

Integrated Models in Geography

Edited by
**Richard J. Chorley and
Peter Haggett**



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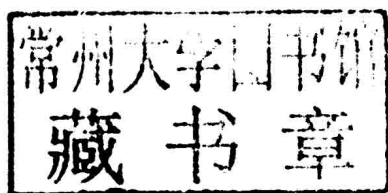
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Integrated Models in Geography

First published in 1967, this book explores the theme of geographical generalization, or model building. It is composed of five of the chapters from the original *Models in Geography*, published in 1967. The first chapter broadly outlines this theme and examines the nature and function of generalized statements, ranging from conceptual models to scale models, in a geographical context. The following chapters deal with mixed-system model building in geography, wherein data, techniques and concepts in both physical and human geography are integrated. The book contains chapters on organisms and ecosystems as geographical models as well as spatial patterns in human geography.

This text represents a robustly anti-idiographic statement of modern work in one of the major branches of geography.

Integrated

MODELS IN GEOGRAPHY

Part IV of Models in Geography

Edited by

RICHARD J. CHORLEY

PETER HAGGETT

UNIVERSITY PAPERBACKS

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D. R. Stoddart

Models, Paradigms and the New Geography

P. HAGGETT and R. J. CHORLEY

Models are undeniably beautiful, and a man may justly be proud to be seen in their company. But they may have their hidden vices. The question is, after all, not only whether they are good to look at, but whether we can live happily with them.

KAPLAN, 1964, p. 288.

In concluding the previous volume in this series, we attempted to review the paths taken by various workers in moving towards what they saw to be the 'frontier' in geographical research. We argued there that the quest for a model or models was a recurrent theme in their search. This volume is a direct outcome of that conclusion in that specific workers were asked to discuss the role of model-building within their own special fields of geographical research. While we would not wish to pre-judge their findings, it will be evident from the format and arrangement of the chapters that there is: (1) some measurable contrast between their approaches to geography, various as they are, and those that characterize the great part of established geographical patterns of thinking, as evidenced by existing textbooks and syllabuses; and (2) a community of common ideas that link all contributors into what Price (1963, p. 62) would characterize as an 'invisible college' of geographical practitioners. Whether this communality is sufficient to form the basis of what Manley (1966) has termed a 'New Geography' is not for us to judge. However, it is perhaps significant that the greater part of the volume is based on work produced since 1945, and much of it since 1960. In this opening chapter we discuss what we believe to be the significance of this new search for a model-based geography.

FACTS, MODELS AND PARADIGMS

The nature of facts

Information in geography is capable of treatment in terms of general information theory. In this context factual information only has relevance within

some more general frame of reference, and such a basic operation as the definition of a relevant fact can only be made on the basis of some theoretical framework. There are also different levels of organization of relevant information. Some information can be relevantly organized only at a small scale, whereas the orderly large-scale patterns of other information are blurred or swamped altogether on the local scale. One can therefore view geographical information registration and analysis, from one point of view at any rate, as a problem in the separation of regional and local information patterns from the more randomly-organized information which, as 'noise', obscures them (Chorley and Haggett, 1965). Of course, one may choose to regard the noise



1.1 A photograph of melting snow taken on impulse by a photographer in China just before the last war. The pattern makes no sense until it is organized as a full-face and shoulders, similar in style to a late-medieval representation of Christ; the upper margin cutting the brow and illuminated from the right (Source: *Partly from Porter, 1954*).

as the more significant element and to ask whether it is useful to try to recognize any order in reality. This results in the stress being placed on the variety of geographical information available and in attempts to subdivide information. However, it is becoming increasingly popular to ask what kinds of order are exhibited by geographical information and on what scales of space and time each operates. In short, the 'simple' registration of facts is being recognized not only as unsatisfactory but as an impossibility. Hanson (1958, pp. 8-19) has pointed out that what is observed depends not only on the context in which a particular phenomenon is set, but in the manner in which one is prepared to view it. In the words of Sigwart: 'That there is more order in the world than appears at first sight is not discovered *till the order is looked for*' (Quoted by Hanson, 1958, p. 204). Figure 1.1 gives a striking illustration

both of the close apparent relationship between order and disorder, and of the subjective approach necessary to identify what it believed to be orderly.

The distinction between the idiographic and nomothetic approaches to the real world was recognized by Aristotle, although not in the terms which we currently employ, when he pointed out that poetry is more philosophical and of graver import than history because it is concerned with what is pervasive and universal, whereas history is addressed to what is special and singular (Nagel, 1961, p. 547). Today the distinction is made commonly between the 'humanities' which are primarily concerned with the unique and non-recurrent, and the 'sciences' which seek to establish general statements for repeatable events and process. Contemporary geography obviously lies athwart this apparent gulf, which must either be bridged or must lead to the dismemberment of the existing discipline. The dichotomy between the general and the particular was clearly stated by Francis Bacon in his *Maxims of the Law*; 'For there be two contrary faults and extremities in the debating and sifting of the law, which may be noted in two several manner of arguments: some argue upon general grounds, and come not near the point in question; others, without laying any foundation of a ground or difference of reason, do loosely put cases, which, though they go near the point, yet being put so scattered, prove not, but rather serve to make the law appear more doubtful than to make it more plain'. Indeed, the distinction between the idiographic and nomothetic views of geography, so strongly put by Bunge (1962), may be useful in highlighting many of the current shortcomings in the subject, but is less valuable from the more purely philosophical standpoint. Bambrough (1964, p. 100), for example, points out that all reasoning is ultimately concerned with particular cases, and that laws, rules and principles are merely devices for bringing particular cases to bear on other particular cases. 'The ideal limiting case of representation is reduplication, and a duplicate is too true to be useful. Anything that falls short of the ideal limit of reduplication is too useful to be altogether true' (Bambrough, 1964, p. 98). In short, every individual is, by definition, different, but the most significant statement which can be made about modern scholarship in general is that it has been found to be intellectually more profitable, satisfying and productive to view the phenomena of the real world in terms of their 'set characteristics', rather than to concentrate upon their individual deviations from one another.

The nature of models

The catholic view of models taken in this volume derives largely from Skilling (1964). He argued that a model can be a theory or a law or an hypothesis or a structured idea. It can be a role, a relation or an equation. It can be a synthesis of data. Most important from the geographical viewpoint, it can also include

reasoning about the real world by means of translations in space (to give spatial models) or in time (to give historical models).

The need for idealization. The traditional reaction of man to the apparent complexity of the world around him has been to make for himself a simplified and intelligible picture of the world. 'He then tries to substitute this cosmos of his own for the world of experience, and thus to overcome it' (Chorafas, 1965, p. 1). The mind decomposes the real world into a series of simplified systems and thus achieves in one act 'an overview of the essential characteristics of a domain' (Apostel, 1961, p. 15). This simplification requires both sensual and intellectual creativity (Keipers, 1961, p. 132). 'The mind needs to see the system in opposition and distinction to all others; therefore the separation of the system from others is made more complete than it is in reality. The system is viewed from a certain scale; details that are too microscopical or too global are of no interest to us. Therefore they are left out. The system is known or controlled within certain limits of approximation. Therefore effects that do not reach this level of approximation are neglected. The system is studied with a certain purpose in mind; everything that does not affect this purpose is eliminated. The various features of the system need to be known as aspects of one identical whole; therefore their unity is exaggerated' (Apostel, 1961, pp. 15-16). According to this view, reality exists as a patterned and bounded connexity which has been explored by the use of simplified patterns of symbols, rules and processes (Meadows, 1957, pp. 3-4). The simplified statements of this structural interdependence have been termed 'models'. A model is thus a simplified structuring of reality which presents supposedly significant features or relationships in a generalized form. Models are highly subjective approximations in that they do not include all associated observations or measurements, but as such they are valuable in obscuring incidental detail and in allowing fundamental aspects of reality to appear. This selectivity means that models have varying degrees of probability and a limited range of conditions over which they apply. The most successful models possess a high probability of application and a wide range of conditions in which they seem appropriate. Indeed, the value of a model is often directly related to its level of abstraction. However, all models are constantly in need of improvement as new information or vistas of reality appear, and the more successfully the model was originally structured the more likely it seems that such improvement must involve the construction of a different model.

Characteristics of models. The term 'model' is conventionally employed in a number of different ways. It is used as a noun implying a representation, as an adjective implying a degree of perfection, or as a verb implying to demonstrate or to show what something is like (Ackoff, Gupta and Minas, 1962, p. 108). In fact models possess all these properties.