal published by the American Association of Geographers (AAG), in 1954, followed by two full-length papers by Hartshorne. He published a monograph entitled 'Perspectives on the Nature of Geography (1959)'. Hartshorne provided a point by point rebuttal of the Schaefer's observations. Hartshorne in his own words 'geography is basically a regional study dealing with the unique combination (interrelations) of characteristics in specific areas of the earth's surface; it is largely descriptive: 'No universals need to be evolved, other than the general law of geography that all areas are unique'

(**Hartshorne 1939**). He stuck to his original concept of geography as a science of the study of areal differentiation and reasserted that 'Geography is a discipline that seeks to describe and interpret the variable character of the earth's surface as the world of man'. He firmly believed that even though 'time' was important in the study of geography, the main thrust or concern was to describe the variable character of areas as formed by existing features in interrelationship that is a functional/causal relationship between phenomena of diverse origin existing together in particular places at the present time.

Hartshorne also clarified his position on the need the need to formulate scientific laws to explain individual cases. The primary objective of the science is to understand the reality, formulating scientific laws as a method is important and somewhat essential to serve the purpose of unearthing the truth. He, however, was stern in maintaining that those who believe that formulating scientific laws is the only objective of science are actually thoroughly confusing the means with the ends.

The outcome of the Hartshorne – Schaefer debate was a clear shift of academic enquiry towards systematic geography from the regional geography in America, post-1950. There were an increasing realization and awareness that geography too should develop and laws and models and accomplish this purpose it needs to adopt nomothetic perspective in order to seek general in the particular (inductive argument). This also precipitated the shift from areal differentiation to spatial integration (spatial organization), creating a spatial pattern in the movement and circulation in the form of spatial interaction. Geography as a spatial science offered to explain them with the help of form laws or morphological laws underlying such pattern.

Conclusion

Hartshorne's perspective of areal differentiation and spatial analysis (which include spatial organization) ironically, define the ways of spatial viewing and not that which is viewed. Both approaches focused on the spatial distribution of the phenomena and the manifestation of the complex as a result of the interplay of causal relationships among the phenomena. The chorological paradigm, given fresh vent in the ideas of areal differentiation as popularised by Richard Hartshorne talks of dividing the face of the earth into homogeneous and unique regions, whereas the spatial organization as an essential aspect of spatial synthesis encompasses, spatial integration and interaction. The focus on systematic approach as a systematic science traces its genesis in the early ideas of spatial organization and integration. The concept of spatial organization seeks to establish a common theme cutting across the regional differences in the different places of the surface of the earth. This approach of study of the discipline does not create division owing to areal differentiation into homogeneous units; on the contrary it looks for the holistic arrangement of assemblage of phenomena in the space, and in a sense connects various heterogeneous units (which have internal homogeneity or sameness, within a given boundary of the region).

To study the spatial organization of the phenomena, geography sought to frame generalized laws through nomothetic or law formulating an approach. The chorological science approach translated into regional geography while spatial science approach through the methods of systematic science prelude the initiation of a systematic approach in geography.

Taking into consideration the views put forward by other proponents of a regional approach, the 'uniqueness and impossibility' of generalization (Law formulation) becomes more prominent.

Interestingly as Hartshorne puts forward, in systematic geography each particular element, or element-complex that is geographically significant, is studied in terms of its relation to the total differentiation of the area, whereas in regional geography all the knowledge of interrelations of all features at given places- obtained in part from the different systems of systematic geography is integrated, in terms of interrelations which these features have to each other, to provide the total geography of those places. (Hartshorne 1939).

Systematic and regional approaches seemingly at cross-roads and in contrast to each other share a lot of similarities and adhere to the broader perspective of the distribution of phenomena on the surface of the earth. Geography as a science needs both approaches of study of the subject, in order to understand phenomena and through their areal expression and distribution the underlying logic (which systematic science termed the process law.) systematic geography is essential to understand the areal differences in each kind of phenomena and the reasons/ principles and the processes behind the complex of the relationships among themselves. In order to view and understand the geographical personality of an area in comparison to the other, it is necessary to investigate the totality of related features of the different regions/ units, which becomes the central theme of a regional approach in geography. The two approaches are not only

related but conceptually entwined with each other. One exists because of the other and one cannot be viewed in isolation as systematic geography strives for formulation laws and generalization and regional geography concerned with the 'Uniqueness', The generalization is applied in the unique region to have a better understanding of the comprehensive whole.

