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THE MORPHOLOGY OF LANDSCAPE

Carl O. Sauer

One of the century's most eminent geographers, Carl Sauer (1889-1975) was associated with the University of California, Berkeley, for most of his academic life. While a graduate student at Chicago, he had attended lectures by Eliot S Falsepe (chapter 14) but came to reject her broad-based environmentalist perspective. In one of his few methodological statements, "Morphyology" presented a coherent alternative derived from mainly German geographical traditions, many of which he shared with Hauser (chapter 24) despite their evident clash over the question of time. Geography could not be defined as an abstract relationship; it had to have a substantive content: the cultural landscape. This emphasized the material record of humans upon the landscape and the spatial interaction of physical and cultural phenomena, excluding customs and beliefs. The essay was well received by his contemporary peers, but Sauer's own work in Mexico and Latin America was much more systematic in this programmatic. He figured prominently in studies of the origins of agricultural society, the diffusion of plants and animals, and the impact of conquest upon indigenous American societies. Sauer was a prime mover of the Pan-American symposium on Man's Role in Changing the Face of the Earth, in 1933, and a long-time advocate of a less deterministic attitude toward the environment. Many later geographers (for example, Daniel, chapter 15) have returned to his methodological premises for containing an adequate formative perspective toward culture.


Introduction

Diverse opinions regarding the nature of geography are still common. The label geography, as is the case with history, is not a trustworthy indication as to the matter contained. As long as geographers disagree as to their subject it will be necessary...

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Though repeated definitions, to seek common ground upon which a general position may be established. In this country a fairly coherent success of viewpoints has been advanced, especially through presidential addresses before the Association of American Geographers, which may be accepted as mirror and mould of geographical opinion in America. They are sufficiently clear and well known that they need not be restated. In European geography a somewhat different orientation appears to be developing. In various quarters significant activity in being displayed, probably in some measure influenced by anti-intellectual currents. At any rate a shaking up of some vigor is under way. It may therefore be appropriate to summarize the field of geography, keeping current views abroad especially in mind, in order to attempt a working hypothesis that may serve to illuminate in some degree both the nature of the objective and the problem of systematic method.

The Field of Geography

The phenomenon of science. — All science may be regarded as phenomenology: a term science being used in the sense of organized process of acquiring knowledge, rather than in the common restricted meaning of a natural body of physical law. Every field of knowledge is characterized by its declared preoccupation with certain groups of phenomena, which it undertakes to identify and order according to their relations. These facts are assembled with increasing knowledge of their connection; the attention to their connection evokes scientific approach. "A fact is first determined when it is recognized as to limits and qualities, and it is understood when it is viewed in its relations. Out of this follows the necessity of predetermined modes of inquiry and of the creation of a system that makes clear the nature of the phenomena... Every individual science is native as a special discipline, in so far as it accepts the section of reality which it is field of aptitude and does not question its position in the general scheme of nature; within these limits, however, it proceeds critically, since it undertakes to determine the connection of the phenomena and their order... According to such definitions of the grounds of knowledge, the last concern is with the phenomena that constitute the "section of reality" which is occupied by geography, the next with the method of determining their connection.

2. Geography as a "naturally given section of reality." — Disregard as to the context of geography is no greater than that distinct fields of inquiry are usually designated as geography. (1) The study of the earth as the medium of physical processes, or
the geophysical part of cosmoiogic science; (2) the study of life-terms as sets to their physical environment; or a set of biogeography, dealing with trophy and (3) the study of the actual or habitat differentiation of the earth, or chorology. In these three fields there is partial accordance of phenomena, but little or no relation. One may choose between the three; they may hardly be consolidated into one discipline.

The great fields of knowledge exist because they are universally recognized as being concerned with a great category of phenomena. The experience of mankind, the inquiry of the specialist, has made the primary subdivisions of knowledge. Botany is the study of plants, and geology that of rocks, because these categories of fact are evident to all intelligence that has concerned itself with the observation of nature. In the same sense, area or landscape is the field of geography, because it is a naively given, important section of reality, not a sophisticated thesis. Geography assumes the responsibility for the study of area, because there exists a common curiosity about that subject. The fact that every school child knows that geography provides information about different countries is enough to establish the validity of such a definition.

No other subject has preëxisted the study of area. Others, such as botanists and geologists, may concern themselves with natural phenomena, but in that case they are naively using geographic facts for their own ends. If one were to establish a different discipline under the name of geography, the interest in the study of area would not be destroyed thereby. The subject existed long before the name was coined. The literature of geography in the sense of chorology begins with parts of the earliest sagas and myths, vivid as they are with the sense of place and of man's contact with nature. The most precise expression of geographic knowledge is found in the map, an immortal symbol. The Greeks wrote geographic accounts under such designations as periplos, periplon, and peripatias long before the name geography was used. Yet even the present name is more than two thousand years old. Geographic treatises appear in numbers among the earliest printed books. Explorations have been the dramatic reconnaissances of geography. The great geographic societies justly have accorded a place of honor to explorers. "He et ubicumque," in the device under which geography has stood, always. The universality and persistance of the chorologic interest and the priority of claim which geography has in this field are the evidences on which the case for the popular definition may rest.

We may therefore be content with the simple statement of the Greek word which the subject bears as its name, and which means most properly area knowledge. The Germans have translated it in Landschaftskunde or Ortskunde, the knowledge of landscapes or of lands. The other term, Erdkunde, the science of the earth in general, is falling rapidly into disuse.

The thought of a general earth science is inapplicable to utilization, geography can be no independent science only as chorology, that is, the knowledge of the varying expression of the different parts of the earth's surface. It is, in the first place, the study of lands; general geography is not general earth science, rather it presupposes the general properties and processes

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of the earth, or accepts them from other sciences: for its own part it is oriental about their bearing each other.  

With this preference of synthetic areanowledge to general earth science the old tradition of geography is in agreement.

The interdependence of earth phenomena. - Probably not even the adhärences of other, present schools of geography would deny place for such a view of the subject, but they deem this naively given body of facts inadequate to establish a sciences, or at the most would consider it an auxiliary discipline which supplies fragmentary evidence, to find its place ultimately in a general geophysical or biophysical system. The argument then is shifted from the phenomenal content to the nature of the connection of the phenomenon. We accept the place for a science that finds its entire field in the landscape on the basis of the significant reality of chorologic relation. The phenomena that make up an area are not simply asserted but are connected, or interdependent. To discover this area "connection of the phenomena and their order" is a scientific task, according to our position the only one in which geography should devote its energies. The position falls only if the necessity of area be shown. The competence to arrive at orderly conclusions is not affected in this case by the question of coherence or incoherence of the data, for the characteristic association, as we find it in the area, is an expression of coherence. The element of time is admittedly present in the association of geographic facts, which are thereby in large part recollected. This, however, places them beyond the reach of scientific inquiry only in a very narrow sense, for time as a factor has a well-recoginized place in many scientific fields, where time is not simply a term for some identifiable causal relation....

Summary of the structure of geography. - The task of geography is conceived as the establishment of a critical system which embraces the phenomenonology of landscape, in order to grasp in all of its meaning and color the varied terrestrial scene. Indirectly Vital de la Blache has stated this position by cautioning against considering "the earth as 'the scene on which the activity of man unclips itself,' without reflecting that this scene is itself living. " It includes the works of man as an integral expression of the scene. This position is derived from Herder and more than from Taine. Modern geography is the modern expression of the most ancient geography.

The objects which exist together in the landscape exist in interrelation. We assert that they constitute a reality as a whole which is not expressed by a consideration of the component parts separately, that area has form, structure, and function, and hence position in a system, and that it is subject to development, change, and completion. Without this view of area reality and relation, there exist only

1 Hettner, A., "Methodische Zeit und Weltbilder," Griz. Zeiler, vol. 26, p. 37 (1923). Hettner is cited here in the literal statement of the position he has defended only for many years. To American geographers warmans address of 1930 cited above is ever reminiscent of his spirited dedication of the same few words.

2 Principes de la geographie humaine, p. 9 (1923).
special disciplines, not geography as generally understood. The situation is anal-
gous to history, which may be divided among economics, government, sociology, and so on; but when this is done the result is not history.

The Content of Landscape

Definition of landscape – The term ‘landscape’ is proposed to denote the unit concept of geography, to characterize the peculiarly geographic association of facts, equivalent terms in a sense are ‘area’ and ‘region’. Area is in essence a general term, not distinctively geographic. Region has come to imply, to some geographers at least, an aggregate of geographic land. Landscape is the English equivalent of the term German geographers are using popularly and strictly but the same meaning, a land shape, in which the process of shaping is by no means thought of as simply physical. It may be defined, therefore, as an area made up of a distinct association of forms, both physical and cultural.1

The facts of geography are plain facts; their association gives rise to the concept of landscape. Similarly, the facts of history are plain facts; their association gives rise to the concept of period. By definition the landscape has identity that is based on recognizable composition, limits, and generic relation to other landscapes, which constitute a general system. Its structure and function are determined by integrated, dependent forms. The landscape is considered, therefore, in a sense as having an organic quality. We may follow Whorf in saying that one has not fully understood the nature of an area until one “has learned to see it as an organic unit, to comprehend land and life in terms of each other.”2 It has seemed desirable to introduce this point prior to its elaboration because it is very different from the unit concept of physical process of the physiographer or of environmental influence of the anthropogeographer of the school of Radetz. The mechanics of glacial erosion, the climatic correlation of energy, and the form content of a regional habitat are three different things.

Landscape has generic meaning – In the sense here used, landscape is not simply an actual scene viewed by an observer. The geographic landscape is a generalization derived from the observation of individual scenes. Croes’s remark that “the geographer who is describing a landscape has the same task as a landscape painter”3 has therefore only limited validity. The geographer may describe the landscape as a type or possibly as a variant from type, but always he has in mind the generic, and proceeds by comparison.

An ordered presentation of the landscapes of the earth is a formidable undertaking. Beginning with infinite diversity, salient and related features are selected

1 Solis, J., Auffassung der natüralischen Geologie (1909), has proposed the term ‘Chora’ to designate the content of geography.
3 Quoted by Beck, P., Philosophie der Geschichte (vol. 23, p. 10.)

In order to establish the character of the landscape and to place it in a system, yet generic quality is non-existent in the sense of the biologic world. Every landscape has individuality as well as relation to other landscapes, and the same is true of the facts that make it up. No valley is quite like any other valley; no city the exact replica of some other city. In so far as these qualities remain completely unrelated they are beyond the reach of systematic treatment, beyond that organism knowledge that we call science. "No science can rest at the level of mere perception .... The so-called descriptive natural sciences, zoology and botany, do not remain content to regard the singular, they raise themselves to concepts of species, genus, family, order, class, type."4 “There is no ideographic science, that is, one that describes the individual merely as such. Geography formerly was ideographic long since it has attempted to become nomothetic, and no geographer would hold it at its present level.5 Whichever opinion one may hold about natural law, or nomothetic, genetic, or causal relation, a definition of landscape as singular, ungeneric, or universalized has no scientific value.

Element of personal judgment in the selection of content – It is true that in the selection of the generic characteristics of landscape the geographer is guided only by his own judgment that they are characteristic, that is, repeating, that they are arranged into a pattern, or have structural quality, and that the landscape accurately belongs to a specific group in the general series of landscapes. Croes objects to a science of history on the ground that history is without logical criteria. "The criterion is the choice itself, conditioned, like every economic act, by knowledge of the actual situation. This selection is certainly conducted with intelligence, but not with the application of a philosophical criterion, and is justified only in and by itself. For this reason we speak of the fine text, or stone, or instinct of the learned man."6 A similar objection is sometimes urged against the scientific competence of geography, because it is unable to establish complete, rigid logical control and pattern rules upon the selection of the student. The geographer in fact continually exercising freedom of choice as to the materials which he includes in his observations, but he is also continually deriving influences as to their relation. His method, imperfect as it may be, is based on induction; he deals with sequences, though he may not regard these as a simple causal relation.

If we consider a given type of landscape; for example a North European hilly, we may put down notes such as the following:

The sky is dull, ordinarily gently cloudy, the horizon is indistinct and never more than a hazy decrescendo distant, though seen from a height. The boulder is gently and regularly rolling and distant in a flat, flat terrain. There are no long slopes and no symmetrical patterns of surface forms. Watercourses are short, with clear brooklike water, and prevail. The houses

5 lbid, p. 98.
6 Die Geschichte, p. 109, 110. The statement applies to the history that has the greatest play of "making the past live again." There is, however, also a phenomenologie history, which may discover related forms and their expression.
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The natural and the cultural landscape. — Human geography does not oppose itself to a geography from which the human element is excluded; such one has not existed except in the minds of a few exclusive specialists. It is a forcible abstraction, by every good geographic tradition a tour de force, to consider a landscape as though it were devoid of life. Because we are interested primarily in "culture," which grows with original vigour out of the lap of a maternal natural landscape, to which each is bound in the whole course of its existence, geography is based on the reality of the unions of physical and cultural elements of the landscape. The content of landscape is found therefore in the physical qualities of areas that are significant to man and in the forms of his use of the area, in fact in physical background and facts of human culture. A valuable discussion of this principle is given by Kroeber under the title "Vater- und Kulturlandschaft." 18

For the first half of the content of landscape we may use the designation "site," which has become well established in plant ecology. A forest site is not simply the place where a forest stands; in its full connotation, the name is a quantitative expression of place as terms of forest growth, usually for the particular forest association that is in occupation of the site. In this sense the physical area is the sum of all natural resources that man has at his disposal in that area. It is beyond his power to add to them; he may "develop" them, ignore them as part, or subtract from them by exploitation.

The second half of landscape viewed as a biotic unit is its cultural expression. There is a strictly geographic way of thinking of culture, namely, as the imprint of the works of man upon the area. We may think of people as associated with and among them, as we may think of them as a group associated in descent or tradition. In the first case we are thinking of culture as a geographic expression, composed of forms which are part of geographic phenomenology. In this view there is no place for a "continuity of landscape."

The Application of the Morphologic Method

Form of Induction. — The systematic organization of the content of landscape proceeds with the reappraisal of a priori theories concerning it. This reassessment and ordering of phenomena as forms that are integrated into structures and

18. Vidal de la Blache, P., op. cit., p. 3.
19. Schütz, O., Untersuchung der Altersschichten, Leipzig, 1852, p. 249. "Es ist die mannigfaltige, mehrfach sich wiederholende Methode, mit der der geometrische Struktur a und der theoretischen Methoden:"
comparative study of the data as thus organized constitute the morphologic method of synthesis, a special empirical method. Morphology rests upon the following postulates: (1) that there is a unit of organic or quasi-organic quality, that is, a structure to which certain components are necessary, these component elements being called "forms" in this paper; (2) that similarity of form in different structures is recognized because of functional equivalence, the forms then being "homologous"; and (3) that the structure's units may be placed in series, especially into developmental sequence, ranging from incomplete to final or completed stage. Morphologic study does not necessarily affirm an organism in the biologic sense, for example, in the sociology of Herbert Spencer, but only organized unit concepts that are related. Without being committed as any sense to a ground biogenetic law, the organic analogy has proved most useful throughout the fields of social inquiry. It is a working device, the truth of which may perhaps be subject to question, but which leads nevertheless to increasingly valid conclusions.  

The term "morphology" originated with Goethe and expresses his contribution to modern science. It may be well to recall that he turned to biology and geology studies because he was interested in the nature and limits of cognition. Believing that there were things "accessible and inaccessible" to human knowledge, he concluded: "One need not seek for something beyond the phenomena they themselves are the few (Leichte)." Thus originated his form studies, and especially some of morphology of form. His method of scientific inquiry rested on a definite philosophical position. If therefore the morphologic method appears unintentional to the student who is eager to come to large conclusions, it may be pointed out that it rests upon a deliberate restraint in the affirmation of knowledge. It is a purely evidential system, without preconceptions regarding the meaning of evidence, and presupposes a minimum of assumptions, namely, only the reality of structural organization, being objective and value-free, or nearly so, it is competent to arrive at increasingly significant results.

Preparatory Systematic Description

The first step is morphologic study. Historically, "geography" commenced by describing and recording, that is so a systematic study. It proceeded to prepare a systematic study. If observed facts be by some predetermined order that represents a preliminary grouping of the material. Such systematic description is for the purpose of morphologic relation and is really the beginning of morphologic synthesis. It is therefore distinguishable from morphologic not at all in principle.

The assumption, as it, advanced by Wulffinger as "Philosophen des Altertums."

Krebs, op. cit., p. 87.
should mean a general descriptive scheme to be followed in the collection of field notes. A general descriptive scheme, intended to catalogue aral facts broadly, without proceeding at this stage from hypothetical origins and connections, has been recently proposed by Passarge under the name Beschreibende Landschaftskunde. It is the first comprehensive treatment of this subject since W. Richter's Aufbauer der Forstwissenschaften, written not prior to the most flourishing period of geomorphology (1886). The work of Passarge is somewhat rough-hewn and it is perhaps excessively schematic, yet it is in the most adequate consideration by far that the whole matter of geographic description has had. Its purpose is "first of all to determine the facts and to attempt a correct presentation of the significant, visible facts of area without any attempt at explanation or speculation." The plan provides for the systematic observation of the phenomena that compose the landscape. The method mentions most plainly the facts, a device for the collection of material in frames setting. It helps to see as much as possible and to make as little as possible and has the further advantage that all observations are ordered. If under geographers had been familiar with a method of systematic observation of irrigation, it would have been impossible for the characteristic values of typical natural units to have escaped attention until W. Richter's discussed that fact.

Passarge proceeds with an elaborate schedule of notes covering all form categories of the landscape, beginning with hydrologic effects and ending with forms of habitation. From these he proceeds to a descriptive classification of form associations into larger aral terms. For the further elaboration of the plan the reader is referred to the volume in question, as worthy of careful consideration.

The author has applied his system elsewhere to the "pure" or against the "explanatory" description of areas, as for example in his characterization of the Valley of the Osucongo, in the northern salt steeple of the Kalahar. That he succeeds in giving to the reader an adequate picture of the formation of area will probably be admitted.

One may note that Passarge's supposedly purely descriptive procedure is actually based on large experience in areal studies, through which a judgment as to the significant constituents of landscape has been formed. There is no empiricism through morphologic knowledge, through the classification is not genetic, but properly based on the nature of general forms. The schema which Passarge has fashioned, though disclaiming all attempt at explanation, is in reality a device fashioned by experienced hands for catching all that may be wanted in a real morphology and for deferring explanation until the whole material is sorted.

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Forms of Landscape and Their Structure

The division between natural and cultural landscape. — We cannot form an idea of landscape except in terms of its form relations as well as of its space relations. It is in continuous process of development or of dissolution and replacement. It is in this sense a true appreciation of historical values that has caused the geomorphologist to see the present physical landscape back into its geologic origins and to derive it therefore step by step. In the chronologic sense, however, the modification of the area by man and its appropriation to his uses are of dominant importance. The area prior to the introduction of man's activity is represented by one body of morphologic facts. The forms that man has introduced are another set. We may call the former, with reference to man, the original, natural landscape. Its entirety it no longer exists in many parts of the world, but its reconstruction and understanding are the first part of formal morphology. It is perhaps too broad a generalization to say that geography dissociates itself from geology at the point of the introduction of man into the areal scene. Under this view the prior events belong strictly in the field of geology and their historical treatment in geography is only a descriptive device employed whose necessary to make clear the relationship of physical forms that are significant in the habitat.

The works of man express themselves in the cultural landscape. There may be a succession of these landscapes with a succession of cultures. They are derived in each case from the natural landscape; man expressing his place in nature as a distinct agent of modification. Of especial significance is that climax of culture which we call civilization. The cultural landscape then is subject to change either by the development of a culture or by a replacement of cultures. The datum line from which change is measured is the natural condition of the landscape. The division of forms into natural and cultural is the necessary basis for determining the areal importance and character of man's activity. In the universal, but not necessarily cosmicologic sense, geography then becomes that part of the larger or human chapter in earth history which is connected with the differentiation of the areal scene by man...
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The natural landscape is being subjected to transformation at the hands of man, the last and for us the most important morphologic factor. By his cultures he makes use of the natural forms in many cases altering them, in some destroys them.

The study of the cultural landscape, as yet, largely an unfulfilled field. Recent results in the field of plant ecology will probably supply many useful leads for the human geographer, for cultural morphology might be called human ecology. In contrast to the position of barriers in this matter, the present thesis would eliminate physiologic ecology or osteology and seek for parallels in syntaxology. It is better to force into geography too much biological nomenclature. The name ecology is not needed; it is both morphology and physiology of the biotic association. Since we waive the claim for the measurement of environmental influences, we may use, in preference to ecology, the term morphology to apply to cultural study, since it describes perfectly the method that is involved.

Among geographers in America who have concerned themselves with systematic inquiry into cultural forms, Mark Jefferson, O. E. Baker, and M. Acquascente have done outstanding pioneering. Brinck’s “essential facts of geography” represent perhaps the most widely appreciated classification of cultural forms.

Sten De Geer’s population atlas of Sweden was the first major contribution of a student who has concentrated his attention solely on cultural morphology. Vaughan Conkli introduced the concepts of “mask,” “stereoscope,” and “crossroads” in a most valuable contribution to urban problems.

Most recently, Geister has undertaken a synthesis of the urban forms of Germany, with the desired subtitle: “A contribution to the morphology of the cultural landscape.” These pioneers have both productive ground; our periodical literature suggests that a rush of investigators may soon be underway.

**Diagrammatic representation of the morphology of the cultural landscape.** – The cultural landscape is the geographic area in the final meaning (Cherry). Its forms are all the works of man that characterize the landscape. Under this definition we see no concern in geography with the energy, custom, or belief of man but with man’s record upon the landscape [see Figure 17.2]. Forms of population are the phenomena of mass or density in general and of recurrent displacement, as seasonal migration. Housing includes the types of structures man builds and their grouping, either dispersed in many rural districts, or agglomerated into villages or cities in varying plans (Stahlheber). Forms of production are the types of land utilization for primary products, farms, forests, mines, and those negative areas which he has ignored. The cultural landscape is fashioned out of a natural landscape by a culture group. Culture is the agent, the natural area in the medium, the cultural landscape in the expression.

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*Broth, J. Human Geography (1900, Am. ed., 1923).*
*Brodgar’s Beobachtung (Jergan, 1917).*
*The Great Captains (Edmonson, 1721).*
*The Detailed Task (Chicago, 1912).*

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this line is of determinate or infinite length does not concern us as geographers. In some measure, certainly, the idea of a climatic landscape is useful, as in the case of the idea of a climatic landscape, which gives a tendency of imposing factors, has influenced the possibilities of agro-
group. Culture is the agent, the natural area is the medium, the cultural landscape the result. Under the influence of a given culture, itself changing through time, the landscape undergoes development, passing through phases, and probably reaching ultimately the end of its cycle of development. With the introduction of a different, that is, alien culture, a rejuvenation of the cultural landscape sets in, so that a new landscape is superimposed on remains of an earlier one. The natural landscape is of course of fundamental importance, for it supplies the materials out of which the cultural landscape is formed. The shaping force, however, lies in the culture itself. Within the whole limits of the physical equipment of area lie many possible choices for man, as Vitali never grew weary of pointing out. This is the meaning of adaptation, through which, aided by those inventions which man has derived from nature, perhaps by an imitative process, largely subconscious, we get the feeling of harmony between the human habitation and the landscape into which it so fittingly blends. But these, too, are derived from the mind of man, not imposed by nature, and hence are cultural expressions.

Morphology as Applied to the Branches of Geography

The consolidation of the two diagrams gives an approximation of the total scientific content of geography on the phenomenological basis by which we have proceeded.86 They may readily be expressed as so to define the branches of geography. (1) The study of the form categories per se in their general relation, the system of the forms of landscape, is morphology in the purely methodological sense and is the equivalent of what is called, especially in France and Germany, general geography, the propositional through which the student learns to work with his materials. (2) Regional geography is comparative morphology, the process of placing individual landscapes into relation to other landscapes. In the full methodological sense, this is the ordering of cultural, not of natural landscapes. Such a cultural

86 The conclusions presented in this paper are substantially in agreement with those of the author's article "On the Definition, Method, and Classification of Geography," 1953, pp. 1-17, with the comment that a 'cultural' landscape taken in the place of the 'natural' usually used.

Beyond Science

The morphologic discipline enables the organization of the fields of geography as positive science. A good deal of the meaning of area lies beyond scientific description. The best geography has never disregarded the aesthetic qualities of landscape, in which we know no approach other than the subjective. Humboldt's "physiognomy," Bausch's "wood," Volta's "mythology," Gradmann's "harmony" of landscape, all lie beyond science. They seem to have discovered a symptomatic quality in the contemplation of the earth's scene, preceding from a full, mature, scientific studies and yet apart therefore. To some, whatever it is, is mystical in an abstraction. Yet it is significant that there are others, and among them some of the best, who believe that having observed widely and charted diligently, they yet remain a quality of understanding at a higher plane which may not be reduced to formal process.87

Divergent Views of Geography

The geographical thesis of this article is so largely at variance with certain other views of the subject that it may be desirable to set forth in summary form what has been expressed and implied as to contrast in the several positions.

87 Vorgeschichte der Landwirtschaftslehre (Berlin, 1929), Landwirtschaftliche Fichte (Berlin, 1929).
88 A good statement of current occurrences in this field is in Grünwald, E., "Das biologische Land- schaftsbild." Zbl. Geol. Ges. Zbl., Berlin, 1914, pp. 145-147. This has been publishing since 1902 a biannual scientific journal, Die Neue Geographische, in which occurrences given here are secured in a regularity pattern of shell.
89 Morphologie der Erdbildgebilde (Berlin), vol. 2.
seafloors, islands. These descriptive topographic terms are studied by geomorphology as to their derivatives, not as to their significance.

Geomorphology being the history of topography, it derives present surfaces from previous forms and records the processes involved. A study of the geomorphology of the Sierra Nevada in a history of the sculpturing of the mountain mass, concerned with the uplift of the earth block, and the stages of modification in which erosion, processes, secondary deformations, and structural conditions are in complex relations. Relief features in this sense are the result of the opposition of erosive and degradational processes through geologic periods of life. Certain features, such as peninsulas and terrace remnants, thus have high diagnostic value in reading the record of modification of surface. Three elements of the landscape, however, may be of little or no significance in the chorologic sense. To geomorphology the peninsulas have been extremely important; the trend of geography has not been notably affected by its discovery. Out of the topographic complex the geomorphologist may select one body of facts illustrative of earth history, the geographer will use a largely different set of facts which have habitat significance.

The geographer, therefore, is likely to be a specialized historical geologist, working on certain, usually late, chapters of earth history. Conventional historical geology is mostly concerned with the making of rock formations. The geogenic philosopher directs attention to erosional and degradational surfaces in the record of the rocks. To such an extent has this been the American orientation that we have in our country little geologicologic work of recent date that is consciously geographic in purpose, that is, descriptive of actual land surfaces.

The geomorphologist, however, can and does establish a connection between the fields of geography and geology and his labors further our own work. He advances our studies of landscape materiality where he has preceded the geographer, and we properly regard him potentially as much a collaborator in geography as in geology.

One of the present needs in American geography is a greater familiarity with and application of geomorphologic studies.

*Photography and physical geography.* — When Huxley reapplied the term photography he declared expressly the desire to reform physical geography. He was not kidding, he said, "on any particular branch of cultural knowledge, but on natural phenomena in general."

The subtitle of his memorial reads: "An Introdu-

[Note: The rest of the text is not clear due to the quality of the image.]
occupants." Vidal de la Blache's thesis that in the relation of man to the earth there exists less of necessary adaptation than of 'possibility' is worked out with skill and conviction. Excepting for their spiritual devotion to the master of French geography, the authors are not really familiar with geographic thought. They do not fully represent the tenets of geography because they knew chiefly the publicists of environmentalism, against whom they consider Vidal as the outstanding bulwark. Vidal will have an honored place in the history of geography, but we are no longer much impressed by his concern to establish decently good relations with rationalistic thought. Rationalism has once better days than these; we no longer need to come to terms with it by diplomatic compromise. In spite of the deficient orientation in geographic thought, the volume directs a quality of dialectic at one geographical school which entitles it to high rank in geographic criticism.

In this country the theme that geography is the study of natural environment has been dominant in the present generation. It has come to be accepted abroad that such is the American definition of geography. The earliest term was 'environmental control.' This was succeeded by 'response,' 'influence,' 'adjustment,' or some other word that does not change the meaning, but substitutes a more cautious term for the ringing declaration of control. All these positions are mechanistic. In some way they hope to measure the force that physical environment exerts over man. The landscape as such has no interest for them, but only those cultural features for which a causal connection with the physical environment can be established. The aim, therefore, is to make of geography a part of biopysia concerned with human responses.

Geographic morphology does not deny determinism, nor does it require adherence to that particular faith. In order to qualify in the profession, Geography under the banner of environmentalism represents a dogma, the assertion of a faith that brings not to a spirit vested by the middle of the universe. It was a new example for the age of reason, that set up its particular form of adequate order and even of ultimate purposes. The imposition of the faith could proceed only by finding inferences to its efficacy. To the true believer there were visible evidences of the existence of what he thought should be, which were not to be seen by those who were weak in the faith. Unless one has the proper temperament, the continued elaboration of this single thesis with the weak instruments at his hand becomes desperately monotonous. In such a study one knows beforehand that one will encounter only variants of the one theme of 'influence.'

The narrowly rationalistic thesis conceives of environment as process and of some of the qualities and activities of man as products. The agency is physical nature; man responds or adapts himself. Simple as the thesis sounds, it turns coarsely to investigation in the matching of specific response to specific stimuli or inhibition. The direct influence of environmental stimuli is purely somatic. What happens to man through the influence of his physical surroundings is

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15 See, p. 12.

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beyond the competence of the geographer; at most he may keep informed as to physiologic research in that field. What man does in an area because of taboo or terrorism or because of his own will involves use of environment rather than the active agency of the environment. It would, therefore, appear that environmentalism has been shooting neither at cause nor at effect, but rather that it is lagging its own decays.9

Conclusion

In the colorful reality of life there is a continuous resistance of fact to confinement within any 'gentleman' theory. We are concerned with 'directed activity; not mere outcome realization' and this is the morphologic approach. Our native sense of reality, the landscape, is undergoing manifest change. This contact of man with his changing home, as expressed through the cultural landscape, is our field of work. We are concerned with the importance of the site to man, and also with his transformation of the site. Altogether we deal with the interaction of group, culture, and site, as expressed in the various landscapes of the world. Here are an inseparable body of fact and a variety of relation which provide a course of inquiry that does not need to restrict itself to the strains of rationalism.9
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