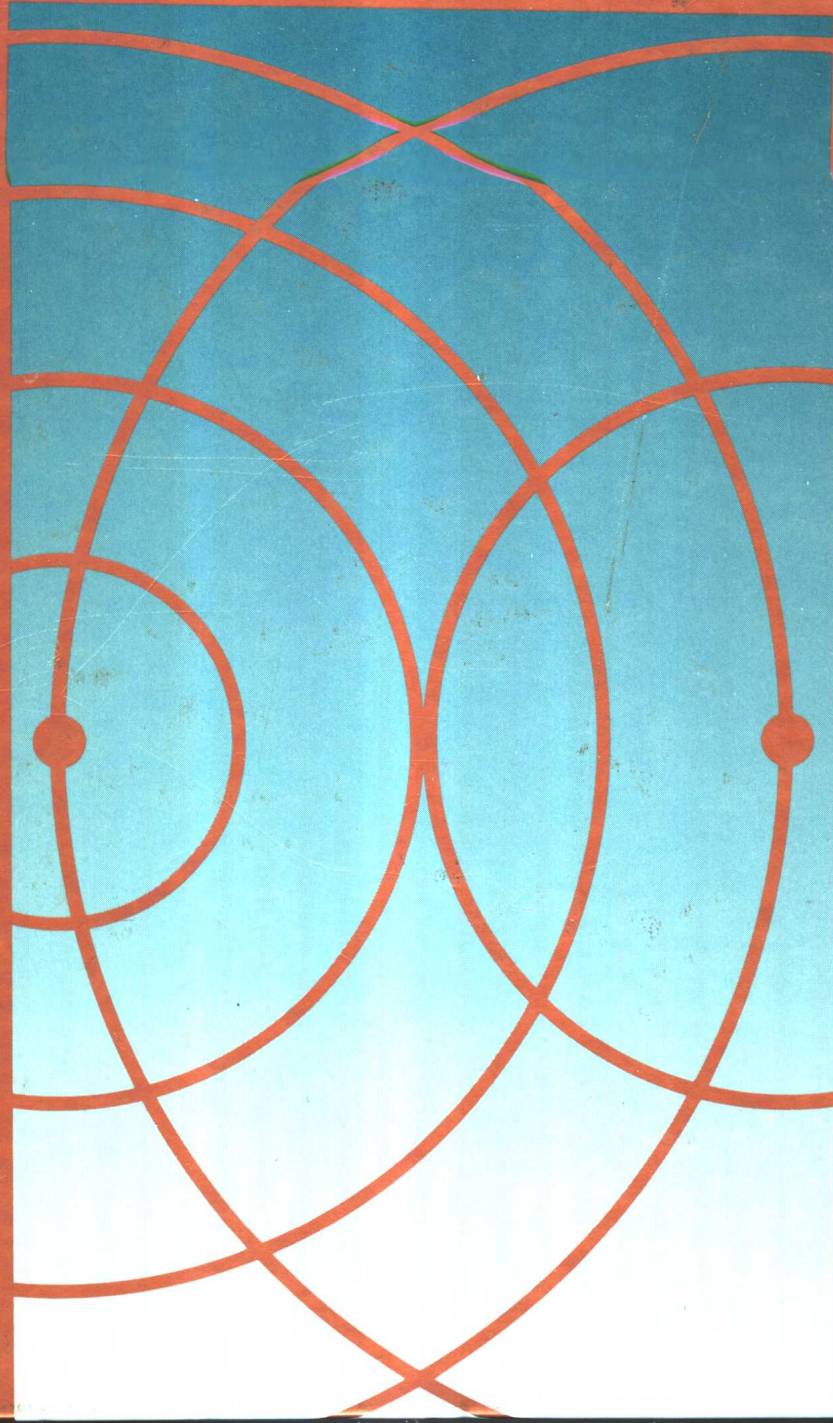


James O. Wheeler / Peter O. Muller

ECONOMIC GEOGRAPHY

SECOND EDITION



ECONOMIC GEOGRAPHY

SECOND EDITION

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Preface to the First Edition

This book is the outgrowth of our teaching of introductory economic geography for many years. The book builds on the foundations of economic geography as it existed in the 1950s and from the perspective of the theoretical developments of the 1960s as refined and redirected by the behavioral and applied economic geography of the 1970s. The book attempts to maintain both an empirical and a theoretical perspective. It is written for the students of the 1980s.

The organization of the book is intentionally somewhat different from that of most textbooks in economic geography. Rather than progressing from a discussion of the primary, the secondary, and the tertiary sectors of the economy, this book—after an introductory chapter describing economic geography—treats global population patterns and problems and the worldwide distribution of technology and economic development before turning to the analysis of spatial interaction patterns (transportation). After the analysis of transportation, we discuss the city and its economic activities, including retailing. One chapter is devoted to the changing economic geography of cities (metropolitan areas) in the 1980s. We then review the in-

dustrial location process, including basic location theory and the problems of industrial regions. The next part of the book examines the economic geography of energy, with particular emphasis on the United States, a topic not covered in detail in most other economic geography textbooks. After the treatment of energy, two chapters are devoted to the economic geography of agriculture, again with a focus on the United States. The last chapter describes how one goes about applying economic geography to real world problems. Although we feel this organization provides a logical progression, the book has been prepared in such a way that an instructor may assign the chapters in any order deemed appropriate. James Wheeler wrote Chapters 1 to 7, 9, 10, and 15; Peter Muller wrote Chapters 8 and 11 to 14.

We are grateful to many people who assisted in a variety of ways in the development and preparation of this book. We thank several economic geographers and others who kindly permitted us to reproduce portions of their published work, including maps and diagrams. We thank Nancy L. Muller for her forbearance and editorial suggestions in the preparation of Chapters 8 and 11 to 14.

Henry N. Michael, now retired from Temple University, graciously assisted with the photography in Chapters 8 and 11 on very short notice. Martha L. Corry, SUNY at Oneonta, and Dennis J. Dingemans, University of California at Davis, supplied insightful and very helpful reviews of the final manuscript. We also acknowledge Otis P. Starkey, with whom James Wheeler initially studied economic geography; Robert N. Taaffe, who supplied much encouragement in James Wheeler's early studies in economic geography; and Stanley D. Brunn, University of Kentucky, for his long-time support and assistance.

James Wheeler wishes to thank his colleagues in the Department of Geography at the University of Georgia for assistance of various kinds in the preparation of this book. Those deserving special mention include Joseph W. Bencloski, William H. Berentsen, Elgene O. Box, Louis De Vorse, James S. Fisher, R. James Heyl, Don R. Hoy, James B. Kenyon, Clifton W. Pannell, Merle C. Prunty, and Kirk H. Stone. Others who assisted with

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James O. Wheeler
Athens, Georgia

Peter O. Muller
Coral Gables, Florida
Dec. 18, 1980

Preface to the Second Edition

We are pleased for the opportunity to revise *Economic Geography*, to update the statistical material, and to introduce the findings of new research into this second edition. We have retained the basic structure and topical coverage of the first edition, and at the same time attempted to provide fresh insights into the changing forces driving the space-economy during the latter half of the 1980s.

A number of people have assisted us, directly and indirectly, as we have undertaken this revision. In particular, we wish to thank the following: Thomas J. Baerwald, Science Museum of Minnesota; William R. Black, Indiana University; David J. Cowen, University of South Carolina; David G. Dickason, Western Michigan University; John J. Ford, Shippensburg University; John Fraser Hart, University of Minnesota; Richard E. Lonsdale, University of Nebraska; Jeffrey Osleeb, Boston University; Thomas Rumney, State University College of New York at Plattsburgh; and Charles E. Tatum, Texas Southern University.

We gratefully acknowledge the perceptive advice and encouragement we received from several colleagues at our home departments. At the University of Georgia these include: William H. Berentsen, James S. Fisher, Thomas W. Hodler, James B. Kenyon, Ronald L. Mitchelson, Howard A. Schretter, and William K. Wyckoff; at the University of Miami these include Harm J. de Blij and Ira M. Sheskin. We also thank those who assisted with the preparation of parts of the manuscript: Thomas J. Baerwald (photographs), William H. Berentsen (photographs), Catherine L. Brown (photographs), Robin E. Datel (photographs), Audrey W. Hawkins (typing), D. Keena Lowe (proofing), Esther Nedelman (various tasks), and Robert L. Thayer, Jr. (photographs). We appreciate as well the efforts of those assisting us with the previous edition (they are acknowledged in the Preface to the First Edition), and their contributions continue to remain a part of this book.

Finally, we again express our gratitude for the support we received from the John Wiley

team throughout this revision project, notably: Debra Fratello and Richard Viest (production supervision), Ms. Cecil Golann (copyediting), Gigi Ghriskey and Lisa Heard (map coordination), Mark Mattson of Temple University (cartographic revisions), Pam McGreevy (permissions and liaison), John Patton (copyediting supervision), Ann Renzi (design), and (last but not least) Geography Editor Katie Vignery—whose track record since

1981 clearly reveals that she has become the best in the business at overseeing the publication of quality geography textbooks.

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September 17, 1985

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PART 1

INTRODUCTION

Chapter 1

The Field of Economic Geography

*No single parts unequally surprise,
All comes united to the admiring eyes.*

—Alexander Pope

INTRODUCTION TO GEOGRAPHIC ANALYSIS

The field of geography arises out of two fundamental human qualities. One is the need to know something of the local geography in order to carry out economic and social activities, whether hunting in prehistoric African savannas, growing wheat in twentieth-century Kansas, or robbing banks in modern suburban Chicago. This geographic knowledge of the local area, although commonly taken for granted by an individual, is nevertheless an important part of geographic analysis. It is important to know how and why individuals and groups behave within their local geographic environment. Knowing the local geography is not merely a convenience to an individual, but a necessity to the functioning of society and of the economy. Taxi drivers need to know their local city geography, and so do city planners.

The second human quality leading to an interest in geography is the natural curiosity people have about distant places. Since most

of us, astronauts and traveling diplomats apart, are relatively fixed geographically in our day-to-day activities, we see and know firsthand only a minute fraction of all there is to know about other places. When we do travel, we all too frequently gain merely a passing flavor, seeing the proverbial tip of the iceberg. A tribesman listening to storied legends of far-off places, a family member scanning issues of the *National Geographic* magazine, a salesperson discovering a new regional market area—all are reacting to and are interested in the geography of other places. With the quickening pace and widening influence of technology, the distinction is blurring between what is local and what is distant geography.

Before fixing on the nature of the field of economic geography, we must say a few words, by way of setting the stage, concerning the discipline of geography in general. We may usefully approach geography by considering two continua: a human-physical continuum and a topical-regional continuum (Figure 1.1). Any geographic study treats, in

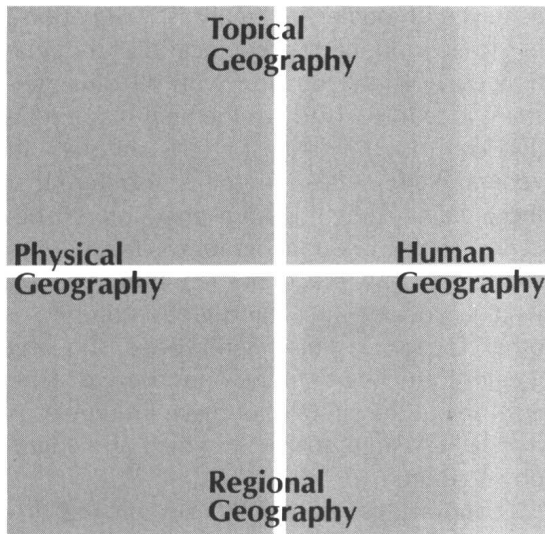


FIGURE 1.1 Two fundamental continua in geography are the human-physical and the topical-regional. All geographic studies may be located somewhere on this diagram, depending on whether the study falls more toward the human or physical end or toward the topical or regional end of the scales.

varying degrees, the physical environment and the human (cultural and social) environment. Economic geography, emphasizing human production, distribution, and consumption activities, naturally falls toward the human end of the scale. Even here, climate, terrain, soil, and hydrology, for example, will play a critical role at some level of analysis.

The second continuum represents an approach to the analysis of the spatial variation in human and physical elements.¹ This approach may be through examination of the geography of a *region*—the state of Vermont, the Tennessee valley, or San Diego, for example. Conversely, the emphasis may be on a particular *topic* of geographic significance, such as areal variation in income, soybean yield, or incidence of vice, all of which vary

from place to place and help characterize places. One might study the economic geography of a region, a second region, a third, and so on, until all the world was covered. On the other hand—and more sensibly—one could decide on the major topics of economic geography and describe the principles involved in the distribution of various kinds of economic activities. Basically, such a topical, or systematic, organization is followed here. The regional approach focuses on a large number of variables or locational characteristics in a limited area whereas the systematic approach analyzes a smaller number of functionally related characteristics over a wide area. At the extremes, the regional emphasis leads to intensive case-studies of minute areas having little general applicability; the topical approach can lead to highly generalized conclusions that do not apply very well to particular localized geographic problems.

Since these two continua exist in time, the study of geography may, therefore, be approached from a third perspective—the continuum extending from the most faded past to the present. All four end points of the two continua may be approached historically though physical changes through time are generally slower. Most historical-geographic studies are either longitudinal or cross-sectional. The latter treats geographic conditions, as they existed at some point, or “slice,” in time—say, the geography of Europe. Longitudinal studies seek trends over a period of time, such as the development and spread of wheat farming in the prairie provinces of Canada. Historical-geographic studies tend to be on the human side of the scale, and longitudinal research is usually systematic whereas cross-sectional analyses are commonly regional.

Geography is that discipline that analyzes variations in phenomena from place to place on the earth's surface. Although many more-convoluted definitions could be quoted or

¹The term *spatial* is used synonymously with *geographic* in these chapters.

4 INTRODUCTION

concocted, the bases of geographic study, as defined here, are (1) the ***description of locations*** on the earth (of whatever phenomena are deemed significant and at whatever scale or level of generalization is appropriate) and (2) the ***understanding of why*** these locations were selected and how they relate to other locations. The distribution of locations can be displayed easily by mapping, as with cities, coal mines, or highways. The interpretation of locations, a goal of this book, is something that can be achieved less readily, for there are several kinds of explanations that may be used.

The task of explanation in geography comes under the general heading of ***spatial analysis***, as the term has come to be used in contemporary geography. Spatial analysis is closely tied not only with cartographic techniques, but especially with more elegant statistical and mathematical models. Although the interest is in explaining empirical spatial patterns, the approach is frequently theoretical, in which general principles are developed and tested with regard to particular real-world data. For example, rather than explaining the location of a grocery store merely in terms of a sequence of specific historical changes in land use, one might call on appropriate elements of spatial-marketing theory dealing with the location of competition, changing modes of transportation, or changing market trends.

The basic distinction between ***site*** and ***situation*** is used in explaining geographic phenomena. "Site" refers to the characteristics inherent in the parcel of land on which the location occurs (the land occupied by the grocery store, a residential dwelling, a farm, and so on). Each site has advantages and disadvantages for different locational purposes, such as degree of slope, swampiness, percent of area in trees, soil productivity, or simply size of the land unit. Understanding geographic distributions at the local level is

achieved through site analysis. "Situation" has to do with the relative location—the relationships of one location with all other relevant locations. Through the analysis of relative location, the greatest efforts are made in geographic understanding. It is also here that the greatest difficulties are encountered because the first law of geography is that what is located at one place has an influence on what is located at a prodigious number of other locations, the nearer ones showing greater influence than the ones more distant. Sorting out the strength of these influences is a broad research goal with which all geography is concerned.

Economic geography focuses on the distribution of production, distribution, and consumption activities. The economic geographer wishes to display the spatial distribution of these economic activities and to understand why they are located as they are. A significant part of this understanding lies in recognizing how economic activities are interrelated in particular areas and how the activities are tied to other economic activities at other locations. For example, one may examine the situation (relative location) of a manufacturing plant through analysis of the location of raw-material sources and market location. At a different level, the economic geographers may wish to understand why this same manufacturing plant selected its specific site from the several alternative sites available. When the same basic questions and approaches of the geographers, as outlined here, are focused on the spatial patterns of ***economic activities***, we are dealing with the field of economic geography.

What is the relationship between economic geography and the field of economics? Edward Taaffe has answered that question by the illustration in Figure 1.2, which shows an overlap zone between these two fields. At the core of economics is economic theory. Part of the overlap zone is ***regional economics***, in

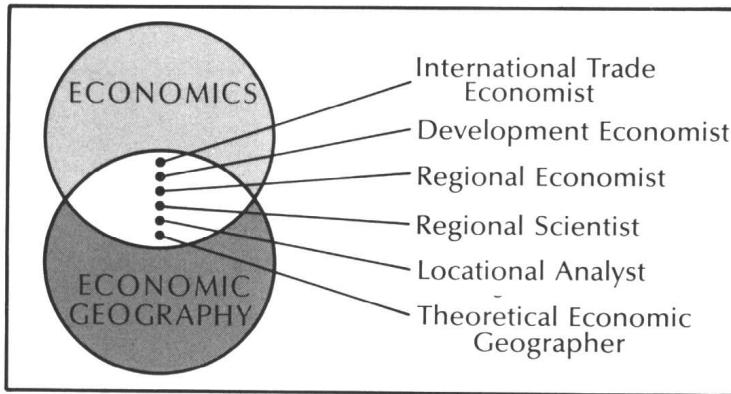


FIGURE 1.2 The relationship between economic geography and economics. *Source:* Taaffe, 1974 (full citation at end of chapter).

which economists use economic theory better to understand regions. Locational analysis, though based in the spatial perspective, is also of interest to economists, who have made major contributions in this overlap zone. Thus, the two fields, economics and economic geography, have separate core interests—economic theory and spatial economic analysis, respectively—but share certain common research concerns. The result is that, in this overlap zone, research in regional economics and locational analysis draw from the ideas and approaches of both economists and economic geographers.

SUBFIELDS OF ECONOMIC GEOGRAPHY

Just as human geography may be subdivided conveniently on the basis of subject matter into such areas as, for example, political, population, urban, and economic, so, too, may economic geography be reduced to its components. Figure 1.3 depicts a traditional breakdown of economic geography into topical clusters. **Primary economic activities** involve the extraction and utilization of resources, as in mining, forestry, hunting, and agriculture, in which humans and the envi-

ronment come into direct physical contact. Secondary activities are those that process, transform, assemble, or otherwise manufacture a wide range of goods and encompass everything from handicraft industries (basket and quill-making) to large, modern automobile assembly lines. The tertiary sector makes available to consumers all kinds of goods and services. A fourth, or quaternary, sector has also been increasingly recognized in the industrialized nations, with the explosion of knowledge and the growth in consumption of information-related services (from tax consultants to research “think tanks”). In addition to these main sectors of the economy, transportation and communications cut across and connect all four sectors. A final category of activities needs to be recognized. Although not strictly, or ever primarily, economic in purpose, governmental and institutional activities expend large sums of money. They influence and are influenced by many kinds of economic activities. In the several socialist—and particularly in the communist—countries of the world, these governmental activities exert a direct, controlling effect on the economy.

The service activities, the largest and fastest-growing employment component in the industrialized world, cut across the ter-

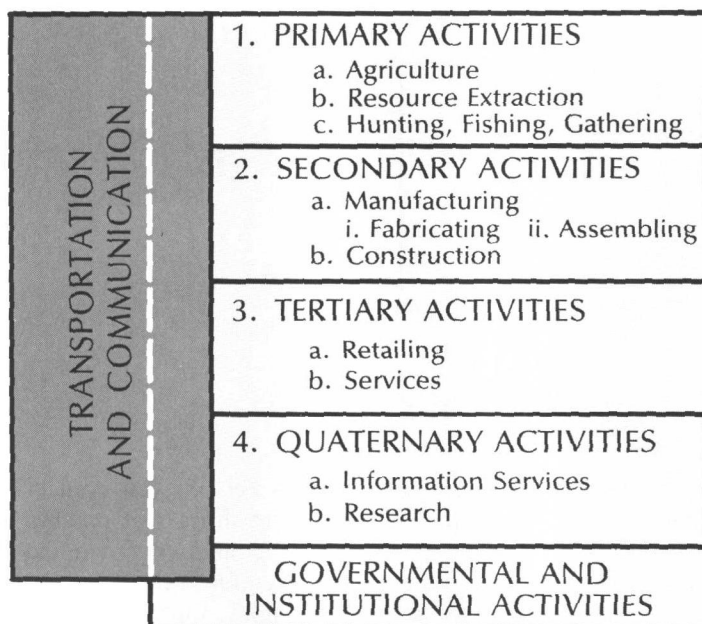


FIGURE 1.3 The subfields of economic geography cut across the primary, secondary, tertiary, as well as the quaternary sectors. Transportation and communications cut across each of these subfields and, in fact, connect them.

tiary and quaternary sectors. Included in the quaternary sector are the producer services, comprising planning, management, legal, financial, marketing, and accounting services for large corporations and governments. The producer services are among the most rapidly expanding employment categories in a country such as the United States or Canada.

ECONOMIC LOCATION THEORY

Economic geography is, then, an extremely broad field in the sense that it examines such a wide range of different kinds of activities. This breadth is shared, of course, by the discipline of economics. Like economics, economic geography is unified as a body of knowledge not so much identified by the subject matter studied as by a set of interlock-

ing principles or theories. In the case of economic geography, these principles and theories are those of the location of economic activities, known formally and collectively by the term **location theory**.

Location theory seeks to explain the basic, universal factors determining and influencing the location of all kinds of economic activity. Like all bodies of theory, it attempts to offer general explanations and cannot apply exactly to all locational decisions. All theories are based on assumptions, and when the assumptions in a theory do not correspond to reality, it is not that the theory is necessarily wrong, only that the theory does not apply well in that particular situation. In addition, different facets of location theory are in various stages of development and at different levels of verification. Location theory is constantly being modified through both deduc-