

THE DEVELOPMENT OF SCHOOL GEOGRAPHY IN CANADA  
AND THE UNITED STATES : ITS PLACE IN THE CURRICULUM  
AND RELATIONSHIP TO ACADEMIC GEOGRAPHY

by

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## ABSTRACT

### THE DEVELOPMENT OF SCHOOL GEOGRAPHY IN CANADA AND THE UNITED STATES: ITS PLACE IN THE CURRICULUM AND RELATIONSHIP TO ACADEMIC GEOGRAPHY

This study examines the development of geography as a school subject in North America over nearly two centuries. The examination looks at two key aspects: the place of geography in the school curriculum as a whole, and the relationship of what is taught as school geography to the discipline at a higher academic level. The impact of change in curriculum theory and in the academic conceptualization of the nature of geography and school geography is assessed.

Canadian school curricula in the social sciences and social studies are examined to determine whether or not geography has, in recent years, emerged once again as an important, independent, school subject. Provincial curriculum guides and courses of study are examined. The literature is surveyed to determine the principal forces determining the direction of Canadian school geography. In particular, the relationship between trends in American school geography and those in Canada is examined.

The findings of this study indicate that the place of school geography in both Canada and the United States is not clearly established at the present time. While geography continues to have a stronger place in the Canadian schools, its place has not been as firmly re-established as was anticipated a decade ago.

This is the result of:

1. Changes in social science curriculum theory, at both the elementary and secondary levels, that have developed in the United States in the last decade and that have influenced Canadian curriculum design;
2. The decline in interest among academic geographers, especially those at the leading edge of their discipline, in school geography; and
3. The continued failure of geographers to clarify the confusion over the nature of the discipline in a way that will permit more effective teaching of the discipline in schools.

As a consequence, the social studies tradition persists in North American schools and is tending towards multidisciplinary and interdisciplinary approaches, resulting in the isolation and decline of physical geography and the absorption of human geography into generalized social science.

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## Chapter I

### INTRODUCTION

#### 1:1 Purpose

This essay examines the development of school geography in Canada, with particular reference to the period since World War II. Of particular concern was an identification of the forces and trends that have worked to determine the nature of Canadian school geography and its place in the public school curriculum. Special reference was made to the development of curriculum theory as it relates to geography. Three organizing themes were identified for purposes of this examination:

1. Changes in social science curriculum theory, especially at the elementary level, that have developed in the United States over the last few years and that have influenced Canadian curriculum designers;
2. the seeming failure of geography to clarify the confusion over the nature of the discipline in a way that permitted more effective teaching of the discipline in schools;
3. the apparent decline in interest among academic geographers in school geography.

To these three points must be added a fourth, closely related to all of the others, the question of whether the so-called "new" geography, characterized by the High School Geography Project in the United States, that arose out of the restructuring of the social studies curricula during the 1960's, has established itself in Canadian schools.

## 1:2 Background

The place of geography in North American school curricula has fluctuated considerably over the 175 years that the subject has been taught on this continent. At times the teaching of geography has occupied a prominent position in schools at both the elementary and secondary levels; at others it has vanished completely from the curriculum. Following the development of "Social Studies" derived from the teaching of John Dewey, the teaching of geography as an independent school subject declined considerably from the 1930's on. In the social studies approach geography became linked with history at the core of social education. In the years that followed concern was expressed regularly by academic geographers and interested educators about the status of school geography. During the decade 1960-1970, concern with restructuring the social studies curricula led to considerable interest in the structure of geography and other disciplines. There was general feeling among geographers that this new emphasis would lead to a resurgence of geography as an independent subject in schools.

Despite the efforts of academic geographers and the rapid growth of geography programs at the university level, geography has not re-emerged as an independent subject at all levels and in all provinces in Canada. During the 1950's and 1960's, the number of departments of geography in Canadian universities increased ten-fold (anon., 1971). This was seen by many Canadian educators as providing an impetus for the growth of the discipline in the schools. Weir and Russell (1959:285) state that "there appears to be a direct correlation between increased demand for the teaching geography above the elementary levels

in all those provinces where departments of geography have been established in the universities." After a brief growth in the number of independent geography courses in Canada during the 1960's (Mayo, 1964), the status of school geography in this country at present is unclear. Some provinces retain the social studies approach, others have independent geography courses at the secondary level while retaining the social studies at the elementary. A few provinces are moving in the direction of interdisciplinary social education across all levels of child development and education. If there is any clear trend emerging it is in the direction of the interdisciplinary or multi-disciplinary problem-centred approach and away from the teaching of the subjects of geography and history. Curriculum models in English-speaking Canada have traditionally followed those of the United States while lagging slightly behind. Mayo (1964:91) states that "the history of geographic education in Canada closely parallels that of the United States due to strong American influence there." In addition to the strong influence of the United States, there has been considerable impact on Canadian school geography from the British, especially in the area of physical geography. The overwhelming influence, however, has clearly been American, both in determining the nature of school geography and in the more general area of social studies and social science curriculum development.

Before examining the development and current state of Canadian school geography, then, it is necessary to examine the evolution of geography in the United States as a school subject. Similarly it is necessary to examine the changes in American attitudes towards social education in the curriculum, especially during the last decade. Without reference to the development of these two elements in the United States, the contemporary status of school geography cannot be fully understood.

### 1:3 Methodology

The basic methodology of this study was an extensive literature search. Primary sources in the areas of geographic and curriculum theory were examined. Curriculum guides and textbooks in school geography were reviewed, with particular emphasis placed on the citation of geographic and curriculum theory references. Secondary sources were used to compare the findings of this study with those conducted earlier.

Other studies of the place of geography in North American schools have focussed on the status of geography at some particular time (Weir and Russell, 1959; Mayo, 1964). This approach was rejected for this study because it reveals little of the process of curriculum development. This is important in a study of Canadian school geography as British Columbia, Saskatchewan, and New Brunswick are currently reviewing and revising their social studies/ social science curricula. This process of revision takes up to five years. As a consequence, this study examined Canadian course and curriculum guides issued throughout the period 1965 to 1975 to try to determine trends in school geography.

## Chapter 2

### GEOGRAPHY IN THE AMERICAN SOCIAL STUDIES MOVEMENT

#### 2:1 Background

In the Twentieth Century, geography, with history, has been one of the two major thrusts in the social studies in the United States. As a school subject, social studies has its clearest expression in the 'pragmatic' school of educational philosophy which rests upon the teaching of John Dewey. Social studies involves the use of the social science disciplines to each moral or citizenship education. In Dewey's philosophy human beings, collectively and voluntarily, shape the world around them; by their actions they transform their environment (Dewey, 1916). As Saint-Yves (1972) has shown, this philosophic point of view is also a geographic one. Learning, for Dewey, is a product of the student's interpretation of life experiences. This is 'learning by doing'; "the student learns to extract experience from his immediate environment. This is why Dewey sees two vital subjects in school -- history, which examines a succession of past experiences, and geography, which examines the circumstances of present experiences"(Saint-Yves, 1973:26). Many of the modern views of the social studies see geography and history as 'unifying themes' (Massialas and Cox, 1966; Shinn, 1974).

#### 2:2 Social Education and the Social Studies Movement

The ultimate goal of the examination of life experiences described above is the transfer of what is learned to future life experiences as an effective,

functioning member of a democratic society. In America this has translated itself into a view of the social studies as citizenship training. A report of a committee of the National Council for the Social Studies states that "the ultimate goal of education in the social studies is the development of desirable socio-civic and personal behaviour. No society will prosper unless its members behave in ways which further its development" (Allen et al, 1962:315).

This theme is not a new one in American education. As early as 1798, Benjamin Rush (quoted in Thomas and Brubaker, 1971:9), in his Thoughts upon the Mode of Education Proper in a Republic, argues that:

1. Education must be indigenous to the United States, not a copy of any foreign country's system.
2. Education must inculcate national loyalty.
3. Amusements must educate for democracy.
4. Latin and Greek are not suited for American education.
5. Science should be substituted for Latin and Greek.
6. Education should make possible the development of national resources.
7. Emphasis should be placed upon history to support nationalistic culture. "

In Rush's ideas, reiterated often throughout the history of American education, may be found the roots of the modern social studies.

Human geography, with its emphasis on cultural and economic factors in national or regional development, fitted in nicely in the social studies. James (1962:42) prefaces his remarks on the place of geography in the social studies as follows: "all education, we may assume, is aimed at the transmission of the values

of our culture and the development of socially acceptable attitudes towards problems and conflicts." In the curriculum, this philosophy usually is expressed by an emphasis on the nation or local region as an appropriate focus of study. Such an approach is, almost inevitably, ethnocentric in its nature. In its extreme form it becomes chauvinistic. Warman (1967:172) claims for geography "a strength, a durability, and a singular quality which almost demand a place in the curriculum. To deny such a place will mean an appalling increase in geographic illiteracy which in a world looking to the North American continent's people for leadership may well prove to be disastrous."

To the shapers of the social studies movement, 'the development of socially acceptable attitudes'; was to be undertaken through problem-solving activities. Rugg (1921:253) outlines the basic characteristics of the social studies as taught up to the 1950's as follows:

- "1. All units of work shall be presented definitely in problem-solving form (as contrasted with the narrative, factual, compartment method, with questions at end of chapter which courses now employ). Factual settings are grouped around problems stated so as to force an attitude of further inquiry.

One of the most important implications of this principle is that all economic, industrial, social and political material shall be woven together in one course, as contrasted with three or more in current practice -- history, geography, civics, economics, etc.

2. At the present time, great gaps occur in the continuity and progression of history, geography, and civic courses. History is taught in certain grades but not in all; geography in but few. It is one of our central theses that there should be one continuous social studies course from the first grade to the twelfth, hence we are assigning material to each grade (tentatively working from the fourth) in such a way that the discussions of one grade shall be continuations of those of earlier grades but on more mature levels because of the increased maturity of the children.



3. Problems shall be based (not solely on the spontaneous interests of particular pupils) but on: 1. common experiences of children of that mental and social age; 2. personal appeals where possible, e.g. "What would you do if -- etc?" 3. alternative proposals where possible, to force comparison and systematizing of facts; 4. intellectual opposition to obtain interest; 5. much concrete human detail to obtain interest.
4. Constant practice shall be given in analyzing, generalizing and organizing, as material that pertains to the "problems" is collected and studied. We are applying laws of habit-formation to analytical thinking in the social field. The important generalizations in each field must be discovered and such a considerable amount of activity provided for pupils (excursions, collecting facts, making maps, making notes of observations, writing reports, etc.) that much practice will be given in analyzing, generalizing and organizing.
5. Problem-situations shall be presented first through current affairs. Only those historical backgrounds shall be developed with specialists in the validity of historical materials in each field (government, economics and social relations) decide are crucial for clear thinking about contemporary matters. Thus, history is not regarded as a "content" subject; -- only geography, government, economics, industry, anthropology, sociology, psychology are that. An article setting forth this theory will be published this year.
6. Historical backgrounds, involving a grasp of "time sequence," "continuity," or "development" of contemporary institutions and activities, are presented through "sharp contrasts." Sequence should move very rapidly in lower grades, somewhat more slowly in high school. Backgrounds are extensive, "thin," moving rapidly, and very concrete, in say, the fourth and fifth grades, becoming gradually more intensive, detailed, abstract and moving more slowly in the junior and senior high-school grades.
7. Problems, or the examples of generalization and organization which contribute to them, should recur in many grades, organized on an increasingly more mature level. Thus, some form of "layer" scheme may prove to be most effective to provide sufficient repetition.

Rugg implicitly demonstrates that history is a dominant factor in American social studies and that mode of thinking is pervasive in the social studies approach.

Despite the parallel thrusts of history and geography in the thinking of Dewey and others, the fusion of the two disciplines in the school curriculum took place at the expense of geography; by the 1960's history was being taught in almost 100% of American schools while geography was offered in less than 40% (Masia, 1963).

### 2:3 The New Social Studies

Development of the "new" social studies followed close on the heels of the "new" mathematics and the exploration of new approaches to the teaching of science and modern languages that took place in the 1950's. The change in the social studies reflected in part a change in approaches to teaching in general and in part the rapid growth of the social sciences in North American universities following the Second World War. Part way through this development process Fraser (1970:11) wrote:

"Probably the most obvious change occurring in the social studies curriculum is a breaking away from the traditional dominance of history, geography, and civics. Materials from the behavioural sciences -- economics, anthropology, sociology, social psychology, and political science -- are being incorporated into both elementary and secondary school programmes."

At the early stages of this process it was quickly recognized that some clear framework was required for integration of the social sciences into the school curriculum.

Simultaneously, major changes were taking place in the philosophy of education. During the twenties and thirties, the traditional view of the school subjects as reservoirs of facts and ideas, taught in the hope that they might turn

out to be useful, gave way to an emphasis on examining the real personal and social problems of the students. The academic disciplines were still seen as reservoirs of facts and ideas that could be drawn upon by students in examining those problems. By the sixties, this had begun to give way to "an emphasis on the logical order inherent in knowledge itself, on the structures of concepts and principles that characterize the various disciplines" (Belasck, 1963:95).

Jerome Bruner was, to a very great extent, responsible for introducing the above-stated approach to social education,

"Knowledge is a model we construct to give meaning and structure to regularities in experience. The organizing ideas of any body of knowledge are inventions for rendering experience economical and connected. We invent concepts such as force in physics, bond in chemistry, motives in psychology, and style in literature as means to the end of comprehension.... The power of organizing concepts is in large part that they permit us to understand and sometimes to predict change in the world in which we live. But their power lies also in the fact that ideas provide instruments for experience." (Bruner, 1962:120)

and:

"The curriculum of a subject should be determined by the most fundamental understanding that can be achieved of the underlying principles that give structure to that subject."  
(Bruner, 1960:31)

Most of the major social science/social studies curriculum projects of the 1960's rested upon this structural approach, whether they were of an interdisciplinary or single discipline approach. This required a close examination of the social science disciplines to determine their main organizing ideas and concepts and, consequently, their structure. The importance of the structure of the discipline approach is that it is concerned with constancies, recurring patterns, or elements that allow the student to bring these 'structures' into clear focus through examination of data (Shwab, 1962).

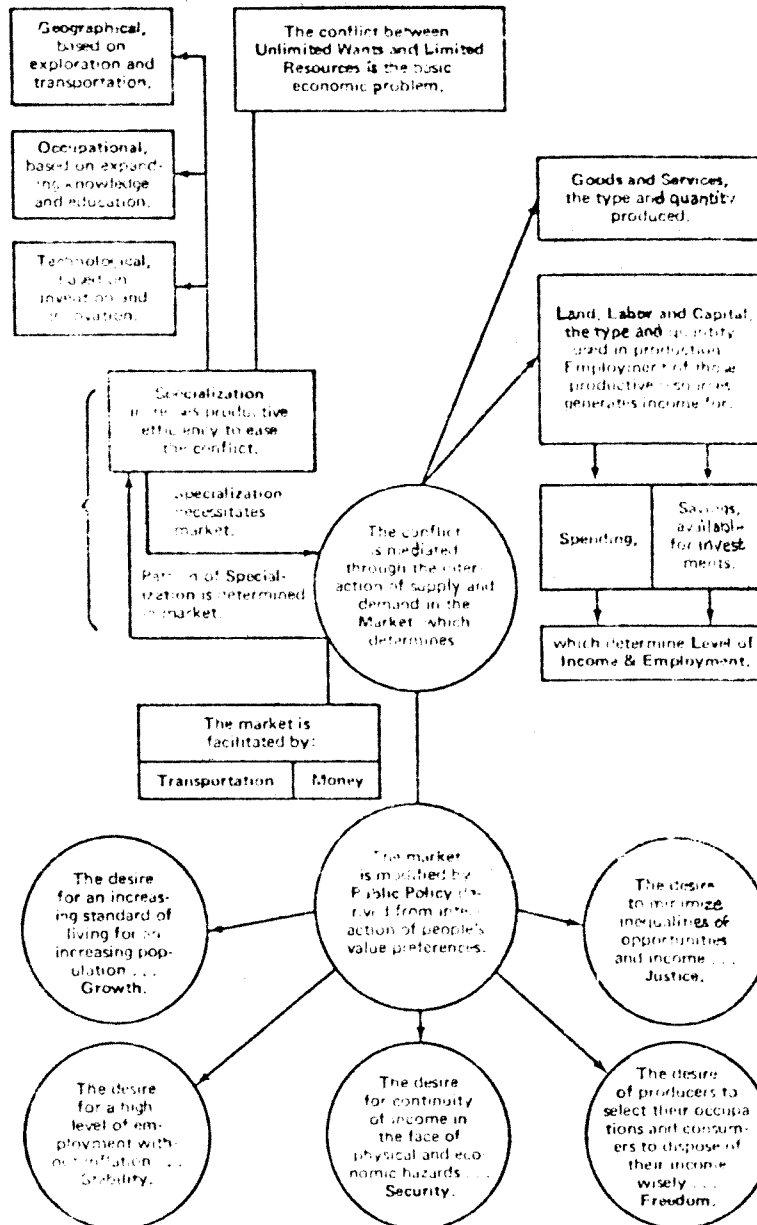
In the following years a number of models of the structures of each social science discipline appeared in print. Some of the disciplines lent themselves well to the structure of the discipline approach. Examples from economics, sociology, political science, and anthropology (Figures 1, 2, 3, and 4) are all theoretical structures underlying a multidisciplinary curriculum project directed by Senesh (1973) and published as Our Working World. The relationship between the structures and general systems theory is obvious and their theoretical basis lies in what social scientists strive to do, not necessarily what they have done.

Since 1970, curriculum development in the social sciences has tended to emphasize interdisciplinary or multidisciplinary approaches. As is demonstrated below, this has significant implications for the place of geography in the school curriculum.

#### 2:4 Definition of Terms

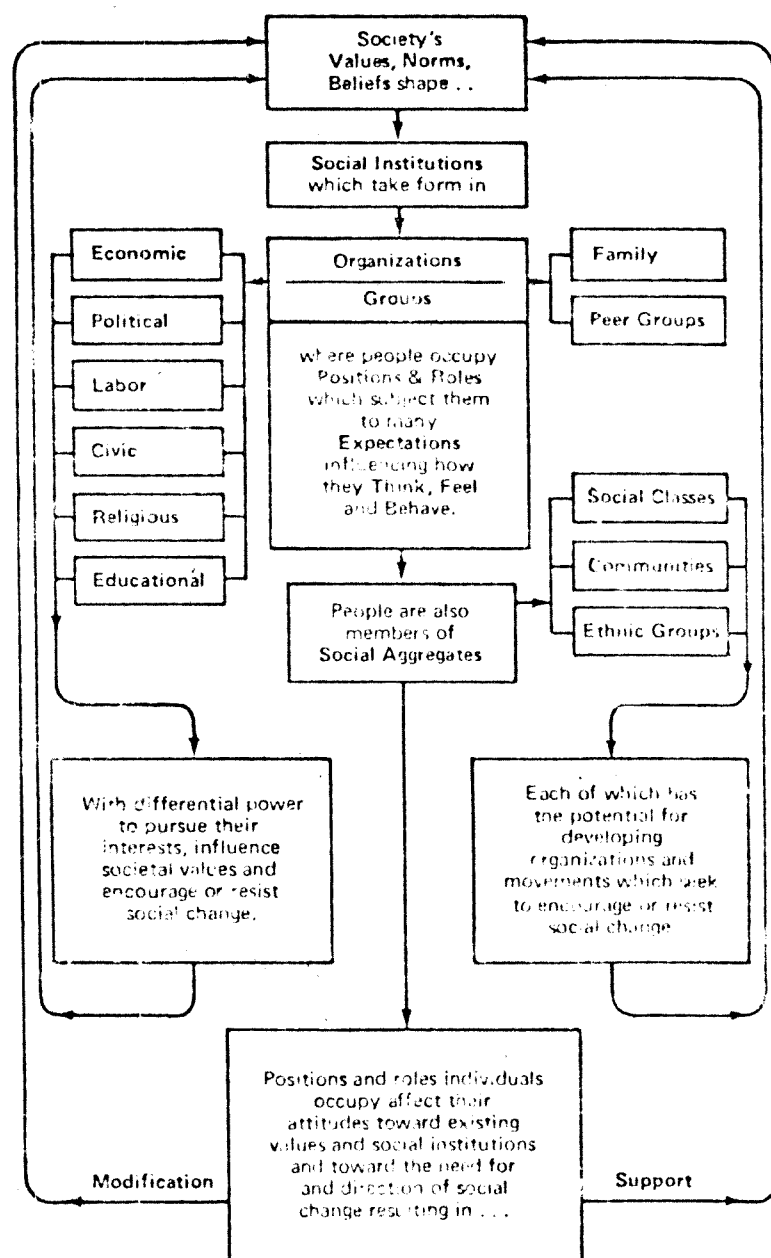
In the discussion of geography in the school curriculum that follows, the term social studies will be used to designate courses that follow the Dewey model based on a fusion of history and geography (and sometimes "civics"). In these courses, it is assumed that the basic objective is the development of the socialization of the students and that the content and concepts of the discipline are regarded as means to that end. The term social science (and occasionally natural or physical science) will describe those courses where the goals are designated by the nature of the discipline itself. Occasionally, the phrase social education will be used to describe the process of developing acceptable socio-cultural behaviour. Social studies may be seen as being a combination of social science and social education.

Figure 1  
The Structure of Economics



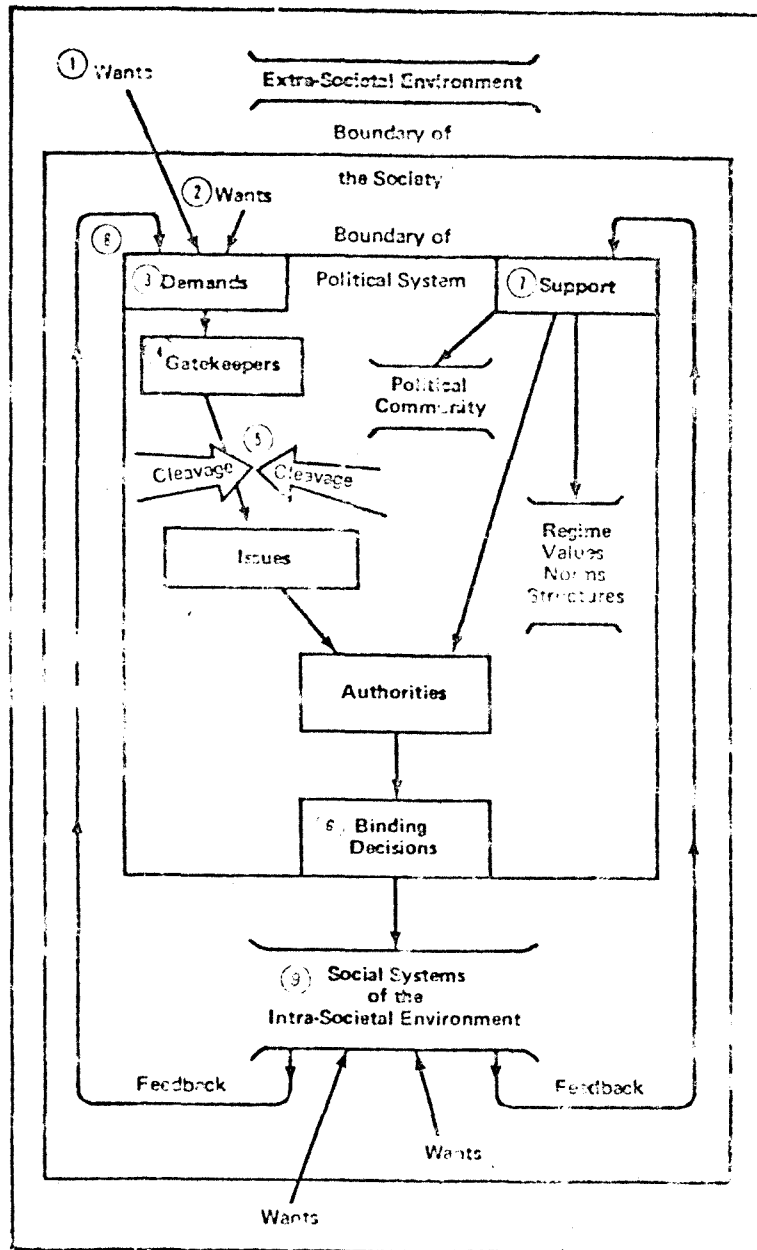
Source: Senesh (1973)

Figure 2.  
The Structure of Sociology



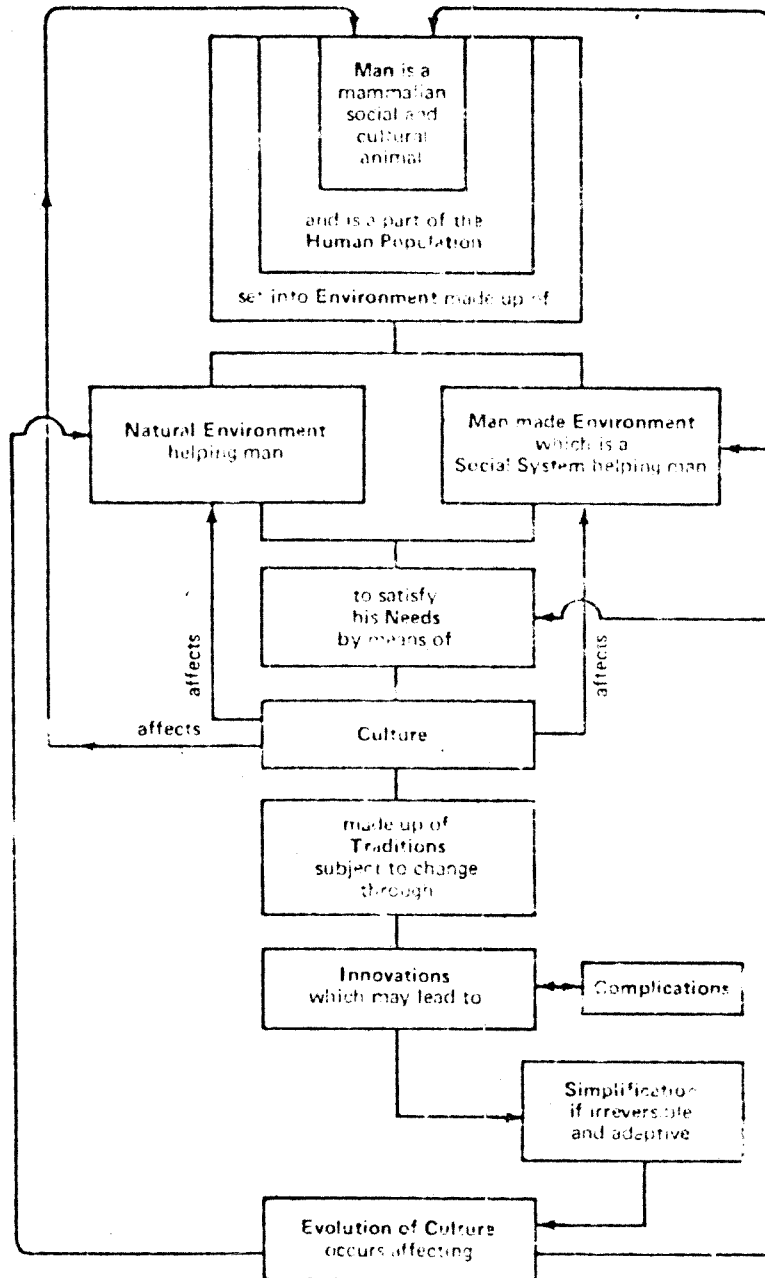
Source: Senesh (1973)

Figure 3.  
The Structure of Political Science



Source: Senesh (1973)

Figure 4  
The Structure of Anthropology



Source: Senesh (1974)



## Chapter 3

## SCHOOL GEOGRAPHY IN THE UNITED STATES

## 3:1 Relationships between School and Academic Geography in the United States

School geography in the United States has closely followed the development of the academic discipline in that country, in theory at least. At all stages in the history of the development of school geography in the United States two factors must be kept in mind: the tendency for school geography to lag behind the senior discipline at the universities; and the generally poor preparation of teachers in geography. The two are related; the frequency of paradigm shifts in American geography meant that many teachers trained in the ways of one approach to academic geography were still teaching in the schools after a new one had taken its place. Kennamer (1970:380-84) has summarized the sequence development of academic and school geography in the United States (Chart 1), noting that the evolution of school geography is characterized by: "The situation of academic geography having changed significantly, or being in the process of doing so while geography in the school curriculum is lagging behind."

This review of the history of school geography in the United States will trace the development of the subject in relation to the growth of the academic discipline and changes in curriculum theory. While it would be valuable to explore the role of teacher-training in the development of the teaching of geography as a school subject, there is insufficient data to do so fully. It must be kept in mind that most teachers of geography have for a long time been poorly trained in the discipline, often having only a naive popular view of the discipline.

## Chart 1

## Change in Geography

	The Discipline of Geography	Geography in the Schools	The Social Studies Curriculum
1970's	Spatial Distribution Spatial Interaction	*Spatial Characteristics of Human Earth System, New Regional Analysis	*Multi-Disciplinary, Cross-Disciplinary
1960's	Cultural-Historical Region-Formal and Functional	Regional Geography Coverage of World	Discipline Oriented, Structure, Inductive, Inquiry (National Projects)
1950's	Elements of Geography: Physical and Cultural		
1940's	Descriptive Regional Geography	Descriptive Regional Geography Geographic Factors Meant Physical Aspects, Not Human	Child Centered, Societal Needs, Fused, Core Curriculum
1930's	Morphology of Landscape Possibilism - Geography as Human Ecology	Rise of Economic and Commercial Geography	
1920's	Physiographical Studies Environmental Determinism	Rise of General Science Decline of Physiography	NEA Commission on Social Studies
1910's	Physiographic Emphasis		
1890's	William Morris Davis and Physical Geography at Harvard	Physiography in High Schools	Committee of Seven
1870's	Human Element and Deterministic Thesis		Discipline Oriented, Descriptive, Deductive
1860's	Physical Geography and Natural Teleology	Physical Geography in the High School - Guyot and Maury Influence	
Mid-1800	Rise of Physical Geography	Descriptive Facts within Political Regions, Memorization	
1820's	Systematic	Preparatory Schools Descriptive and Locational Content	
Colonial America	Descriptive Mathematical	Descriptive Mathematical Use of Globes	

\*Tentative and yet to be determined

Source: Kennamer(1970)

It is to this that Meyer (quoted in Tomkins, 1965:8) refers when he states:

"Progress in geographic education will require a ruthless destruction of the naive environmentalism of the great majority of American teachers."

The role of the classroom teacher in maintaining the gap between academic and school geography is a constant factor in the history of social science education in the United States. On the other hand, and in a partial defence of the classroom teacher, there is evidence to indicate that academic geographers have both failed to clearly communicate the nature of their discipline to school teachers and have actually reinforced some of the naive conceptions in their attempts to write for school use.

An examination of the development of teachers' concepts of geography would be a major research task in itself. Such a study would properly belong to the realm of sociology of knowledge and would examine influences in the form of university instructors and texts on teachers of school geography. Another approach would be to explore Rostlund's (1956) notion that the teacher is only an expression of society and that content of geography courses is socially determined. Both themes are beyond the proper scope of this paper but will be touched on throughout.

### 3:2 American Geography in the Nineteenth Century

Geography has been a part of American education since the end of the 18th Century. The earliest geography courses were offered in higher schools and most of the histories of American school geography (Brigham and Dodge, 1933; Mayo, 1964; Warntz, 1964; Kohn, 1970) focus on geography at the secondary level.

Through an examination of text books in use during the nineteenth century, Brigham and Dodge (1933) identify two main trends in school geography. The first half of the century was characterized by descriptive physical and world geography of a sort described as 'practical' and learned by rote-memorization of facts about places. In 1795, the Reverend Jedediah Morse published the first important American geography text, Elements of Geography, which consisted of 144 pages of descriptive physical geography, two small maps, no pictorial illustrations, and brief incidental mention of historical events. In the same year, Nathaniel Dwight published his Short but Comprehensive System of the Geography of the World. William Woodbridge's Rudiments of Geography was released in 1821. "The descriptive physical geography of each of these texts was flavoured with the new American consciousness. All went through several editions" (Thomas and Brubaker, 1971:9).

Just as today, there was considerable confusion as to the nature of geography and the role of school geography in preparing students to study in the universities. Warntz describes how Harvard University in 1804 faced this situation by forming a committee that examined, among other things, entry standards in geography. The following is a definition of geography and the expected outcomes of teaching geography in 1804 as reported by the Harvard commission:

"May it belong to geography to shew the parts of the earth, where the most curious and valuable of these bodies are principally found, to compare the productiveness of different regions with respect to them, and to notice the influence of climate upon them, or those properties of them which seem to depend only upon situation. And should it not be relatively to these bodies confined to what is requisite for a general, intelligible account of these circumstances." (Warntz, 1964:29-30)

The early nineteenth century approach to school geography was clearly utilitarian in nature, and at least in part, rooted in the needs of early nation-building and expansion.

Following the American Civil War, the bulk of school geography was built on the study of systematic physical geography, based on Fitch's Outlines of Physical Geography (Brigham and Dodge, 1933). To this must be added the development of land survey and geological exploration that accompanied the expansion westward of the United States. Pictorial books and newsmagazines utilizing the new technique of photography contributed greatly to the growth of popular geography during the same period. This period saw a close relationship between geography and geology, culminating in the development of the science of geomorphology. William Morris Davis played a major role in the preparation of high school courses of studies up to the first decade of the present century. While Davis' approach to geography greatly influenced academic geographers, the courses he designed had little notable success in the schools.

"Most students found them dull and uninteresting, especially when taught by teachers who were poorly trained in geography as a laboratory science. They were unable to handle the subject matter of the course properly. Before long, interest in these courses waned and by 1910 the study of physical geography no longer played a significant role in the high school curriculum." (Kohn, 1970:2 8)

The most significant and lasting of Davis' contributions to high school geography was the emphasis he placed on "man-environment relationships" which has survived to the present time.

The available literature focusses on the place of geography in high school curricula, obscuring several important aspects of the early teaching of geography in North America. The first is that the great majority of school leavers received no secondary school education whatsoever. Secondary schools were more closely aligned with the universities and academic geography than the public schools. Elementary school classes were taught by persons with, at the best, high school education. Many of these teachers had studied the world regional geography of the first half of the century. This is the second major aspect, the lag effect which was an important factor in the failure of high school teachers to successfully implement Davis' new geography courses. Lag effect and the difficulty teachers have in coping with shifts within the discipline are recurring phenomena in American school geography.

This does not imply a lack of continuity in school geography as a result of changes in the discipline. Rather, there appears a common thread in American school geography throughout the Nineteenth Century that survives even to the present day. This is the tendency to emphasize locational and descriptive facts within political regions that Kennamer(1970) identifies as emerging in the early 19th century. This type of school geography has been labelled "caples and bays" or "sailor" geography.

During the period of national expansion in the United States and of exploration in Asia and Africa, this approach had a great deal of popular appeal. This appeal to the curiosity and imagination of the American people was fed to a great extent by the dispatches of journalists like Henry Stanley,

by the novels of writers like Herman Melville and Joseph Conrad, and by the emergence of photographic features in the Sunday supplements. The gradual evolution of the National Geographic Magazine from a scholarly to a popular journal reflects this tendency.

### 3:3 American School Geography from 1900 to 1960

The growth of general science at the start of the Twentieth Century led to a call for a new model for school geography. The "science" of environmental determinism was heralded as the new trend. Dodge (1913), reviewing the state of the geographers' art in America, sounds remarkably like one of the "new" geographers of half a century later calling for the replacement of "capes and bays" geography.

"Within recent years there has been a great change in public opinion as to what the purpose of school geography should be. Formerly we were satisfied if a child's mind was well stored with facts of "sailor geography" which he had labouriously memorized. The recent emphasis in school work of the reasons for geographic facts has come to the front because we have seen that while the facts may change in quantity they remain true in quality, in as much as they are the result of certain world-wide general principles, as true today as they have been throughout all time. It is of more value, therefore, for a student to understand the reasons for the growth of a city such as New York or Chicago because of the geographic conditions that have favoured it, than it is for him to know the approximate population of these cities at the last census or the names of the railroads that enter them."

Two major developments in academic geography prior to the Second World War also served to reinforce the older model of school geography. The first of these was the close identification of history with geography in the development of the environmental determinist school of geographic thought.

H.B. George (1901) and Semple (1903, 1911) had major impact on the teaching of social studies. In the hands of less sophisticated teachers, American History and its Geographic Conditions and other texts, reinforced the old geography.

An examination of a highly successful junior high school geography text of the period, The World Around Us (Thralls et al, 1962, first published in 1958) demonstrates the culmination of the traditional development of school geography in the United States. In the introduction to the teachers' manual, the authors state that:

"Modern geography deals with the arrangements, distributions, associations, and relationships among people and their natural cultural environments (sic). Its emphasis is on an understanding of people, their land, and how their activities affect one another...." (Thralls et al, 1962:3)

The influence of Hartshorne is clearly evident in the above statement. One would have to go further back, to Semple or Huntington, to find the roots of the one that follows it. The authors selected the chapters of their book on the basis of nine climatic zones which they identify with catchy titles such as "Hot, Dry, and Dangerous". Their rationale for using climatic zones as the basis of the text is given as follows:

"More than half a century ago professional geographers began to see that they could gain new insights into mankind and his earth if they gave closer attention to the different natural environments in which men live....They probed, analyzed, and classified many things that go make up any natural environment.... They found that the most universal factor of environment, for purposes of analysis and classification, was climate. Man can alter many things in his natural environment, but climate he must learn to live with as he finds it."  
(Thralls et al, 1962:4)

Capes and bays and environmental determinism are not always clearly linked but in the example just cited, that theory is expoused as a justification for



teaching descriptive geography. Thralls (1958) is also the author of a widely used text on the training of teachers of school geography.

Thomas and Brubaker point out that this type of geography curriculum had a very high degree of acceptance among teachers and parents, as well as educators.

"Descriptive geography, like narrative history, has been a very familiar subject in the lives of older generations so that both teachers and parents are prone to accept such a geography program as suitable fare in the elementary school. It is far safer from attack by parents than are curricula focusing on controversial social issues of the community or on personal-social adjustment of children and their families.

...teachers also find it easier to teach and the outcomes easier to evaluate than is true of other, more innovative programs...

In summary many schools include a heavy offering of descriptive geography in their overall social-studies program . . . because the study of (such) geography is a familiar and non-controversial tradition in American education, and because many teachers find (it) convenient to teach and evaluate."

(Thomas and Brubaker, 1971:184)

Of far greater and longer lasting significance was the publication of Hartshorne's The Nature of Geography (1939). The definition of geography as the study of the distribution of unique phenomena upon and of "areal differentiation" of the earth's surface provided an immediate acceptable justification of the teaching of geography through an inventory of facts and places. Hartshorne's reaffirmation of his "exceptionalist" view of geography (Hartshorne, 1959) in the face of rapid growth of the social sciences helped to cement "cape and bay" regional geography in school geography curricula.

It is an accepted principle in the sciences that the frequency of citation of a reference is a significant measure of the importance of that material. An examination of both text books and curriculum guides reveals the heavy dependence on Hartshorne for a definition of geography as taught in the schools. A selection of these is reproduced below:

"An understanding of geography involves an appreciation of the marked differences which make one place so distinct from another. . . . What geography seeks is no less than an overall understanding of the personality of a place, a compilation of all those phenomena which make one location different from all others." (Cressey, 1962:96)

"The interaction between culture and environment is the focus of geography; it is in fact, the source of its subject matter."  
(Joyce, 1965:33)

"Geography is that field of learning in which the characteristics of particular places on the earth's surface are examined. It is concerned with the arrangement of things and the association of things that distinguish one area from another." (James, 1962:45)

"The student of geography should be guided towards an awareness that every place is unique." (Broek, 1965:73)

"Geography is the study of differences among regions and the particular interactions between men and their environment which make each region unique." (West, 1971:289)

Hartshorne (1939:451) notes that "if. . .the purpose of geography is to gain a knowledge of the world in terms of the differential development of its different areas, the task of studying regions as areal divisions of the world, is not subject to question." The above cited views of the nature of school geography offer proof that Hartshorne's approach was not "subject to question".

In addition to the areal association and differentiation themes developed in the world and regional courses, another, older theme in American geography reasserted itself during this period. This is the man-land relationship approach

approach which had its roots in the writing of Davis and which struggled to overcome the stigma that environmental determination placed upon it. Some of the school texts like Carter's Man and the Land (1963) never adequately resolve this struggle, though Man and the Land more clearly expresses its author's ethnocentrism and ideology than occasional determinist lapses.

This, in brief, was the state of North American school geography at the start of the 1960's. School geography at this stage represents the culmination of nearly a century and a half of "capes and bays" or "sailor" geography given increased authority and credibility by the writings of Hartshorne (1959, James (1962) , and other academic geographers. Texts and courses of study emphasized comparative and descriptive regional studies, augmented by slight variations on this theme stressing other regional models such as the culture realm (James, 1966).

Stress in school geographies was placed upon content, chiefly in the form of descriptive inventories of places and things. Concepts, particularly analytic concepts were poorly developed and articulated. Only the region (Whittlesey, 1954) was well established as tool for school geography and even so, its use was more often as a descriptive rather than analytic device. Map skills, "geographic literacy", were poorly developed in most students leaving North American secondary schools (Krug, 1967:254). Gunn (1970:41) summarizes the major features of what he calls the "old" geography as follows:

- "1. Dominant conception of the child as passive and receiving.
2. Encouragement of memorization.

3. Emphasis on static conditions.
4. Tendency to team up with history and geology.

Gunn (1970, 1974), Krug (1967) and many others have concluded that geography was indeed in a sorry state in American schools in the mid-1960's. Neither students nor teachers were pleased with the geography offerings in the social studies programs. That is, if geography was offered at all. Table 1 shows the neglected circumstances of school geography in 18 north-central states of the U.S.A. in 1961. Mayo (1964) offers similar evidence of geography's neglected state in the United States in the early 1960's.

Table 1  
Social Studies Offerings by Grade Level in North Central U.S.A.

Course	Per Cent of Schools Offering in				Per Cent Schools not Responding*
	Grade 9	Grade 10	Grade 11	Grade 12	
Civics	40.2	4.6	...	...	60.4
World History	14.9	85.3	25.0	20.7	4.6
Geography	24.3	15.2	15.8	15.5	63.4
U.S. History	0.8	6.0	87.2	14.9	0.8
Government	...	...	10.9	50.3	48.9
Problems of Democracy	0.8	2.2	8.4	50.0	47.3
Economics	...	2.2	18.2	50.0	46.5
Sociology	0.3	1.6	8.2	14.7	84.2
International Relations	0.3	1.1	4.6	11.4	87.0

\* Invariably means that the course is not offered. The total percentage for a course usually exceeds 100 because many schools allow a course (rows) to be taken by students in adjacent grade levels. The total percentages for grades 10-12 (columns) exceed 100 because some schools offer a choice of courses at these levels.

Source: Masia (1963:205-212)

Mayo (1964) states that the decline in the status of geography in American schools is directly a result of the growth of the social studies movement.

By the early 1930's some geographers were beginning to take notice of the evaporation of their discipline as an independent subject. Russell (1933:540) decries the loss of a distinct geographic approach in the new social studies courses:

"In some cases this part of the curriculum is entitled social science. In others it is social studies. These courses are admirable in their purposes and aims, but they fail in making plans for the achievement of a goal which is outstanding in geography; namely a knowledge and appreciation of the likenesses and differences in the problems of people in the various sections of our country and among the various nations of the world as related to the natural environment.

By 1934 less than 5 percent of all American high school students were electing to enroll in geography courses (Mayo, 1964).

The social studies approach was clearly more appealing, both to teachers and students, than the traditional approach to the teaching of geography in American schools. Mayo (1964) points out that the popularity of the social studies approach reflected several factors. Most important was the concern in social studies for the needs of the child and provision for child growth. The shift in emphasis away from concern with the facts and material content of the academic disciplines was also an important factor. That the social studies model was adopted at a time when the emphasis was on human and economic geography contributed to the decline of the discipline as a school subject, the unclear

boundaries and overlap in context with history and the social sciences means that there was to be no strong emphasis on the geographic tradition in the social studies in the United States.

Demands from university professors and specialist teachers of geography for a new school geography became increasingly loud during the first half of the 1960's. Academic geography had undergone significant changes in philosophy and methodology. The search for a new approach to school geography

"...bespoke a recognition that traditional high school geography in the United States lagged far behind contemporary professional thinking and research in the discipline. Nothing short of a major effort to improve the quality of high school geography could possibly bring about student exposure to the viewpoints, the problem orientation, and the methodology of contemporary professional geography." (Patton, 1972:52)

At the same time sweeping changes in elementary social studies curriculum theory demanded a new approach to school geography as well. The result is what is described as the "new" geography.

### 3:4 The "New" Geography in the School

Two recent articles in the New York Times contrast the new approach to geography with the old:

"Geography, old style, is that subject the student bumps into in elementary school in order to learn the capital of Arizona, the annual rainfall in the Amazon Basin, or the duration of the Laotian monsoons. The new geography is much less descriptive than the traditional geography, and much more analytical, theoretical, and mathematical." (January 8, 1968, quoted in James, 1972a)

and,

"...the old descriptive concept of geography, which confronted so many generations of American children with a cold and lifeless picture of the world is giving way to new, sophisticated approaches that stress logic and inquiry rather than remote memorization." (June 3, 1973)

The expectations of educators and academic geographers for the teachers of the "new" geography are clearly stated by Jackson and Forrester (1974:ix).

To them geography

"...now enjoys a more scientific foundation, has a more practical orientation and understanding about phenomena on the earth's surface and their complex interrelationships. These new methods, approaches, and attitudes must be put over by the teacher to students in high schools; they are not just for academic consideration in universities."

The fulfillment of these goals and expectations in the classroom requires new approaches to the question, "what is geography?", changes in the training of teachers of geography, new curriculum models, and the development of new materials, methods, and techniques of instruction.

Gunn (1970:41) has listed what he considers to be the most significant features of the "new" school geography:

1. Dominant conception of the child as active and communicating.
2. Encouragement of enquiry.
3. Emphasis on dynamic situations.
4. Guiding concern with models and general principles.
5. Tendency to team up with social sciences generally, and with physical and biological sciences generally."

How one learns to think geographically clearly emerges as a goal of the new geography that is as important as the acquisition of geographic information.

From the previous discussion of the traditional place of school geography in North America and from the descriptions of the "new" geography outlined above, it is possible to recognize four major processes that have coalesced to redefine the place of the study of geography in the social studies curriculum.

1. The dissatisfaction of geographers, both in the schools and in the universities with the old school geography. School teachers and students at both the elementary and secondary levels were finding geography courses to be dull. Academic geographers were disappointed with the quality of geographic skills and thinking in students entering university programs.
2. Changes in the nature of academic geography. Geography became simultaneously more concerned with problem-solving through explanation and in the development of models and theories to explain and predict interactions of phenomena in space.
3. Developments in learning theory research. Geographers became increasingly aware of new approaches to learning. Discovery or inquiry approaches were recognized as having immense applicability to the learning of geographic skills. In addition, the work of Piaget and others began to show clear patterns in the development of learning in children. This research provides valuable guidelines for the introduction of map skills or for appropriate ages at which higher-order more abstract questions may be asked.



4. Changes in approaches to the social studies curriculum at all levels. This is especially true of the elementary schools. Geography and history as the two classical disciplines of North American social studies were rapidly being replaced by an interdisciplinary social science approach focussing on mankind. This approach rests heavily upon the work of Jerome Bruner and his colleagues at Harvard. Emphasis was placed upon problem-solving approaches and decision-making based on critical thinking about society. To the content orientation of earlier social studies curricula was added a value or effective component.

### 3:5 The Structure of Geography

Bruner's work came to the attention of geographer McNee (1967:31) who advises that:

"Geographers can and should adopt many of the ideas of instruction being advocated by Jerome Bruner. It is more important that the student learn to think like a geographer than it is for him to know a lot about the earth. Learning to think like a geographer means many things, but above all, it means absorbing the conceptual structure of the discipline."

Geographers concerned themselves with the structure of their own discipline with somewhat limited success. Thomas (1964), Helburn (1968), Warman (1964), Nishi (1966), Greco (1966), have all attempted to deal with the problem of identifying the basic ideas and concepts that underlie geography as an academic discipline. Here confusion as to the nature of geography complicates matters severely; geographers proceeding in the fashion of the

social scientist while dealing with, for the most part, ideas developed or established through the writings of Hartshorne, James, and others who reject the notion of geography as a nomothetic science. All of these attempts to define a structure of geography begin with an identification of what the authors perceive to be the basic organizing concepts of geography.

In a review article, Nishi (1966:328-331) identified the following concepts, derived from a spate of redefinitions of geography, as providing the basic structure of geography:

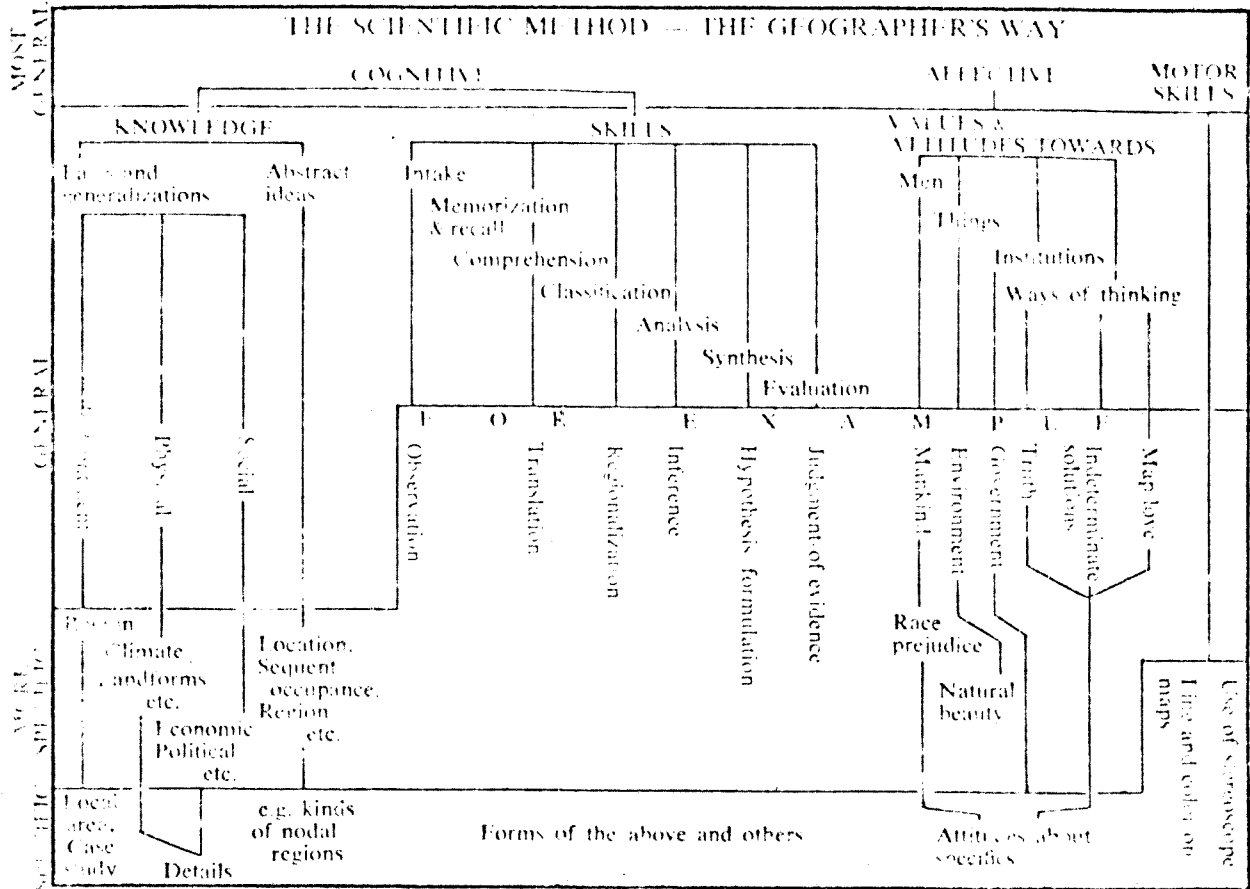
- "1. Spatial distribution
2. Areal coherence
3. Regional concept
4. Location theory
5. The cultural viewpoint
6. The human relationship to a natural resource
7. The dynamic nature of geographic analysis
8. The importance of time
9. Spatial interaction
10. Man-land relationships
11. Global interdependence."

Nishi's "concepts" very close parallel those identified earlier by Warman (1964:14-22):

- "1. Globalism
2. The Round Earth on Flat Paper
3. The Life-layer
4. Areal Distinctions, Differences, and Likenesses
5. The Region
6. Resources Culturally Defined
7. Man the Chooser
8. Spatial Interaction
9. Perpetual Transformation."

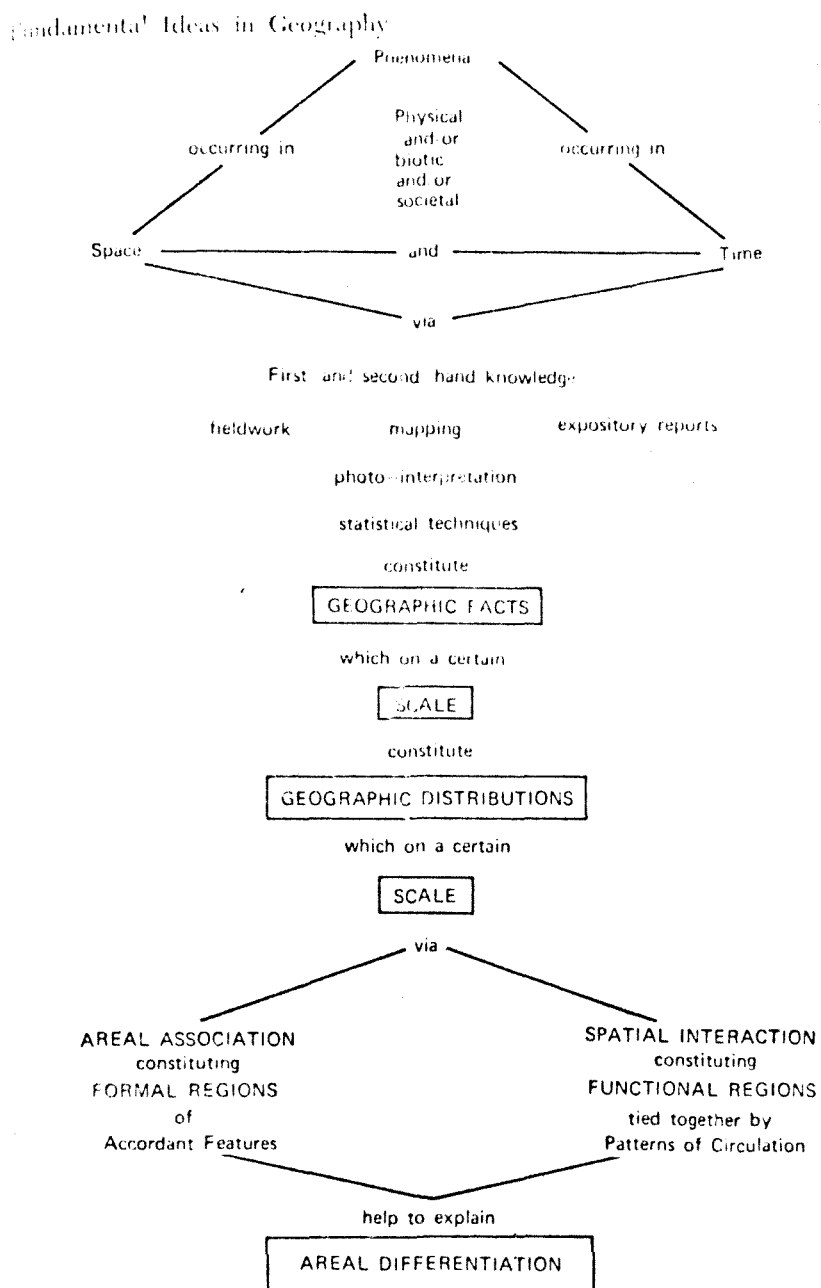
Other authors (Helburn, 1968; Greco, 1966; Thomas, 1964) have attempted to portray the structure of geography graphically or systematically in keeping with the models of the structures of the other social science disciplines. These three models are shown in Figures 5, 6, and 7.

Figure 5  
Helburn's Structure of Geography



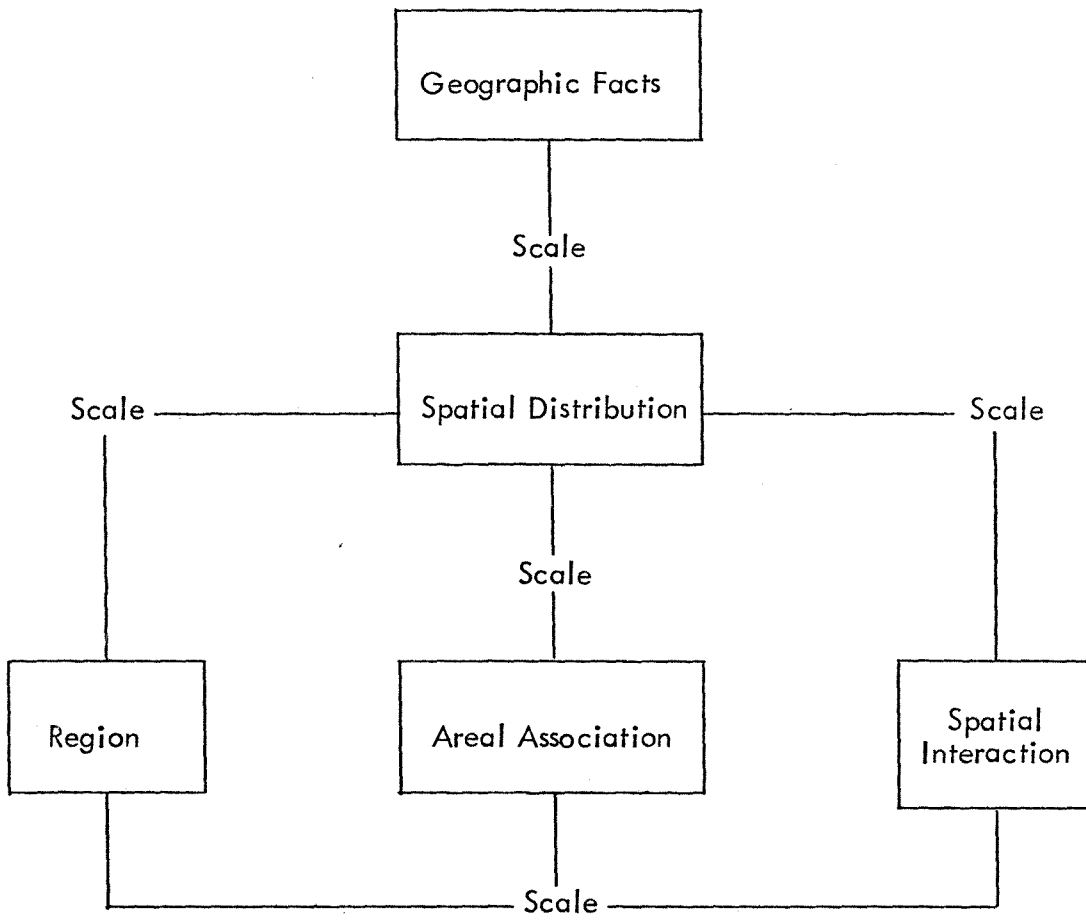
Source: Helburn (1968)

Figure 6  
Greco's Structure of Geography



Source: Greco (1966)

Figure 7  
Thomas' Structure of Geography



based on Thomas (1964)

As may be readily seen, these models share many of the same basic organizing elements of the two identified above. Helburn's model is unique in that it attempts to relate the structure of geography to Bloom's (1956) taxonomy of educational objectives.

Thomas (1964:45) summarized the early attempts to develop a structure of geography that could be used in the development of the school curriculum as follows:

"In general, the system follows this structure. First we have the notion of a geographic fact. Geographic facts, once defined may be expanded into the concept of spatial distribution. The notion of the spatial distribution may be developed in turn into the concepts of spatial interaction and areal association. Then the concepts of the region may be synthesized from the notions of the spatial distribution, spatial interaction, or areal association, depending upon the type of region that one wishes to treat....

The concept of scale may be treated as another basic concept which enters the system at an elementary level and then continues to operate throughout it modifying particular geographic facts, spatial distributions, spatial interactions, and regions." (Thomas, 1964:45)

Thomas' structure of geography is displayed in Figure 7. Of all of the structures of geography discussed, Thomas' comes closest to Schwab's (1962) criteria of identifying syntactical and substantive tools or concepts of the discipline. The nature of the "geographic fact" is usually determined by reference to Hartshorne (1939, 1956) .

Such a structure of the discipline failed to satisfy a large number of geographers, both at the school and in the university. Their greatest fear was that a great deal of traditional geographic content would have been excluded

(Krug et al, 1970). The other, more inclusive models clearly reflect a wide variety of the traditional approaches in geography.

Out of all this concern for the structure of geography and the concern about a new social science approach to geography came the High School Geography Project. A number of other geography and multidisciplinary projects and curriculum models also came out of the sixties and have been adopted for use in North American schools. The High School Geography Project and several other curriculum programs are discussed below.

### 3:6 The High School Geography Project

The High School Geography Project, in its conception and development spanned nearly the whole of the decade of the development of the "new" social studies discussed above. Its conception in 1961 reflected the concern of several members of the Association of American Geographers and the National Council for Geographic Education with the state of school geography, particularly at the secondary level. The reason for the group's concern was twofold, the decline of geography as a school subject and the poor preparation of undergraduates entering university geography courses. Simultaneously, it was recognized that geography as taught in schools failed to reflect the emerging social science emphasis in social studies education, outlined above.

There is a large body of literature describing in detail the development of the High School Geography Project. Rather than review the whole of this body of literature, this examination of the development of the project will focus

on a few elements that have broad implications for the development of geography curricula in the social studies. For a complete review of the literature concerning the High School Geography Project see Kohn (1964) and Gunn (1972). The latter contains an excellent bibliography of the literature pertaining to the project.

In the initial stages of the High School Geography Project, divergent views as to the nature of the discipline threatened, as is common in geography, to create an insurmountable obstacle. William Pattison, the first director of the project, resolved this problem by postulating four chief foci of geographers' attention. Pattison chose to delimit the nature of the subject by reference to what geographers had done over time. Pattison (1964a) identified his four "historic thrusts" of geography as:

1. The spatial tradition, concerned with mapping, location, and movement;
2. the area studies movement, dedicated to the study of unique aspects of regions:
3. the man-land-tradition, oriented towards the relationships between societies and the earth, and
4. the earth science tradition, involving research into the physical properties of the earth.

Like the attempts to develop structure of the discipline models for geography described above, Pattison's four traditions suffer from excessive inclusiveness. The author attempts to deal with this problem in the following passage:



"The four traditions, though distinct in logic, are joined in action. One can say of geography that it pursues concurrently all four of them.... It is to be hoped that through a widened willingness to conceive of and discuss the field in terms of these traditions, geography will be better able to secure inner unity and outer intelligibility, ...and that thereby the effectiveness of Geography's contribution to American education and the general American welfare will be appreciably increased."  
(Pattison, 1964b:216)

The six units of the High School Geography Project clearly reflect these traditions.

Another major problem faced by the High School Geography Project and other curriculum programs in geography arises directly from the four traditions identified by Pattison; it is the question of whether geography is to be taught as a social or physical science. The four traditions and other models of the discipline clearly give geography a foot in both camps. There are real problems in translation of the four traditions to the school geography curriculum as most social studies teachers have little or no physical science background.

The developers of the project realized that the materials they developed would have to be taught by persons who were not geographers. Most teachers of social studies, at both the secondary and elementary levels, have had little or no training in current geographic thought or methods. A survey of high school geography teachers in Chicago (Havighurst, 1964) revealed that less than a dozen of that city's teachers were qualified to teach geography. The assumption in the Chicago school system was that any teacher qualified to teach history could teach any social studies subject. "The realization that geography would be offered, whatever its revised content, as part of the social

studies produced considerable anxiety in geographers. They were fearful of the embrace of history and history teachers" (Krug, Foster, and Gilles, 1970: 92). The response of the geographers connected with the project was to re-emphasize the physical base of geography.

Perhaps the most important result of the structure of the discipline approach was a strengthening of the geographer's concern with the discipline. "The structure of the discipline approach, stressing as it does the promulgation of separate courses (emphasis added), might well have appealed to geographers who feared the violation of their field in a forced submission to an over-arching orientation" (Krug, et al, 1970:94). Helburn (1970:46) reviewing the High School Geography Project's handling of curriculum decisions states that:

"The changing strategy selected assumed that teachers, trainers of teachers, and especially school administrators would like to offer an intellectually stimulating and rigorous geography if they could."

### 3:7 Other Approaches to the "New" Geography

It is interesting to contrast the approach to geography in the High School Geography Project to the one taken in a recently published multi-disciplinary elementary social science curriculum project. The director of Our Working World project was Lawrence Senesh, an economist. Like the members of the High School Geography Project, Senesh's team worked nearly ten years on the project. Our Working World began as a single disciplinary project in economics. As the program developed Senesh (1973:ii) discovered that "economics alone does not explain life". The project expanded into a multidisciplinary program based on a structure of the discipline approach.

The most interesting aspect of Our Working World is the way in which it treats history and geography. Neither of these are treated as disciplines, rather they are seen as universals.

"Whatever disciplines are brought to bear on a social problem or topic, it cannot be understood without regard to the dimensions of space and time. Because the need for geographical and historical considerations is constant, they are not handled in the Our Working World curriculum design in quite the same way as the other social science discipline.... They are used with the other appropriate disciplines to examine each part of man's life." (Senesh, 1973:20)

All human events take place in time and space, therefore everything has its own history and geography in Our Working World. The consultant to Our Working World for geography was Brian Berry of the University of Chicago.

The approach taken by Senesh is closely related to that which sees the teaching of geography as the development of spatial and locational skills throughout the child's development. The approach has its roots in Piaget's and Inhelder's (1958) research into the development of the child's conception of space. In this approach to the teaching of geography, the map is the key element. Hanna (1966) identifies a sequence of geographic skills from kindergarten to grade 12. Stated generally, these skills are:

- "1. The ability to observe, collect, and reorganize data gained from firsthand and vicarious experiences and to represent them on maps with appropriate symbols.
2. The ability to read and comprehend data recorded on maps and globes and to differentiate, classify, and translate these symbolic data into conceptual patterns of landscape.
3. The ability to analyze and interpret the locations and distributions that are portrayed on maps and globes and to reason about things geographic."

Stated more specifically, the goals of Hanna's K-12 geography skills sequence are:

- "1. The ability to observe systematically and to identify and note the location and distribution and density of features of the landscape .
2. The ability to orient self and to note directions in space and on maps and globes .
3. The ability to locate places, distributions, and densities on maps and globes .
4. The ability to use scale and to judge or measure distance in space and on maps and globes .
5. The ability to use and understand symbols and to visualize the realities for which they stand .
6. The ability to use cartographic principles of map composition and graphic expression
7. The ability to recognize and express relative location .
8. The ability to use and understand basic map projections .
9. The ability to understand and relate areal distributions .
10. The ability to use and understand the globe as a model of the earth ."

Data for the development of the skills can be provided through the study of human behaviour and activity in a wide variety of contexts including the child's own experience .

Many of the recent interdisciplinary and multidisciplinary curriculum programs stress the sequential development of a wide range of skills . Geographic skills are usually included . This approach to geography emphasizes the development of geographic thinking and not the entrenching of a body of content and material in a specific course called geography .

### 3:8 American School Geography in the 1970's

During the last decade, developments in social science curricula at the elementary school level in the United States have rapidly outstripped those

at the secondary level. The social studies model or the single discipline social science course still prevails at the secondary level while elementary programs stress the development of integrated social science skills and methods of inquiry through the use of interdisciplinary or multidisciplinary materials at appropriate stages of child development. Both of these observations apply to school geography in the United States at the present time.

Of particular significance has been recognition of the need to develop K-12 programs so that social education and the development of social science skills are carefully sequenced over the entire span of the child's intellectual and personal development. Marsh (1973:40) reminds geographers of this trend in his critical assessment of the High School Geography Project:

"Perhaps it wasn't politically expedient to attempt to devise a K-12 program using geography as the central discipline within an interdisciplinary program. Perhaps the structure of the other social studies projects, the insecurity of the financial purse strings, and the desire to appease conflicting academic views about the boundaries of the academic discipline were the major influences."

Jarolimek (1970:388) sums up the decade of curriculum reform that produced the High School Geography Project in the following manner:

"The conclusion of the High School Geography Project is in a way symbolic of the termination of the first phase of the response of American education to the need for curriculum reform that was made so dramatically important in the late 1950's.... What was needed, it was alleged, was a disciplined approach to social science knowledge. Zero in on a particular discipline. Identify the basic concepts and modes of inquiry of that discipline. Teach for those concepts and modes of inquiry using strategies that the scholars themselves use. Preserve the integrity of the discipline."

He warns of the limitations of this approach and points out that some geographers are already aware of the shortcomings of this approach and its role in the development of the High School Geography Project. In conclusion, Jarolimek (1970:389) indicates that:

"The thrust in social studies education of the next decade will undoubtedly be away from a preoccupation with teaching conventional social sciences, particularly single disciplines. Instead, new arrangements of content will find their way into programs."

Gunn (1974:30-31) has also indicated that the objectives of the "new" geography as expressed in the High School Geography project are out of step with the social studies/social science curriculum models of the 1970's:

"In the post-HSGP years geographic objectives have increasingly merged into broader educational objectives involving reassessment of traditional values, global problems of survival, and societal issues concerning the quality of the environment. Geography as a discipline is no longer a point of departure in the design of school curricula. Indeed, no one discipline can be an adequate source of information for the broad-based newer programs . . . In relation to this kind of curriculum most of the geographic objectives we have discussed are unsuitable."

The status of geography as a school subject in the United States at the present time continues to be low; the need for teaching geographic skills in the new curriculum remains great. There is a continuing need in the United States for the dialogue begun in the 1960's between geographers and curriculum designers to produce an approach to geography that will permit the geographic way of thinking and inquiring to be taught effectively. It is critical that academic geographers be involved in this process. To do so they will have to think more about the needs of the child as a learner of geography than about the needs of the academic discipline at the university level.

The areas of academic geography having the greatest impact on school geography in the United States at the present time are those stressing spatial distribution and spatial interaction in a scientific and analytical fashion (Bacon 1970). Of specific importance are location theory, general systems theory, and urban geographic analysis. Model-building is stressed, as is the use of statistical and quantitative methods. Unfortunately few teachers are adequately trained to teach these new methods. As a consequence, Kennamer (1970:382) feels that their place in the social studies curricula of the 1970's is "tentative and yet to be determined."

## Chapter 4

## GEOGRAPHY IN THE CANADIAN SCHOOL CURRICULUM

## 4:1 Background to the Problem

The history of school geography in Canada closely parallels that of the subject in the United States. In this country, however, the place of geography in the school curriculum has been traditionally more firmly established than is the case in the United States. This is largely a consequence of European influences on Canadian school geography -- French geography in the Quebec schools and to a lesser extent, British geography, especially in British Columbia and Ontario. The British influence continued to make itself felt in recent years through the presence of large numbers of British geographers on the faculties of Canadian universities, both in departments of geography and education. The British influence has generally tended to establish itself as a greater emphasis on physical geography in Canadian schools than in the American, especially in the two decades following the Second World War.

With the adoption of the social studies model, geography as an independent school subject in Canada was considerably diminished. In sharp contrast with the American experience, however, geography remained an equally important thrust, with history, in the Canadian social studies programs. This is, in large measure, a consequence of the stronger place of physical geography whose boundaries were more clearly defined than the human geography current in the United States when the social studies movement started. With the rise of academic geography in Canadian universities, it appeared as though the



discipline was re-establishing itself as an independent school subject during the late 1950's and early 1960's (Mayo, 1964). In the last two decades social science curricula in Canada have been strongly influenced by the trends in American curriculum theory described above. These trends have tended to mitigate against the existence of a separate school geography. At present the status of school geography in Canada is unclear.

The greatest influences on Canadian social science curriculum development have come from the United States. Traditionally, the British have been more concerned with the content of the subjects rather than with establishing their appropriate place in the curriculum. Walford (1973) in his discussion of educational objectives in British school geography clearly demonstrates that concern for curriculum design in geography in that country is of recent development. Most of the sources cited are of American origin, especially Bruner (1962), Bloom (1956) and others concerned with the whole spectrum of the curriculum. Considerable attention is paid to the American High School Geography Project which is criticized for having too narrow objectives. Recent British concern with the place of geography in the school curriculum does not appear to have had any appreciable impact in Canada so far. The American influence on curriculum development has been clearly demonstrated since the northward diffusion of Dewey's approach to social education during the 1930's which brought the social studies model to Canada. Adoption of the social studies approach lagged behind its acceptance in the United States but by the late 1930's the social studies were firmly established throughout English-speaking Canada. After the war, geography re-established

itself as an independent subject but the social studies approach persisted. Much of human geography remained subsumed under the social studies rubric.

Social studies/social sciences curricula in most of the provinces have been largely, but unevenly, influenced by developments in curriculum theory in the United States. An examination of the references cited in most of the provincial social science curriculum guides reveals an overwhelming body of American sources with the works of Bruner (1962), Taba (1967), Fenton (1966), Massialas (1966), Morrissett (1967), Hunt and Metcalf (1968), and Michaelis (1968) among the most frequently cited. The curriculum guides of two provinces, Ontario and British Columbia, show the influence of British sources mixed with the American; the British works are in the content areas of history and geography and in methods of instruction in these subjects rather than curriculum theory.

Throughout the history of Canadian school geography, patterns of acceptance and rejection of British and American models of the nature of geography, its content, curriculum theories, and instructional materials present an interesting study in the diffusion of innovation. The literature on the history of geography in Canadian schools is slight. Oulton (1955) and Mayo (1964) both have excellent reviews of the early development of school geography in this country, although Mayo draws heavily upon Oulton. Brigham and Dodge (1933) briefly examine some of the secondary school geography texts in use in Canadian schools in the Nineteenth Century. There are a few reviews of changes in the teaching of geography at the provincial level; Topping (1963) has outlined the development of the subject in British Columbia to the time of the Chant Commission Report. All of these works draw heavily on texts and courses of study for their material. There does not exist in Canada a source like The Journal of Geography in the United States or Geography in

Britain to provide evidence to shed light on the thought behind the development of school geography. The Monograph, the publication for teachers of geography in Ontario only started in the 1930's and its perspective tends to be limited to that province. An examination of the Canadian Geographer during its formative years casts some light on the relationship between academic geography and school geography in the 1950's and early 1960's. Unfortunately, as the academic discipline matured and established itself in the mainstream of North American academic geography, the interest in school geography seems to have declined. In the last decade, the Canadian Geographer has entirely ceased to deal with any aspect of school geography. In recent years, several works have addressed themselves to Canadian social studies/social sciences in general (Byrne, 1970; Logan and Rimmington, 1969; Hardwick and others, 1967) and to Canadian school geography in particular (Jackson and Forrester, 1974; Owens, 1970; Tomkins and Hardwick, 1964; Robinson, 1964, Tomkins, 1965). In addition, the courses of study and the curriculum guides issued by the provincial departments of education are useful sources of data concerning the nature of school geography in Canada.

In Canada, because of the recent development of university geography and the relatively small number of academic geographers who have been actively involved in the training of teachers of geography, it is also possible to identify some of the persons who have been most influential in shaping Canadian school geography. Foremost amongst these is Neville Scarfe (1959, 1965a, 1965b) whose influence on geographic education was felt internationally. He was responsible for the early development of close relationships between the university

and the school in geography in both Manitoba and British Columbia (Mayo, 1964). In both of these provinces his influence is still felt in the curriculum and in the teaching of school geography in those two provinces. Also in British Columbia, George Tomkins (1964, 1965) and Angus Gunn (1970, 1972, 1974), of the University of British Columbia have strongly influenced the teaching of geography in that province and beyond. Tomkins is currently active with the Canadian Studies Foundation; Gunn was involved in the High School Geography Project of the Association of American Geographers. In Ontario, the influence of Elliott and Sagar (1970) and their students has been felt in the area of school geography curriculum development. Nearly all these scholars received their early academic training in Britain but their works on school geography reveal heavy influence of American sources.

#### 4:2 School Geography in Canada to 1964

Mayo (1964) identifies three main stages in the early development of school geography in Canada: physical geography in the Nineteenth Century, human geography in the early part of this century, and the virtual disappearance of the discipline as a separate school subject during the social studies era. These closely parallel the stages of development of the discipline in American schools during the same period. For much of the Nineteenth Century, there was an emphasis on the learning of facts about places on the surface of the earth by rote memorization. Mayo (1964:45) describes this stage as follows:

"Much of the content was simple, some of it bizarre, and the fundamental assumptions as to child nature were often amusing. A list of facts was to be learned in an orderly fashion, and no effort was made to present geography in any other way than that which used political boundaries as a criteria (sic) of division.... Mathematical and physical geography were stressed, as was vocational geography."

Although towns and political boundaries were located, there was no effort to relate physical features to human activities. Human geography as we think of it was not taught at all.

Texts were arranged as gazetteers or inventories of facts about places. A good example is G. J. Hodgins' The Geography and History of British America and the Other Colonies of the Empire, authorized for use in Ontario schools from 1857 to 1865. A glance at Hodgins (1858:21) reveals the following approach to geographic facts about Upper Canada:

- "61. Reptiles...
- 62. Fish...
- 63. Insects...
- III. Population, Religion and Education
- 64. Population...
- 65. Religion...
- 66. Education...
- 67. The Universities..."

The exercises at the foot of the page require the student to be able to recite the information listed in point form under the headings cited above.

Just as in the United States, there occurred in the late Nineteenth Century a shift in Canadian attitudes towards school geography that was marked by a rejection of the rote-memorization of facts (Kohn, 1970). Canadian educators of the period endorsed a new geography -- one that emphasized systematic or scientific thinking. Oulton (1955:97) cites the preface to Ontario's Public School Geography of 1889:

"The study of geography is often the driest and most wearisome the pupil has to deal with and will always be so unless the teacher (emphasizes the development of the child's mind).... The teacher should be careful to remember that all geography is not to be committed to memory, or indeed more than a

small part of it; -- he who should insist upon his pupils memorizing the number representing the square miles in the various countries of the world, or a table of their relative sizes, would be worse than an intellectual tyrant -- he would be a destroyer of intellect."

This rejection of the approach associated with "capex and bays" geography sounds very familiar.

Around the turn of the century, Canadian school geography began to emphasize the interaction between human and physical elements. Man-land relationships were stressed as were environmental influences on human activities.

Mayo (1964:47) states:

"This period in Canada may be said to have started about 1900 and lasted for about 30 years. A better balance began to develop between the human and physical elements of geography. The idea that modern geography was a study seeking to trace and explain the lives and activities of man as influenced by the varied elements to be found in the world was catching on. Pupils were not nearly so concerned with the catechismic memorization of unrelated facts."

The usual approach to the teaching of human geography at this time was of type that is commonly referred to as "expanding horizons".

"Beginning with the home environment, the study of geography was expanded to include the entire world through imaginary journeys and stories. This was a direct influence of the United States in Canadian educational history, as home geography and journey geography (had their origins in the former country)." (Mayo, 1964:47)

The expanding horizons approach bears a striking resemblance to Sonnenfeld's (1970) model of concentric environments. Its specific origin cannot be traced but its presence in social studies curriculum development is sufficiently firmly entrenched as to be worthy of the label "traditional". In this context, Joyce (1965:153) states that:

"The expanding-horizons approach is still the most prevalent means of giving curricula an easy clearly defined sequence. The child studies life in what might be described as widening concentric circles -- from school and family to community, to state, to nation, to hemisphere, to the world...the expanding horizons approach tends to err towards rigidity, particularly when the curriculum is geared strongly to a textbook series constructed on the expanding-worlds approach."

This approach, whose roots in Canadian school geography go back almost to the start of this century, still forms the basis of the elementary social studies curriculum in British Columbia (Prov. of B.C., Dept. of Educ., 1974).

During the first twenty years of the present century, physical geography continued to be taught but its importance in Canadian school curricula declined sharply. Physical geography and its relationship to economic activities became increasingly the focus of interest, particularly in the regional context. This development parallels the growth of commercial geography in the United States but occurred nearly twenty years later in Canada. The regional context of such courses was determined by continental or political boundaries. The most popular regions for study were Canada and North America (Mayo, 1964). Cornish's (1927) Canadian Geography for Juniors devotes thirteen of its chapter to Canada, North America, and the Western hemisphere. The remaining five cover Europe, Asia, Africa, the United Kingdom and the British Empire. The author's introduction serves as an indication of his perception of the persistence of "capes and bays" geography at the time of writing:

"Suppose you were to announce to your class, as a special incentive to stimulate interest, that to-morrow you would give a geography lesson on the boundaries of Europe, on the surface features of British Columbia, on the winds of the Atlantic Ocean, the climate of North America, or the coast-waters of Australia. Would there be any violent hand-clapping, vociferous cheering, or vivid sparkling of eyes? No. Your announcement would probably bring a sudden silence. Yet these are the topics on which we usually build our geography lessons. The present elementary textbook is a protest against

such unpedagogical, unpsychological, dry-as-dust methods of presenting geography to children(;). . . the old-fashioned method is cast aside. Topics of many kinds, journeys, products, cities, occupations, natural phenomena, are moulded into problems to be solved." (Cornish, 1927:v-vi)

An inscription on the fly-leaf of the author's copy indicates that it was still in use in grade five social studies in Vancouver, British Columbia in 1944-45.

During the 1920's, Geography was dropped from the British Columbia programs of study for high schools (Topping, 1963) but continued to be taught at the elementary level. The Putnam-Weir survey of education in the province strongly criticized the teaching of both history and geography (Putnam and Weir, 1925). The authors of this review were strongly influenced by the teaching of John Dewey; in 1927 following the creation of junior high schools in B.C., social studies became a key part of the provincial program of studies (Topping, 1963). By 1930, social studies was taught in the high schools. History dominated the subject. Texts and materials used were strongly American-influenced (Topping, 1963).

In 1933, the new American approach to social education, the social studies movement, was adopted by Nova Scotia (Mayo, 1964). History and geography were particularly affected by this innovation which saw them fused in a common course which attempted to closely tie the child's school experience to his life experiences. During the 1930's all of the Canadian provinces except Quebec adopted the new program of the social studies. Ontario was the last to give way to the American innovation but by 1936 it too had adopted the new approach (Lloyd, 1959). "Geography was no longer taught as a separate subject but was integrated with history and civics under the new programme called 'social studies'. This reorganization marks the most radical change in the history of the teaching of geography in Canada" (Mayo, 1964:48).



Just as the new social studies approach was being adopted in the schools of Canada, a significant event took place at the University of Toronto. In 1935 Griffith Taylor, the noted Australian geographer, came to that institution to establish the first department of geography in a Canadian university. He had just spent seven years at the University of Chicago and his approach to geography reflected both British and American influences. Taylor's interests included school geography as well as academic concerns. In his autobiography, Taylor (1958:19) comments on the school geography texts in use in Canada at the time of his arrival:

"It is interesting to note the technique in these early school books. They were more like gazetteers than geographies. Many tables appeared, containing lists of industrial products. The position of capes and bays is stressed, and of towns on rivers. There is no reference of value to topography. All my later life, as a pioneer geographer in the universities of two great dominions, I have been faced in committees by colleagues whose ideas of geography must have been based on similar books studied at the same schools."

During the 1930's and 40's geography disappeared from the curriculum. As in the United States, history tended to exert a stronger power in the social studies than did geography. This reflected the place of history at the core of the humanities and arts programs in Canadian universities of the time. Of this tendency in Canada, Byrne (1970:15) has written:

"A major influence in the development of a social studies curriculum has been, and I expect will continue to be the predominant position of history. No matter how much a curriculum designer might have wished to introduce new content from the social sciences, he did so at his own peril. Teachers had been prepared in the field of history and insisted on teaching it to the exclusion of other content, irrespective of provincial directive. The vocal public, newspaper editors, politicians, and some university professors, were convinced that the study of history and history alone would produce the informed citizen."

Byrne is writing about the development of the social studies method in Alberta. Mayo (1964) has pointed out that Alberta was one of the earliest provinces to accept the social studies approach and that American influences have always been

strongest in that province. In general it may have been true that history and geography suffered as independent disciplines and the encroachment of the social studies was resisted by historians and geographers. "In Ontario, to go back only as far as the 1940's, the social studies people were opposed to the historians and geographers" (Bowles, 1970:28).

During the late 1950's, the geographers started to voice loudly their opposition to the social studies movement. Stamp (1951) in his survey of Canadian university geography criticized the poor instruction in geography in the schools of this country. Hamilton (1951:8) demands a stronger voice for geography in social studies:

"We as professional geographers must be concerned with geography in the elementary and secondary schools, because here the foundation of knowledge is built for the average Canadian, for our politicians and statesmen, and for our potential geography students. As Canadian citizens we must be concerned with the use of our discipline as part of our culture which must be passed on to succeeding generations."

The tone of Hamilton's remarks is consistent with the objectives of the social studies movement. He goes on to stress the geographic tradition of field work as being an excellent example of Dewey's learning by doing.

In 1955, the Canadian Association of Geographers formed an Education committee to examine the nature and status of school geography in Canada. This committee declared that "professional geographers have a very definite responsibility to the teacher and student of geography and therefore further action should be taken to put the case for geography before all education authorities in this country" (Hills, 1957:55). Out of this committee came a draft resolution on the

teaching of geography (Appendix A). Some of the key points of the resolution are reproduced below as they provide important information as to the status of geography at that time:

"There are still provinces of Canada where geography is not taught at any grade. In some provinces an attempt has been made to fuse geography with history but too often geography loses its identity completely so that in effect geography is missing from the curriculum.

There is much evidence to suggest that geography is rarely a popular subject in schools.... The reasons for the unpopularity of geography are undoubtedly the lack of geographic training of the majority of teachers teaching the subject, and the inadequacy of teaching aids.

Where geography is taught it is usually thought of as mainly human geography.... Needless to say geography is rarely taught in a systematic and scientific manner.

Geography because it is a subject with a distinct point of view should be taught as a separate subject from at least Grade 3 or 4. We consider that where geography is integrated or fused with other subjects it loses its identity and special function. Under the heading of social studies the attempt is made most often to fuse geography with history. Though there is a "universal and mutual relation" between these two subjects, they each have a distinct point of view, geography in terms of space and history in terms of periods of time. " (Hills, 1957:56-58)

Trevor Lloyd (1959) in a presidential address to the Canadian Association of Geographers railed loudly against the social studies approach. He dismissed the social studies as follows:

"Largely as a result of the work of curriculum planners intent, perhaps, on tidying up the timetable, such a clearly defined and recognized subject as elementary geography became lost in a newly-created subject usually referred to as 'social studies'."

In a burst of nationalism uncharacteristic of Canadian geographers, Lloyd (1959:4) denounces the social studies movement as an unnecessary American intrusion into Canadian education. "The time has come to reduce Canada's importation of

pedagogical notions, . . .and that the social studies curriculum be the first to be repatriated." Lamentably, Lloyd's voice is the last to be heard speaking out on school geography in the Canadian Geographer.

The following year, the Chant Commission (1960) recommended to the Department of Education in British Columbia that the social studies be restructured so that history and geography be more clearly separated. The commission's rationale for this was that such a move would permit teachers to place a greater emphasis on the mastery of facts. Further, the Chant report argues that the social studies are singularly lacking in educational values. The report is couched in terms that define the role of public schooling as preparation for university entrance. History and geography were well-established disciplines at the University of British Columbia in 1960; the other social sciences were still struggling to establish themselves.

Weir and Russell (1959) examined the status of geography at the secondary level, in all the Canadian provinces at the close of the 1950's. Their results show a curious division of the country along the Ottawa River: the provinces east of that line clearly place a greater emphasis on geography than those to the west (Figure 2). The eastern provinces all offered parallel but separate history and geography courses. In the west social studies courses of the integrated type predominated (Figure 3). From their research Weir and Russell (1959:285) conclude that:

"There appears to be a direct correlation between increased demands for the teaching of geography above the elementary levels in all of those provinces where departments of geography have been established in the universities, namely Quebec, Ontario, British Columbia, Manitoba, and, more recently, Alberta."

Table 2  
Social Studies - Separate Courses

Provinces:	Geography: (G) Compulsory; (g) Elective History: (H) Compulsory; (h) Elective						
	Grades						
	7	8	9	10	11	12	13
Newfoundland	G/H	G/H	g/h	g/h	g/h		
P.E.I.	G/H	G/H	G/H	G/H	/H	/H	
Nova Scotia	G/H	G/H	G/H	g/H	/H	/H	
New Brunswick	G/H	G/H		/H	/H	/H	
Quebec Protestant (English)	G/H	g/H	g/H	g/h	g/h	/h	
Quebec Catholic (French)	G/H	G/H	G/H	G/H	G/H	G/H	
Ontario					g/H	g/H	g/h
Manitoba				G/h	g/H	g/H	
Saskatchewan	G/	/H					
Alberta							
B.C.			G/	g/H	g/h	g/h	

Table 3  
Social Studies - Integrated Courses

Provinces:	Geography (g) Capital letters (G or H) show greater emphasis				History (h)		
	Grades						
	7	8	9	10	11	12	13
Newfoundland							
P.E.I.							
Nova Scotia							
New Brunswick			g/H				
Quebec Protestant (English)							
Quebec Catholic (French)							
Ontario	g/H	g/H	g/H	G/h			
Manitoba	g/H	g/H	g/H				
Saskatchewan			g/H	g/H	g/H	g/H	
Alberta	g/H	g/H	g/H	g/H	g/H	g/H	
B.C.	g/H	g/H			g/H		

Source: Weir and Russell (1959)

Geographers at the University of British Columbia were clearly very active in their efforts to secure a firmer place for their discipline in the schools. In 1961 an Advisory Committee on Geography to the Provincial Department of Education was set up under the leadership of J. Lewis Robinson (Tomkins and Hardwick, 1964). This committee saw the responsibility of the professional geographer as being to ensure that the discipline has a firm place in the curriculum of the public schools:

"It is surely evident that geography in schools can and must be in the mainstream of the geographic tradition. It becomes the responsibility of the professional geographer, in so far as he concerns himself with his subject in schools to see that it remains there." (Tomkins and Hardwick, 1964:83)

The report of the committee for 1964 sets forth its set of criteria for the teaching of school geography. Citing Hartshorne (1959), the report feels that school geography should reflect the systematic and regional approaches in geography. The report groundwork for these two approaches being laid in the elementary grades at which level the child should develop observational skills, geographic vocabulary, and geographic literacy (Robinson, 1964).

In the same year, Mayo (1964) undertook a major assessment of school geography in the United States and Canada. He compares his results (Figure 4) with those of Weir and Russell (1959). Mayo (1964:1) concludes that Canadian school geography "is returning to its independent status, or, in other words, is becoming defused from history and the other social sciences." Mayo (1964:1) identifies four factors which he claims are responsible for the restoration of geography to its independent status:

Table 4

## The Status of Separate Geography in Canadian Secondary Education 1964

Provinces:	Grades						
	7	8	9	10	11	12	13
Newfoundland	G	G	g	g	g		
Prince Edward Island	G	g	G	G			
Nova Scotia	G	g	G	g	g		
New Brunswick	G	G					
Quebec - English Protestant	G	g	g	g	g		
Quebec - French Catholic	G	G		G	G	G	
Ontario	G	G	G	G	g	g	g
Manitoba					g	g	
Saskatchewan	G			g			
Alberta					g	g	
British Columbia			G	g	g	g	

Source: Mayo (1964:159)

- "(1) Its historical role as a separate subject in the secondary curriculum;
- (2) The professional attitudes and organized activities of educators concerned with establishing geography's independence from history, which have resulted from the last World War and the ensuing Air Age;
- (3) The role of college and university departments of geography both directly through demonstrating the need for geography, and indirectly through teacher training; and
- (4) The European educational influence evident in the (approach to school geography in Canada)."

A close examination of Mayo's results and of his notes on the data in Table 4 reveals the fact that his claim for a great revival of geography as an independent school subject are somewhat premature. If all the cautionary and conditional notes are removed from Mayo's table it is quickly evident that the increase in the number of independent geography courses is slight. The only province to show significant changes in Ontario.

#### 4:3 Current Status of School Geography in Canada

A brief glance at curriculum guides and courses of study reveals that the current status of geography in Canadian schools is confused. Most provinces are in the process of revising their social studies/social science curricula at the present time so conclusion may be drawn only tentatively.

In the province of Ontario, the Department of Education has abandoned the social studies approach at the secondary level (Prov. of Ontario, 1968) while retaining it at the elementary level (Prov. of Ontario, 1971a). No new independent geography courses have been added since Mayo's (1964) survey. Secondary geography courses remain optional. At the elementary level, the



geographic element is integrated in a loosely structured six-year program utilizing the expanding horizons approach. The approach utilized in the elementary social studies curriculum in Ontario is roughly paralleled in the introduction of new interdisciplinary problem-centred or topical courses as options at the secondary level. One that has a clearly geographic component is Urban Studies which sees social science interests:

"Converging to create a new field of urban studies, and narrow distinctions between geographic, sociological, and economic features are being abandoned. Disciplinary boundaries are educational and academic conveniences; the purpose of the school's course should be to give the student insights into the urban scene in all its manifold aspects." (Prov. of Ontario, 1971b:5)

The teacher who would give too much emphasis to geography is warned in the guide that "if care is not taken, the geographer's concern for spatial distribution may dominate the course work in schools" (Prov. of Ontario, 1971b:4).

Manitoba has seen an increase in the number of independent geography courses at the senior secondary level. These are systematic and academic in nature and closely parallel university course offerings. At the elementary and junior secondary levels, the fused history-geography tradition of the social studies still prevails (Prov. of Manitoba, 1974). On the other hand, Saskatchewan has not changed since 1964 but a revision of secondary social science courses is currently underway (Prov. of Saskatchewan, 1971).

The secondary school social studies curriculum for British Columbia remains largely unchanged since 1960 (Prov. of British Columbia, 1969) although

at the time of writing a revision committee is at work to create a new social studies curriculum. The only major change since 1960 affecting geography in British Columbia was the changing of Geography 12 to systematic geography from world regional (Prov. of British Columbia, 1970). The latter course had used as its text a version of L. Dudley Stamp's World Regional Geography, written in the 1930's and updated slightly in the early 1950's.

One of the British Columbia Social Studies Curriculum Guides (Prov. of British Columbia, 1968) provides an interesting rationale for the dominant positions of history and geography in the social studies curriculum of that province, implying that the courses are offered because they represent what teachers are prepared to teach. This is important as the social studies curriculum committees of British Columbia are made up of working classroom teachers. The teacher developed elementary social studies curriculum (Prov. of British Columbia, 1974) utilized an expanding horizons model, especially at the primary level. At the intermediate level, a different social science discipline dominates each year. Year Four is cultural anthropology, Year Five culture history, and Year Six cultural geography. It is interesting to note that the conceptual basis of the Year Six program in part rests with a diagram of Toynbee's conception of world culture realms represented in Broek and Webb, A Geography of Mankind.

The greatest changes in the social studies since Mayo's results were published have taken place in New Brunswick and Alberta. In the former province, there are no independent geography courses listed (Prov. of New

Brunswick, 1966). In Alberta, the most dramatic change in social science/social studies has taken place. That province has adopted an integrated K-12 social studies program that stresses the examination of problems and inquiry into themes, concepts, and value-issues (Prov. of Alberta, 1971). The new curriculum is based on the work of Simon (1970) and is very largely influenced by recent curriculum theory developments in the United States.

Ironically, a second tendency towards integrated curriculum development may serve to strengthen the place of geography in the schools. The move towards interdisciplinary environmental and outdoor education programs has been accompanied by a new emphasis on map skills and on physical geography in general. Many of these courses are locally developed, and do not appear in provincial curriculum guides. In British Columbia, there are several programs, sponsored by universities and the Department of Education, designed to prepare teachers for environmental studies courses. The Faculty of Education and the Geography Department at Simon Fraser University have cooperated in what is regarded as the best of these programs. The results are being felt in classrooms throughout the province. Similar programs have developed in Alberta and Ontario.

#### 4:4 Summary

Mayo (1964) concluded that geography was reasserting itself as an independent subject in the school curriculum, especially at the secondary level. A look at social science/social studies curricular in Canada for the decade following the publication of Mayo's conclusions indicates that his results are premature.

The status of geography in Canadian schools is, at present, poorly defined; it is definitely undergoing a process of change. The direction of the change is not entirely clear but if the Ontario and Alberta programs are any indication, the trend is toward an integrated social science approach, similar to that emerging in the United States.

## Chapter 5

### COMMENTS AND CONCLUSIONS

This essay has reviewed recent trends in the development of geography in the school curriculum in Canada and the United States. The emphasis has been on human geography and its place in the social studies/social science curriculum. This does not reflect a bias on the part of the author against physical geography. Rather, it is an indication of the low status of geography in the curriculum and, in particular, of the failure of curriculum theorists to consider the appropriateness of the study of physical geography in the schools.

The emergence of the new social science curricula at a time when many classroom teachers still teach a vague form of "capes and bays" geography places a heavy burden upon the academic profession to make clear the geographer's ways of thinking. There is still a need to make the basic concepts, skills, and modes of inquiry of the discipline clear to educators and teachers. It is clear from the evidence presented above that geography has long suffered from a failure to clearly distinguish between the discipline of geography and the subject, geography. This failure is most clearly illustrated by the refusal of the geographers associated with the High School Geography Project to accept the structure of the discipline view of geography because the results conflicted with what had traditionally been taught as geography.

The study of the discipline of geography may be as appropriately developed through the examination of the spatial distribution of physical

phenomena as of human ones. In fact, it is necessary to question whether the anthropocentrism of social studies mitigates against the development of concepts of spatial relationships. For Canadian schools, where the physical geography tradition is still fairly well-established, it is possible that geographic skills may be better taught in environmental, rather than social, science courses. The danger inherent in the physical approach remains that poorly trained teachers may continue to confuse inventories of land forms and locations as geographic facts with an understanding of the discipline of geography.

We can distinguish the discipline of geography from the subject in the following fashion: the discipline is an orderly (disciplined) way of thinking about phenomena; the subject is a body of knowledge, frequently identified as 'geographic facts'. It is the subject that has been taught in North American schools. Ward (1965:11) identifies two ways of looking at the nature of geography that establish the intellectual roots of this dichotomy between discipline and subject in geography:

"The intellectual heritage of modern geography can be examined from two quite distinct perspectives. Firstly, we can document the persistence of root concepts, methods and interests over substantial periods of time or, secondly, we can evaluate the influence of changing theoretical or interpretive schemes upon the focus and content of geographic thought. Considerations of root concepts have for long dominated methodological discussions amongst geographers but it is often the application of new ideas and techniques derived from the contemporary intellectual environment that has provided us with our greatest stimulation and also encouraged us to expand our dialogues with related disciplines."

The approach of Hartshorne (1939, 1959) which has had great impact on the development of geography as a school subject, is clearly that which 'documents the persistence of root concepts' at the expense of theory.

Ward (1965), Morris (1968) and others have anticipated May (1970) in tracing the roots of school geography to the philosophy of Kant. Kant's three organizing principles -- substantive, chronological, and chorological -- provide the conceptual structure for any body of knowledge. Morris (1968:21) states:

"Geography, of course, is that field of learning that organizes its concepts on the chorological principle. It is geography that focuses on the areal association of things and events of unlike origin (emphasis added) and on the interconnections among things and events that are areally associated. No other field of learning accepts this basis as its fundamental concern."

This approach, explicit in the work of Hartshorne, has recently been expanded into a whole social science/social studies curriculum model by Anderson (1970). Anderson envisions a three-fold framework for the social studies whose elements are the temporal, the spatial, and the social. Where Anderson and Morris and other geographers diverge is Anderson's emphasis on an integrated approach to social studies.

For Anderson (1970:47) the spatial

"...is the most difficult of the three frameworks to clarify. The difficulty arises in large degree from the fact that for a generation geography has played little part in the education of scholars. The relationships between geographers and other social scientists (concerned with school curriculum development) have become not only aloof but even hostile due to the timeworn battles about 'geographical influences'. Meanwhile, newer and more analytical work in 'spatial science' is little known."

Anderson cites Bunge (1962) at this point. He is the only author outside the field of geography to mention any of the recent, theoretical geographers in writing about curriculum development. Anderson rejects any exceptionalist view of the spatial framework.

Until the publication of the 40th Yearbook of the National Council for the Social Studies, (Bacon, 1970), modern geography was ignored in discussing social science curriculum development. Bacon stresses two key components in viewing the place of geography in the social studies/social science curriculum: modern concepts and techniques in geography and the application of contemporary teaching and learning theory to the discipline. In the decade that separated Bacon (1970) from James' (1962) approach to the same problem, the emphasis has shifted from James' emphasis on the region to a lead article by Krumme (1970) on location theory. In another article in the same volume, Kennamer (1970:391) raises the following points about the future of the discipline in the social studies/social science curriculum:

"...if curriculum planners use the old school geography, thinking it represents the field, then school geography will not survive in the emerging social studies curricula. Even if the best of geography is available for curriculum planners, it must still meet the test that all the social science disciplines will face, that is: shall the integrity of each discipline be maintained in the curriculum, or should the approach be interdisciplinary? Should specific subject areas be identified at separate grade levels...? If curriculum planning is to be concept oriented in the social studies, it must itself have a conceptual framework exhibiting coherence and consistency. Are these frameworks now emerging? There are many houses to place in order before a clear picture can be seen as to the role geography will have in the new social studies curriculum of the 1970's."

For geography, it is possible to answer some of these questions at the present time. Emphasis on the development of geography as a discipline instead of a subject to be taught would be a step in the right direction no matter what the trend in curriculum development, be it single discipline, multi-disciplinary, or interdisciplinary. Geography conceived as a body of knowledge as has been



traditional in the United States and Canada has so easily led to "capes and bays" or simple-minded environmental determinism rooted in the man-land approach. A new look at the structure of the discipline and an emphasis on the orderly manner of thinking that is geography is necessary if school geography is to accurately reflect contemporary geographic methods while remaining flexible enough to meet a variety of curricular models. Geographers interested in influencing the development of school curricula and in determining geography's place therein would be well advised to heed the advice of Bruner (1971:44):

"This is our task as learned men and scientists to realize that discovering how to make something comprehensible to the young is only a continuation of making something comprehensible to ourselves in the first place -- that understanding and aiding others to understand are both of a piece."

## Appendix A

## A SUGGESTED RESOLUTION ON THE TEACHING OF GEOGRAPHY

The Resolution

A resolution appears to be necessary:-

1. Because we believe that geography taught as a school subject has an essential contribution to make to the education of the grade school and high school child.
2. Because there are still provinces of Canada where geography is not taught at any grade. In some provinces an attempt has been made to fuse geography with history and other social studies but too often geography loses its identity completely so that in effect geography is missing from the curriculum. Even where geography is included in the curriculum as a separate subject it is rarely obligatory to teach it to all grades between Grades IV and XII.
3. Because there is much evidence to suggest that geography is rarely a popular subject in schools, whereas in many countries of the world geography is an extremely popular school subject, e.g., in Britain, geography is the fourth matriculation subject and ranks ahead of history. The reasons for the unpopularity of geography are undoubtedly the lack of geographic training of the majority of teachers teaching the subject, and the inadequacy of teaching aids, though many excellent tools are available.
4. Because where geography is advocated it is usually thought of as mainly human geography. There are exceptions for in parts of Eastern Canada geography is taught separately and given some physical basis. In some other provinces physical geography is taught as a part of general science. Due to the emphasis placed upon human geography, geography becomes chiefly an account of how people live in the various regions of the world. Needless to say geography is rarely taught in a systematic and scientific manner.
5. Because geography is still thought of by many as a purely factual subject though, in general, Canadian administrators agree that geography is not a gazetteer of facts but rather a point of view and a group of ideas. Administrators agree that geography correlates physical and cultural conditions and yet they agree to the division of geography into social studies and earth science.
6. Because, - although geography is supposed to be taught for the purpose of helping future citizens think sanely about political and social conditions in the world and although administrators realize its value in fostering international understanding and a few, the value of geography in conservation and town and country planning, - very few teachers know how to teach geography so as to achieve these purposes.
7. Because in only a few teachers' colleges do students obtain any training in geography though courses are generally offered in methods of teaching social studies.

8. Because even though administrators realize the importance of the map to the geographer, the supply of topographical maps to Canadian schools depends largely on the initiative of individual teachers.

### The Nature of Geography

Geographers study the world in order to show how the physical and human phenomena of its surface are related in space and how variations in these relationships give rise to distinctive regions of landscapes which are the core of geographic study.

There follows a number of corollaries of this concept of geography:-

1. Geographic study must advance from the location of physical and human phenomena on the earth's surface to their description and explanation. Stagnation at the first stage of location results in the outmoded, "capex and bays" type geography. Mere memorization of the location of places or of lists of "phenomena" such as crops or minerals is not geography. Unfortunately it is often the only stage reached in the teaching of geography in many Canadian schools.
2. Since the phenomena of the earth's surface and their interrelations vary greatly from place to place it is not possible to conduct a true geographic study of the world as a whole, a continent or even a country without a subdivision into areas or regions which possess a certain uniformity or distinctiveness. We thus find that "regional geography" is a major method of geographic study. Regional geography enables the geographer not only to study convenient divisions of a continent but also to compare regions throughout the world. It is a major weakness of geography as taught in most schools in Canada that this regional approach is neglected and thus students are unable to grasp either the variations in the character of landscapes from place to place or the total character of the country which he is studying.
3. Rather than use the regional approach the geographer may center his study on a single phenomenon or group of phenomena, e.g., climate, landforms, population distribution or economic production. These phenomena are then studied in their interrelations with other elements on the earth's surface. This method of approach is known as systematic geography and it is necessarily the initial stage in the study of a region if interrelationships are to be understood. Though systematic geography does appear in some curricula as general geography it is often divorced from regional studies. More time should be allotted to systematic study of both physical and human geography in grade schools and high schools. Physical geography in particular requires the systematic approach and if the study is carried out as direct observation or through pictures, air photos and maps, it is usually of great interest to children between the ages of 10 and 15.
4. Geography is not merely an agglomeration of parts of the systematic sciences. Whereas, the other sciences seek to isolate the elements of the earth's surface and study them apart from reality, geography seeks to unite these elements into a coherent whole. In so doing, as is true for all fields of knowledge, geography

utilizes facts derived from other disciplines. The omission of geography from a programme of study is the omission of a vital realm of human understanding.

5. Geography is a dynamic subject for it studies dynamic landscapes. The geographer then must concern himself with the development of landscapes and present changes. Geography takes account of this dynamic nature of the total environment more so than any other science. It is essential then for administrators to realize that teachers and students must be kept supplied with current periodicals, revised editions of textbooks and wall maps, the most recently published topographical maps and only up-to-date teaching aids.

### The Purpose of Geography

#### Specific Aims:

1. To provide students with a knowledge of facts, concepts and relationships so that they may be able to visualize or imagine accurately the physical nature and characteristics of human occupation of regions the world over.
2. To provide a knowledge of, and the ability to use, specific tools by which information important to the geographer may be secured, viz., maps, globes, field work, models, pictures, films, air photos, statistical tables, texts, etc.

#### General Objectives:

1. To develop, through an initial study of the student's own environment and subsequent comparison with other environments, an understanding of how the varied problems of peoples are related to differences in environment and to proceed from this understanding to an appreciation of the problems, achievements and possible future developments of other peoples.
2. To develop the power to appreciate the economic and cultural interdependence of regions and peoples.
3. To develop an understanding of the true nature and value of natural resources and of the need for an intelligent use of them.

The value of geography in education. Geography offers a unique integration of the school curriculum in its emphasis on man-land relations in specific places the world over.

Geography has the general educational function, common to all subjects, of training children to think critically and diligently for themselves and by themselves. It is therefore but one of several necessary subjects in a school curriculum that have common objectives, common approaches, and common methods of study, but distinctive contributions to make total wisdom, and precise points of view to offer.

The mental challenge and the necessary emotional insight into human adjustments presented by geography is excellent educational training. Geographers support the theory that all education should help children face political and social problems sensibly.

Geography is the main means of co-ordinating and integrating the informational aspects of an educational programme which includes history and science, in the same way as craft work and architecture are excellent means of integrating mechanical skills and artistry in the field of practical education.

Geographers embrace fully all up-to-date and sensible ideas on methods of teaching, particularly the active experimental investigatory methods involving field work and close study of the real earth.

### General Recommendations

Social studies. We are generally of the opinion that geography, because it is a subject with a distinct point of view, should be taught as a separate subject from at least Grade 3 or 4.

We consider that where geography is integrated or fused with other subjects it loses its identity and special function. Under the heading of social studies the attempt is made to fuse geography most often with history. Though there is a "universal and mutual relation" between these two subjects, they each have a distinct point of view, geography in terms of space and history in terms of periods of time.

To develop a complete understanding of the landscape the geographer requires some knowledge of historical development and likewise the historian must rely partly on geography to correctly interpret historical events. But the complete fusion of two different points of view is surely an impossibility. The forced marriage of geography and history in the Social Studies programmes of many Canadian schools makes it impossible for a teacher to present logically either history or geography unless, as is often done, he ignores one and teaches only the other, or unless he teaches them alternately. In either case the official union of the two subjects would appear to have no effect other than the confusion of the student and the teacher. When geography is taught within the social studies emphasis is usually placed upon relationships to the neglect of areas or landscapes. Geography is, above all, a study of the earth's surface.

Course Content. In general, in the geography syllabi of Canadian school systems too much emphasis has been placed on a complete world regional coverage. The time available in school timetables for the teaching of geography, whether it be taught within the social studies or separately, is short and definitely inadequate, so that teachers tend to neglect physical geography in particular, and concentrate rather on locational and economic geography which they treat very superficially.

Though all school programmes encompassing the grade school and high school period should aim at the development of a knowledge of world geography which is necessary, particularly to achieve the aim of international understanding, the emphasis should be placed on the development of a geographic "spirit" or "understanding" rather than on a factual knowledge of the geography of all countries or regions of the world. The development of geographic "concepts" is more likely to result from the detailed study of the student's home region, the student's own country and continent and typical sample communities or landscapes in other major geographic regions of the world, than it is from any attempt to study the geography of all regions or countries of the world. Any such attempt must surely result in the acquisition of only a superficial knowledge of world geography which may be sufficient to pass examinations but which will make little contribution to the achievement of the major objectives outlined above.

The importance of maps. Maps naturally fit into geography teaching for they make for precision and accuracy and help in the ultimate generalizations and in extending knowledge beyond the limits of the small sample area.

The kinds of maps that are most useful and illuminating in initial study are, however, those which represent small areas on large sheets of paper, such as the topographic maps on the scale of one inch to one mile or to the scale of 1:50,000. These sheets present areas comprehensible to children and show enough detail for them to be able to look through the map to the reality it depicts. Topographical maps in large quantities and at low cost are available for all of the settled parts of Canada. Teachers should be given every assistance in obtaining adequate supplies of topographical maps.

The geographical training of teachers. Many Canadian administrators agree that social studies is an integration of history and geography and yet only rarely are students in training given the opportunity of studying both subjects. Because of the past neglect of geography, students come to training colleges with very little knowledge of the subject and yet they are expected to learn and develop methods of teaching the subject either as geography in its own right or within the social studies.

We strongly recommend that students in training colleges be given the opportunity of studying geography so that they will be better prepared to teach geography or social studies. A number of universities throughout Canada and the United States are now offering summer programmes in geography. We recommend that teachers now in service be given every encouragement to attend such courses. Because many of these courses involve field work they are preferable to winter night courses, though the latter may serve a very useful purpose.

Note: The Education Committee plans to add to the section 'General Recommendations' on the completion of research at present being carried out. The editor would be most grateful for any suggestions or constructive criticism of the resolution.

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THE TRANSITION FROM INDIGENOUS TO SPANISH  
COLONIAL URBAN PATTERNS IN THE VALLEY OF MEXICO

by

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B.A., University of Calgary, 1967

AN ESSAY SUBMITTED IN PARTIAL FULFILLMENT OF  
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## ABSTRACT

### THE TRANSITION FROM INDIGENOUS TO SPANISH COLONIAL URBAN PATTERNS IN THE VALLEY OF MEXICO

This essay examines the evolution of urbanization in the Valley of Mexico from early prehistoric times to the end of the Spanish colonial domination of the area. The period covered is marked by the coalescence of scattered agrarian villages into linked urban communities, by the rise of a number of true cities organized into systems, and finally by the emergence of Mexico City as a primate city dominating not only the Valley of Mexico but the whole of the colony of New Spain.

Three generalizations concerning this process of urbanization in the Valley of Mexico are examined:

1. The stability of agrarian villages is critical to the early phases of the development of urban systems;
2. Pre-industrial cities in the Valley of Mexico, both pre-columbian and colonial, are often ceremonial or symbolic centres whose domains were determined by social, political, religious or military factors, not economic ones; and
3. These centres become primate cities, not as a consequence of a concentration of economic functions but as a result of the large numbers of persons attending the seat of power, the temples, and the armies.

These generalizations are examined for both the pre-columbian and colonial periods.

Archaeological, historical, and demographic data are examined in the attempt to recount the evolution of urban systems in the Valley of Mexico. Relationships between urban centres are considered in terms of both central place theory and the rank-size rule. Owing to a number of methodological constraints, central place analysis proves infeasible and only the rank-size rule is used to examine relationships.

The findings reported in this essay indicate that true urban systems have existed in the Valley of Mexico for more than 1,000 years. By the end of the pre-colonial period, there are more than one hundred urban places in the region. Rank-size analysis indicates that these centres are organized into two overlapping systems, one dominated by Texcoco, the other by Tenochtitlan. The conquest of the area by the Spaniards is marked by the establishment of the colonial capital on the site of the Aztec capital, Tenochtitlan. This act maintains the symbolic and ceremonial nature of the centre and assists the Spaniards in establishing hegemony over the region. Forced removal of Indians from their villages in the process of creating the congregaciones civiles, and the labour demands caused by the construction of the new capital, combined with epidemics of diseases brought by the Europeans, severely disrupts the indigenous system of urban places. As a consequence, Mexico City, by the end of the eighteenth century, is a primate city, dominating the whole colony.

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## Chapter 1

### INTRODUCTION

#### 1:1 Introduction

The development of town and city life in Spanish America during the colonial period has attracted the attention of many scholars in recent years. Most of the attention has come from urban historians and sociologists. A few geographers have examined colonial urbanization in Latin America, most notably Houston (1968). Urban historical geography in the Latin American setting has been, like all other forms of historical geography of the region, a neglected, suffering from little attention and "a lack of data" (Parsons, 1964). Most geographic studies of Spanish colonial cities have examined the origins of the "grid pattern" morphology characteristic of those centres (Stanislawski, 1946; Stanislawski, 1947). In a recent paper, Rees (1974) has challenged this notion, offering the example of Mexico City as a potential focus of a wide variety of studies by urban geographers.

The study of Mexican urbanism is of great potential value to the development of generalizations about historic processes of urban development. The oldest continuously existing urban system in the western hemisphere is that of the Valley of Mexico, the site of the vast modern metropolis of Mexico City. On the eve of the Spanish conquest, the Valley of Mexico was marked by what was probably the largest urban concentration in the world of the time (Gerhard, 1972). After the conquest, it became the capital of New Spain and the most important American city of the colonial period. Today, Mexico City is a classic example of the primate city (Hayner, 1954) dominating the whole of the Mexican Republic.

A number of possible lines of investigation emerge from the sequence of development of urbanism in the Valley of Mexico. Perhaps the most interesting and having the greatest potential for the development of generalizations in urban geography are:

1. analysis of the systems of cities in the Valley of Mexico during the prehispanic period (Hardoy, 1967);
2. examination of "the continuity of economic, institutional, and spatial prehispanic and colonial urbanization (Hardoy, 1967:86);
3. investigation of the role of colonialism and the creation of an imperial capital in the development of Mexico City as a primate city and other impacts of colonization on the indigenous system of cities.

This last area of investigation arises from a number of observations and questions about the role of imperialism and colonialism, raised by Berry 1964b, Johnson (1970), Harvey (1973), and de Souza and Porter (1974) concerning the development of urban systems in preindustrial and colonial societies. This essay represents an attempt to follow up these three related lines of inquiry in the context of the development of urban systems within the Valley of Mexico.

## 1:2 Methodology

Methodologies appropriate to the exploration of prehispanic and early colonial urbanization in Latin America vary greatly from study to study. Most utilize a single disciplinary approach, usually anthropological or historical. The techniques of the geographer have not been applied to this area of study (Morse,



1970). Hardoy (1967:69) feels that there is a need to find "application of methodologies utilized heretofore in isolated cases and periods, for utilization in an interdisciplinary effort."

This essay considers generalizations developed by three scholars - two geographers and an anthropologist - concerned with the processes and forms of urban systems in pre-industrial societies. To these generalizations are applied analytic techniques concerning the spatial relationships between urban places.

The first generalization considered emphasizes the stability of villages as functional units in the early development of urban systems in Mexico (Wolf, 1959). With the stable economic base provided by the surplus production of agricultural villages, cities developed as centres of social, religious, political, and military power. Fluctuations in the stability of the villages greatly affected the stability of the urban systems.

The second generalization concerns the symbolic nature of preindustrial urban centres (Wheatley, 1970). Such cities were usually ceremonial centres symbolizing the powers concentrated within them. Control over such urban places is important in the building of empires or the establishing of colonial hegemony.

The third generalization derives from the fact that such cities are frequently very large, relative to the size of other centres in the territory over which they hold control. The symbolic city is "customarily a capital city, an administrative centre where the ruling classes reside, together with their entourage, their

retainers and servants, and where artisans, politicians, and professional people who cater to the needs, desires and whims of the patricians will perforce also congregate" (Johnson, 1970:152). Such cities, with their populations swollen by the influx of persons described above, are often primate, dominating a hierarchy of lesser centres.

These three generalizations all concern the character of preindustrial cities, giving only a suggestion of possible spatial relationships between those cities and other urban places. They do not provide any means of analyzing quantitatively the relationships between urban places. Two approaches to regularities in patterns of city sizes and functions -- the rank-size rule (Zipf, 1941) and Christaller's (1954) theory of central places -- have been commonly applied by geographers studying urban systems.

Christaller's (1954) theory of central places is an attempt to explain the sizes and arrangement of urban places in terms of economic functions in relation to transport costs. Christaller's analysis of patterns of urban places in southern Germany indicated a nested hierarchy of central places ideally arranged in hexagonal patterns. Empirical tests of the theory of central places have been undertaken in many parts of the world with varying results. Few attempts have been made to apply central place theory to preindustrial, peasant economies; Skinner's (1964-65) study of central places in rural China is a notable exception.

Preliminary examination of the data for the Valley of Mexico indicated that Christaller's theory of central places might not be applicable. Three factors

contributed to this conclusion. The first concerned the physical nature of the Valley of Mexico. The extensive series of lakes that originally dominated the area limited the available locations for urban places. At the same time, the use of boats combined with a lack of draft animals or the wheel, appeared to produce a marked skew in the range of effective transportation between places. The second major factor was the redistributive nature of the pre-colonial and early colonial economies. Control over the smaller urban centres and the intensity of the flow of trade goods was closely linked to the military power of centres. Finally, while some data on specialization of market functions for individual places in the Valley of Mexico exist, it is not sufficient for an examination of central place functions in the study area.

Zipf's (1941) rank-size rule, while dealing with the relationships in size between urban places, does not concern itself with spatial arrangements among centres. Zipf, a sociologist, was concerned with relationships of economic power and human behaviour, particularly at the level of the nation. An empirical rather than a theoretical construct, the rank-size rule postulates that conflicting forces of diversification and unification are at work in any economic system. The forces of diversification will tend to produce a population marked by many small, self-governing communities; unification is the process that leads to the concentration of a large number of persons, services, and economic activities in a limited area.

The interaction of these factors is at the basis of the rank-size rule. Zipf (1949:399) expresses the rule as follows:

Since the Force of Diversification makes for a larger n number of small P communities, whereas the Force of Unification makes for a smaller n number of larger P communities, then, if we interpret the relationship as a best straight line on doubly logarithmic co-ordinates, the result will be that the n number of different communities, when ranked r, in the order of their decreasing P size will follow the equation (approximately):

$$r = p^{-q} K \dots$$

when r is the rank of a place, P is the population, and K and q are constants.

Where the forces of diversification and unification are in balance, the equation has the slope 1.0.

Berry and Garrison (1958), Stewart (1958), and others have commented on the relationship of Zipf's rank-size rule to geography. Stewart (1958:222) notes that "the rank-size rule is an empirical finding, not a logical structure. Nevertheless, its partial verification suggests an underlying logical basis." Berry and Garrison (1958:86-87) note a consistency between Zipf's rank-size rule and Christaller's central place theory:

No great difference exists between Zipf and Christaller; on the level of the intuitive statement of basic notions, the two schemes seem very much alike. ... By the proper choice of relationships, the class hierarchical scheme of Christaller may take on the rank-size character of Zipf's observations. The Christaller scheme is consistent with Zipf's empirical observations, but consistency requires a rigorous choice of relationships.

This observation suggested that a correlation between the rank-size rule and hierarchical organization might hold in the Valley of Mexico where it is possible to demonstrate a hierarchically organized system of cities, even though that system departs greatly from Christaller's theory of central places.

The use of rank-size relationship is made possible by the availability of census data for various stages of Spanish colonial domination of the Valley of Mexico, starting with the Conquest (see Sources of Data below). Of particular interest in using the rank size was the indication of impact of conquest on the stability of the smaller centres in the region. The rank-size analysis was also used in an attempt to determine whether one or more urban systems were operating in the Valley of Mexico at the time of conquest. Of interest also was whether this method could cast any light on the emergence of the primacy of Mexico City in early colonial times.

### 1:3 Sources for a Historical Geography of the Valley of Mexico

In his "Foreward to Historical Geography", C.O. Sauer states that "the first step in the reconstruction of the past stages of a culture area is mastery of its written documents" (Sauer, 1941:14). These documents may be official reports, unpublished but retained in archives; chronicles or other contemporary historical accounts which were published; maps and charts that were in contemporary military or navigational use; ecclesiastical or civil records of births, deaths, and marriages; personal accounts of travellers; and, too often neglected by the historical geographer, the works of poets, novelists, and artists of the period whose descriptions of their environments may add a great deal to our understanding of contemporary life.

The historical geographer who chooses to investigate the processes that shaped the landscape of Mexico (Nueva España) during the early centuries of the colonial period is fortunate indeed in the availability of written records.

There is an embarrassment of such riches in the old Spanish records for New Spain, from parish records up to summary reports that were sent to the King in Spain. There are diaries and accounts of early explorations, the *visitas* made by inspecting officials who reported in detail on conditions of the country, letters of missionaries, the so-called geographic relations (*Relaciones Geograficas*) ordered for all of Spanish America at several times in the sixteenth and eighteenth centuries, records of payments of taxes, data on mines, salines, and roads. Perhaps no other part of the New World has as elaborate a documentation on settlements, production, and the economic life as do the Spanish colonies. (Sauer, 1941:15).

The scholar who turns his attention towards colonial Mexico has the further advantage that many of the sources, especially archival records, have been collected and edited and that many important contemporary chronicles and accounts have been translated and published in English.

Several recent publications have covered extensively sources for the historical geography of Mexico. Gerhard (1972) has prepared an encyclopaedic guide to the historical geography of New Spain. Organized gazetteer-style around the communities of the colony, it is a valuable source for the geographer examining the spatial patterns of urban systems during the colonial era. Gerhard's work is based almost entirely on the *Relaciones Geograficas*, a series of administrative inventories carried out in the sixteenth and eighteenth centuries (Cline, 1949).

Moreno-Toscano's (1968) study of the economic geography of New Spain is also based on the *Relaciones Geograficas*. West (1970) points out the limitations of the *Relaciones*, especially as sources of quantitative data. An examination of the coverage of both the *Relaciones Geograficas* and the *Suma de Visitas* of 1548

(Borah and Cook, 1960) reveals a number of lacunae concerning centres close to Mexico-Tenochtitlan. Darby (1973) notes a similar problem in the Domesday Book data for early preindustrial Britain with an abundance of data for rural areas and great gaps in the coverage of towns and boroughs.

Nonetheless, statistical surveys and administrative reports abound for New Spain. During the early years of the colony, an inventory was carried out every few years (Cline, 1949). Censuses were taken at frequent intervals. Several members of the Berkeley School of cultural geography have devoted considerable attention to the census data of the period, compiling and analyzing it (Cook and Simpson, 1948; Borah and Cook, 1960; Borah and Cook, 1963). This population data is valuable to the urban historical geographer.

Rees (1974) provides a brief guide to sources for the urban geography of Mexico. Both Rees and Gerhard (1972) emphasize the value of Gibson (1964) in providing hitherto unpublished archival materials of great value to the historic geographer. Gibson, a historian, is particularly concerned with indigenous urbanism in the Valley of Mexico and the impact of Spanish colonial rule on Indian urban life.

In addition to the published archival and documentary materials of the Spanish colonial administration, there is much of value to the historical geographer in the accounts of the conquistadores, the early settlers in the region, and of travellers who recorded their observations during early visits to the area. Among the most useful of these are the accounts of Bernal Diaz de Castillo (1952),

the Anonymous Conqueror (15 ?), and the Spanish leader Cortes (1522). Cortes' letters to the Emperor Carlos of Spain are especially valuable in providing insights as to life in the cities of prehispanic Mexico. Perhaps the most valuable source of material on early Spanish colonial urban life is Cervantes de Salazar's (1554) Life in the Imperial and Loyal City of Mexico in New Spain. Written as a series of Latin dialogues for use by the students of the university, this work uses the device of conducting a visitor through the city to provide an excellent description of Mexico City in 1554, the year it was written. The accounts of visitors to the area like Gage (1958) in 1625 are valuable as is the later but highly analytical work of von Humboldt (1966) during his visit in the eighteenth century.

Many of the early contemporary accounts are also valuable sources for the historic geography of prehispanic urbanism in the Valley of Mexico. This is particularly important as few precortesian records have been preserved (Radin, 1920). From the few ancient Mexican documents that have survived or which were transcribed by the Spaniards, several scholars have prepared reconstructions of the extent of the Aztec Empire (Barlow, 1949), the economy and trading system of Tenochtitlan (Molins Fabrega, 1954; Molins Fabrega, 1956); and the historical demography of the central Mexican region at the time of conquest (Borah and Cook, 1963). All of these sources are valuable to the historical geographer.

In addition to these documentary sources, archaeological work undertaken in the Valley of Mexico provides valuable information about prehispanic urbanism. The literature is too vast to describe here but the work of Millon (1967),



Sanders (1965) and Vaillant (1935) deserve special mention. The archaeological record is obscured for the later phases of prehispanic urbanism; the destruction of the indigenous cities by their Spanish conquerors and subsequent urbanization have destroyed many sites (Soustelle, 1967).

There are still a great deal of data about the early colonial period of New Spain lying untouched in the archives of Spain and Mexico (Gerhard, 1972). There are important gaps in the records about early settlements. Nevertheless, the great deal of published and analyzed material available to the historic geographer permits an examination of the historical geography of urbanism in the Valley of Mexico.

#### 1:4 The Study Area

The Valley of Mexico is not a valley at all. As Beltran (1958:13) says, "la geografía define el termino 'valle' de manera que hace incorrecto su uso en esta ocasión." The Valley of Mexico is in fact a closed drainage basin. This fact gives rise to some confusion in terminology. In the Spanish-language literature, one finds either el valle de México or la cuenca (basin) de México. Some Mexican scholars and the Mexican government have tried to clarify the issue through the use of the phrase la cuenca del valle de México. Thus the water resource control agency for the basin is known as La Comisión Hidrológica de la cuenca del valle de México. Such clarification, while entirely accurate in description and name, is unnecessarily awkward. The accepted English usage is The Valley of Mexico.

In his review of the hydrology of the Valley of Mexico prior to the sixteenth century, Maldonado-Koerdell (1954-55:15) offers the following brief description of the basin:

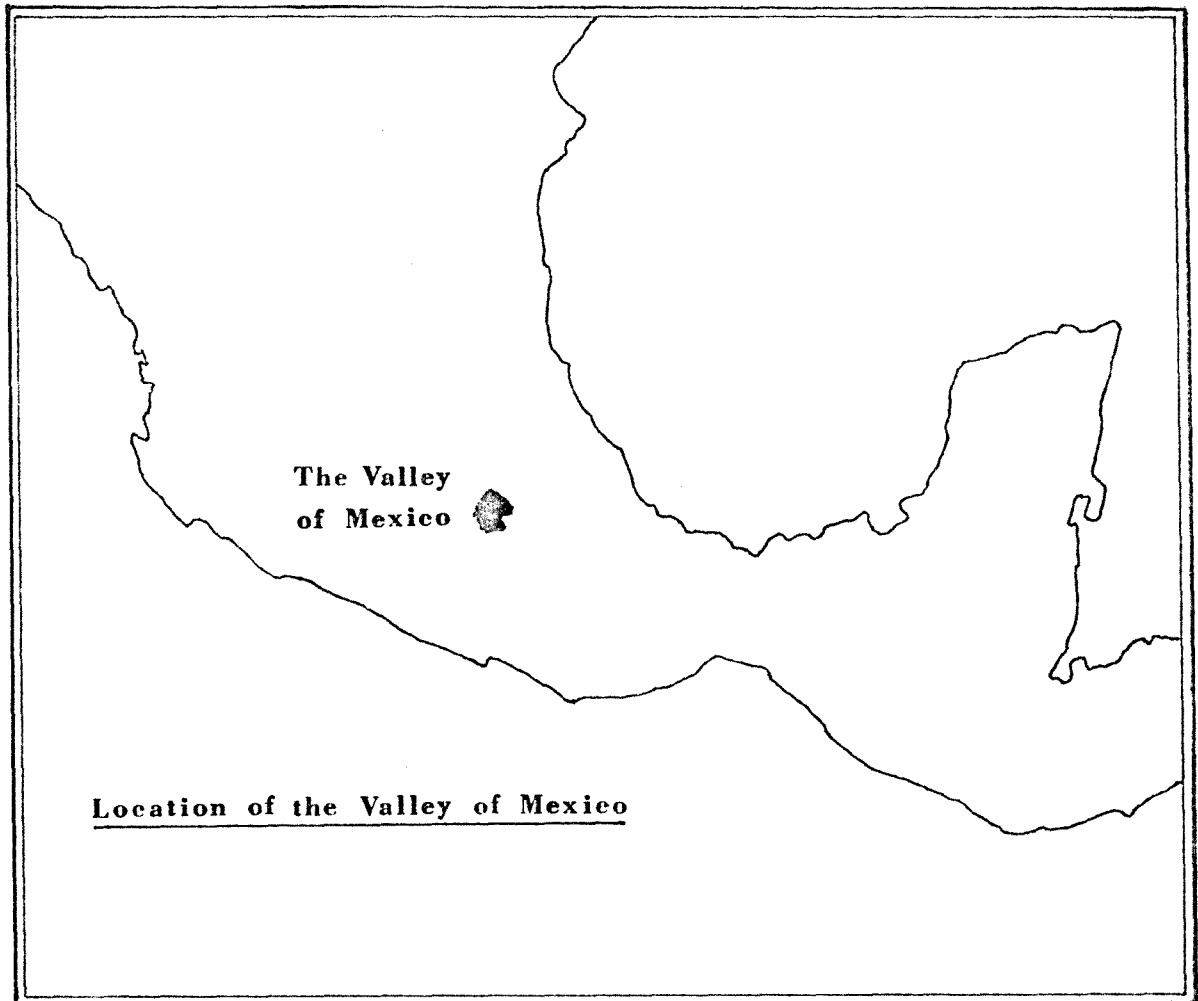
puede caracterizarse como una 'hoya' o depresión incompletamente rodeada por elevaciones de altura variable y situada en la porción meridional de la mesa (o altiplano) central. Dichas elevaciones de origen ígneo y compuestas exclusivamente por rocas extrusivas de Edad Tercera o Cuaternaria aislaron la hoya durante siglos y crearon un régimen hidrológico endorrérico.

During recent geological time, the basin has had no natural outlet to the sea.

The Valley of Mexico (Map 1) is shaped roughly like a figure eight and extends approximately 120 kilometers in a north-south direction and nearly sixty-five kilometers east to west (Gibson:1964). The surface area is some 8000 square kilometers of which Beltran (1958:14) indicates "se considera dividada en 3000 (square kilometers) correspondiente a terreno montanoso, y 5000 a terrenos 'planos' aunque presentan marcados ondulaciones." The floor of the basin lies at an altitude of 2200 meters above sea-level, while the surrounding mountains rise to over 4000 meters in elevation. (Map2).

In the distant geological past, the Valley of Mexico was a true valley with a drainage system opening to the south towards the Rio Balsas which flows to the sea (Golomb, 1966). The present configuration of the basin was formed by volcanic eruptions during the late Tertiary or early Quaternary (Vivo, 1948; Maldonado-Koerdell, 1954-55). Maldonado-Koerdell states that the basin is entirely the product of rising igneous materials and not of any other tectonic process. Golomb (1966) argues that the basin was formed as a result of the inter-

MAP 1

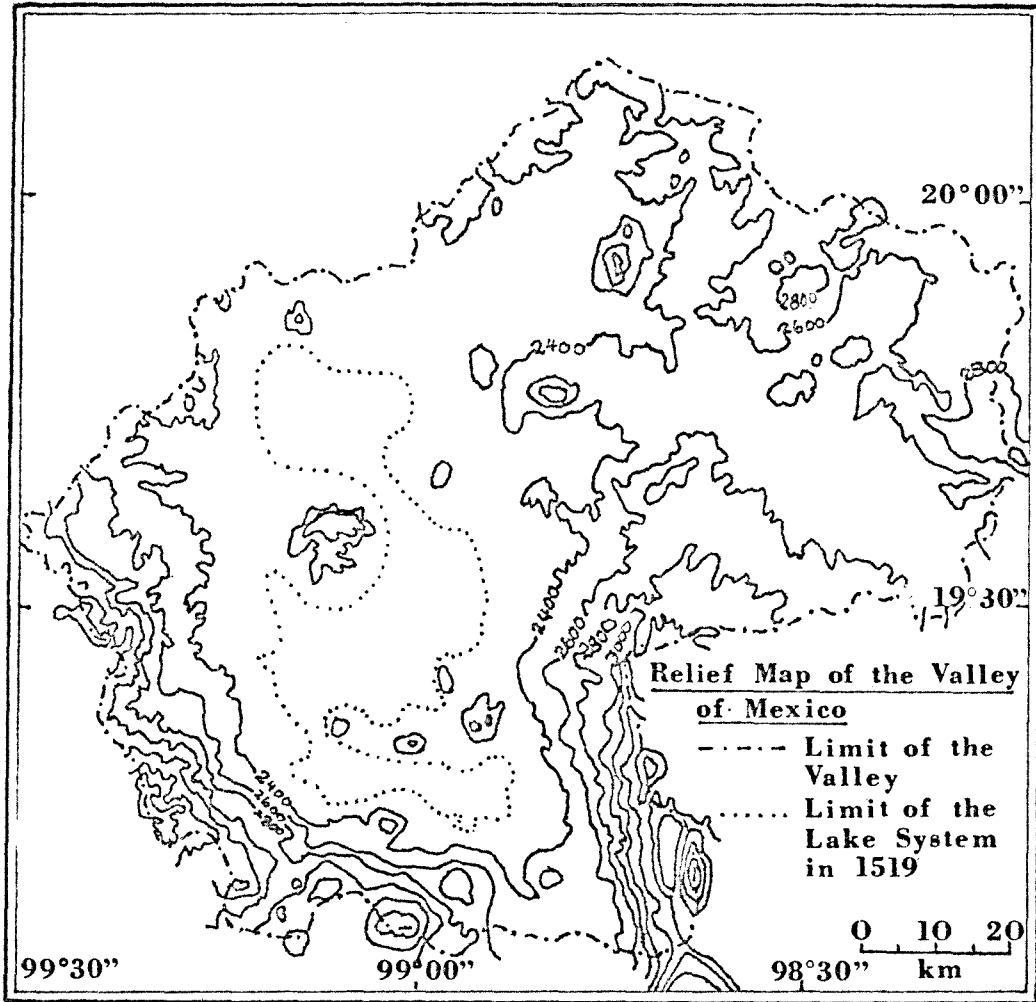


action between two major tectonic systems, the Chapala-Acambay continuation of the San Andreas Fault and the Humboldt-Clarion Fault. These two systems intersect about fifty kilometers to the south of the Valley of Mexico.

There has been little important volcanic activity in the Valley of Mexico in historic time. However, because of its location relative to the two major fault systems indicated above, the area is a major earthquake zone. Earthquakes during Aztec times and even after the Christian conversion of the region were regarded as unfavourable omens. The last major volcanic activity occurred during a relatively recent stage in the human occupation of the valley. The most recent activity took place in the south-central portion of the basin and is marked by the large lava flow known as the Pedregal de San Angel near the site of the National Autonomous University of Mexico. This lava flow covers a major ceremonial centre, Cuicuilco, which dates from the late Formative period. Carbon-14 dating of sublavial material from the site indicates that the area was covered sometime just prior to the start of the Christian epoch (Heizer and Bennyhoff, 1958).

The dominant feature of the Valley of Mexico in pre-Hispanic times was the presence of two major lakes, Lago de Texcoco and Lago de Zumpango, and three smaller lakes, Lagos Xaltocan, Xochimilco, and Chalco (Map 2). These were joined by wet, marshy areas of land and, in effect, formed two large lakes (Gibson, 1964). During the late Quaternary and early recent periods, the entire basin may have formed one large lake or inland sea (Maldonado-Koerdell, 1954-55). Cortes (1522:86) writes of his first impression of the Valley of Mexico.

MAP 2



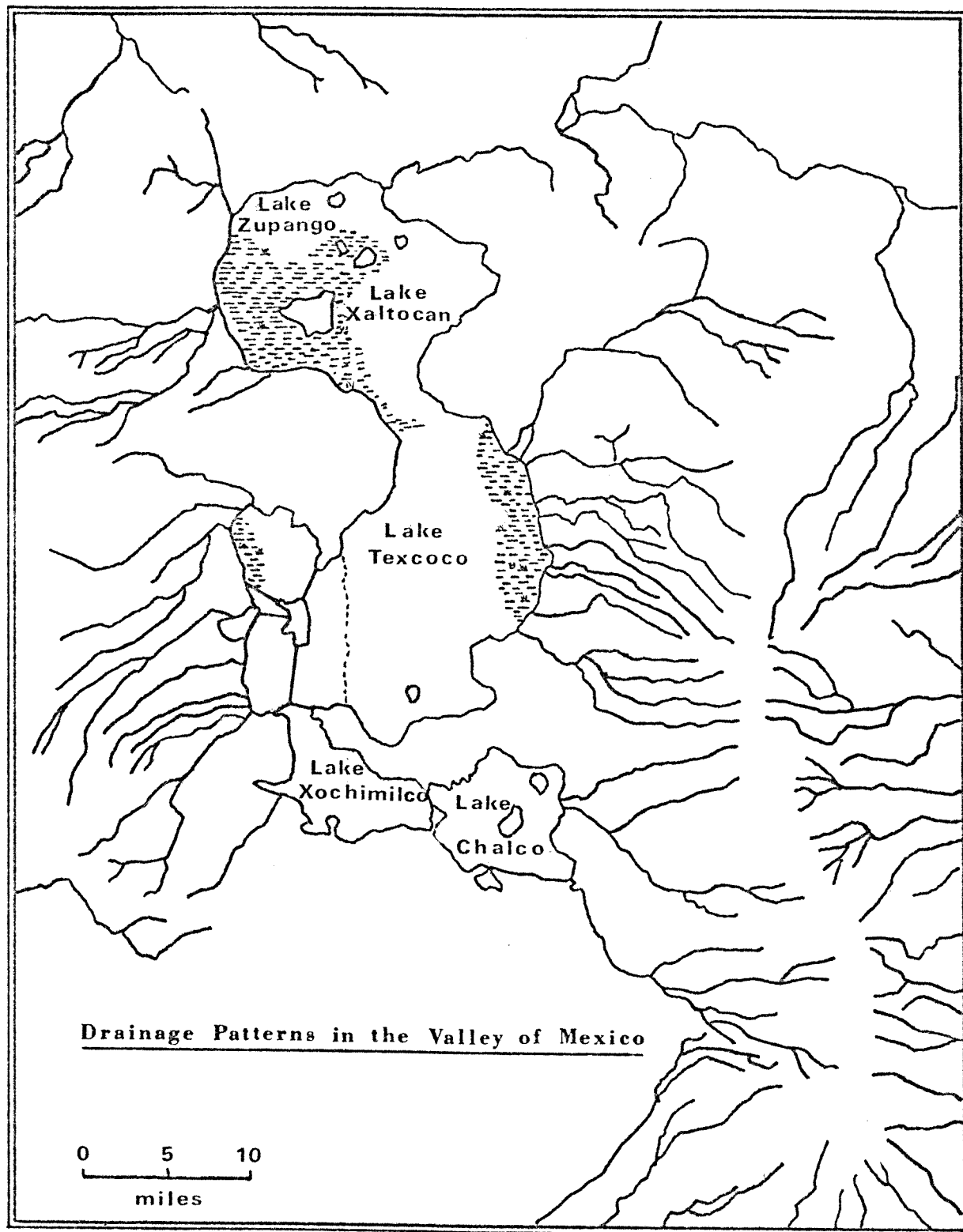
The province is roughly circular in shape and entirely surrounded by very lofty and rocky mountains, the level part in the middle being some seventy leagues in circumference and containing two lakes which occupy it almost entirely, for canoes travel over fifty leagues in making a circuit of them. One of the lakes is of fresh water, the other and larger one of salt. A narrow but very lofty range of mountains cuts across the valley and divides the lakes almost completely save for the western end where they are joined by a narrow strait no wider than a slings throw which runs between the mountains ... since the salt lake rises and falls with the tide, sea water pours from it at high tide into the fresh water lake ..., and likewise at low tide pours back from the fresh to the salt.

These lakes dominated the Valley of Mexico and formed the main transportation system in the precolonial era and the early years of the colonial.

The drainage network of the basin (Map 3) is a relic of an ancient system that filled the lacustrine depression. Capture systems are small and within the larger basin there are a number of closed drainage systems which do not participate in the larger hydrological system of the Valley of Mexico. As mentioned earlier, there is no natural outlet from the basin to the sea; such an outlet was left to the hand of man and the construction of the tunnel of Tequixquiac in 1900 which completely drained the lake system (Simpson, 1969). For a few years following the construction of the tunnel of Huehuetoca in the first decades of the seventeenth century, the Valley had an outlet to the sea (Gibson, 1964) but it had little impact on the drainage pattern.

Even in prehispanic times, the drainage system of the Valley of Mexico had been altered to suit human ends. The inhabitants of the old Alcolhua (Texcoco) domain were irrigation specialists (Wolf and Palerm, 1955) and the Texcocan monarch, Nezabualcoyotl directed the construction of a series of

MAP 3



regulatory dikes and breakwaters on Lake Texcoco in order to protect that city and neighbouring Tenochtitlan from periodic inundation. During the entire colonial period, the efforts of the Spaniards were constantly directed towards the draining of the lacustrine system. This programme, known as the Desague involved the mobilization of a large manpower force and had, as will be demonstrated below, a profound impact on the urban population of the Valley.

Such efforts to control the hydrological nature of the basin have led, particularly in modern times, to some climatic changes. The Valley of Mexico is much drier today than it was during the sixteenth century. At the time of the Spanish conquest, the Valley had a temperate climate, lying as it does at the upper margin of the tierra templada. Vazquez Zapata (1966) classifies the climate of the Valley of Mexico as "wet-temperate" with a rain shadow in the south near Texcoco. Like all of upland Mexico, the study area is and was subject to erratic rainfall and periodic droughts. Some, like the drought of 1900-1925 have been of considerable length (Simpson, 1969). Pollen analysis indicates that such a prolonged drought also occurred in the late Formative period (Gibson, 1964). Sanders and Price (1968) have speculated that the chinampa system of aquatic garden agriculture and other forms of irrigation systems may have been developed at this time as a response to the "challenge" of the drought conditions.

By contrast, the late post-Classic period, the years immediately preceding the Spanish conquest, was one of abundant rainfall. Agriculture flourished and population growth was rapid. Of this period, Gibson (1964:5) says: "of all Indian peoples those of late Post-Classic times made the most accomplished



adaptation to their lakeside setting. They built dams, causeways, aqueducts, canals, irrigation works, terracing systems, and cities built partly in the water and partly on land." Sanders (1965) and Sanders and Price (1968) have discussed at length the ecological aspects of what they have termed the "Central Mexican Symbiotic Region". While heavily ecological-determinist in their views, the authors have provided an excellent analysis of the various ecological niches of the environment of the Valley of Mexico and of human activity therein.

To date, no one has attempted a major analysis of the environmental change that took place in the Valley of Mexico following the Spanish colonization of the region. From the available literature a clear pattern emerges, however, that indicates major alteration of the environment. Huge quantities of timber were cut for beams for Spanish-style construction - Cortes' palace required seven thousand cedars for beams (Gage, 1648) - and to provide charcoal for the Spanish kitchens. The Indians soon adopted charcoal as a fuel and in a few years the once heavily forested hills ringing the Valley of Mexico were badly denuded. The iron ploughs introduced by the Spaniards cut deeper than the digging sticks of the Indians, and the sheep and cattle overgrazed the land. The erosion of the loose but fertile volcanic soils was hastened by these innovations (Cook, 1949). The Desague created the greatest single change in the environment of the Valley of Mexico in colonial times. Significant changes in population size may have accompanied these environmental shifts.

On the eve of the Spanish "discovery" of the New World, the empire of the Culhua-Mexica (commonly known as Aztecs) covered the most part of the

central and southern portions of what is today the Republic of Mexico (Map 1), (Barlow, 1949). By the year 1519, this empire covered a surface area of greater than 250,000 km<sup>2</sup> and counted as its citizens and tribute-paying subjects some 10-12 million persons (Borah and Cook, 1963; White, 1971).

The northern frontier of this empire lay along a rough line running from the Rio Panuco in the northern part of the modern state of Vera Cruz on the Gulf Coast to the mouth of the Rio Balsas in what is now Guerrero on the Pacific. To the south, the imperial domain extended to the Isthmus of Tehuantepec approaching the modern border of Mexico with Guatemala (Chapman, 1957; White, 1971). These boundaries were rather fluid as they were, for the most part, formed by lines of resistance from other tribal groups at the periphery of the empire.

The empire of the Culhua-Mexica was constantly expanding through the activities of the columns of traders (Pochteca in Nauhatl) and their military escorts moving into hostile territory in search of slaves and other precious commodities. On the other hand, the constant encroachment of hostile tribal groups known collectively as the Chichimeca (Chichimec is a Nauhatl word that literally means "sons of dogs" and has an identical meaning to "barbarian" as used by the Greeks or Chinese to describe those groups that lay beyond their culture realms led to the retreat of the northern frontier at frequent intervals).

The Empire of the Culhua-Mexica was not a concrete and cohesive entity. Effective control was uneven, strongest at the centre and diminishing outward. Within the territorial limits of the empire lay two free enclaves, Tlaxcala and

Teotitlan, which paid a form of danegeld in order to maintain their independence (Barlow, 1949; for more on Tlaxcala, see Gibson, 1952). The empire was organized into thirty-eight provinces (including the remote province of Xoconochco, south of the Isthmus of Tehuantepec), all paying tribute to the cities of the Triple Alliance, Tenochtitlan, Texcoco, and Tlacopan, located in the Valley of Mexico (Barlow, 1949; Chapman, 1957).

The general trend of the expansion of the empire was to the south and east, away from the temperate and elevated Valley of Mexico, towards the areas of differing agricultural and resource production that lay in the tropical lowlands. Each of the subject provinces was required to pay a heavy tribute to the overlords of the Triple Alliance. The annual tribute received by Tenochtitlan was: 7000 tons of maize; 4000 tons of beans, grain amaranth, and sage seed; 100 tons of cotton; and equally large amounts of salt, peppers, cacao (which served as a form of currency as well as the basis of the favourite beverage of the Aztecs), tobacco, and honey. Also given in tribute were various manufactured products and raw materials for the workshops and ateliers of the artisans and craftsmen of Tenochtitlan and Texcoco (Codex Mendoza, 1938; Molins Fabrega, 1956). Tribute and trade goods from remote areas were brought back to Tenochtitlan by expeditions of merchants accompanied by soldiers. A great number of slaves was taken in the course of the expeditions and more were given in tribute, not for labour but as sacrificial victims for the alters of the god Huitzilopochtli, the symbol of the empire (Padden, 1967).

The tribute collection was an extractive economic activity which sustained the Aztec empire. This tribute-gathering was regulated through an

efficient civil service and enforced through military action in the case of nonpayment. There was a regular system of markets and "port of trade" exclaves throughout the extent of the empire (Chapman, 1957). The trading was carried on by a specialized merchant class which had clearly established itself as a distinct social group by the end of the fifteenth century. In a society that had neither the wheel nor any domesticated beasts of burden, all of this long-distance commerce moved on the backs of human carriers or in canoes on the lakes. Through its paramount position within the Triple Alliance, Tenochtitlan became the redistributive centre for all tribute goods received.

### 1:5 Summary

The Valley of Mexico was clearly the centre, both politically and economically, of the Empire of the Culhua-Mexica. It was a zone of greater political and economic integration than was to be found in the more distant parts of the empire. Within the Valley, a highly developed system of market centres located in cities and towns served to distribute specialized production (Sanders and Price, 1968). Surplus production from areas outside the valley was brought to Tenochtitlan and redistributed within the valley (Katz, 1966).

Of similar importance is the fact that, by the end of the fifteenth century, nearly all of the peoples of the Valley of Mexico shared a common culture, language, and religion. In 1519 the peoples of the Valley of Mexico were marked by a high degree of "homogeneity of their most characteristic traits" (Paz, 1961:90). Such cultural homogeneity was a fairly recent development, perhaps no more than one or two centuries old (Padden, 1966), and was considerably less pronounced outside of the study area.

The peoples of the Valley of Mexico were characterized by a common social organization and a high degree of urbanization (Adams, 1966). It has been estimated that in 1519, a full twenty-five percent of the inhabitants of the Valley of Mexico were urban residents. The population density of the study area in 1519 has been estimated to have been over three hundred persons per square mile (Cook, 1949).

## Chapter 2

### PRECOLUMBIAN URBANISM

#### 2:1 PreColumbian Urbanism Observed

The first Spaniards who arrived at the Valley of Mexico were clear that they had encountered an urban civilization. Las Casas wrote that "one does not need witness from Heaven to demonstrate that these were political peoples, with towns, inhabited places of large size, villas, cities, and communities" (quoted in Gibson, 1964:32). The letters of Cortes (1522) and the account of the Anonymous Conqueror (15 ?) are filled with comparisons of the cities that they beheld with those of mediaeval Europe. Bernal Diaz del Castillo (1548-16: 269-70) states that "when we saw so many cities and villages built on the water and other great towns on the dry land, ... we were amazed and said it was like the enchantments they tell of in the book of Amadis, because of the great towers, and cues, and other buildings rising out of the water and all built of stone." To the city-dwelling Spaniards who first saw the Valley of Mexico, this was a landscape they could recognize, either from experience or from fantasy.

The urban civilization of the Valley of Mexico in 1520 was the culmination of a process of urban evolution going back nearly two thousand years. Before examining the nature of Aztec urbanism on the eve of the Spanish conquest, we shall briefly examine the evolution of urban society in the Valley of Mexico.

Table 1

Stages of Development of Urbanism in the Valley of Mexico

1500 C.E.	SPANISH COLONIZATION	Colonial
	AZTEC	
	Various Small States	Post Classic
	TOLTEC	
	TEOTIHUACAN	Classic
0		
	Ceremonial Centres	Late Pre- Classic
	Larger Settlements	Middle Pre- Classic
	Small Villages	Early Pre- Classic
1500 B.C.E.		Formative

## 2:2 The First Villages

While the Valley of Mexico has been occupied continuously for some twelve thousand years (de Terra et al, 1949), we shall concern ourselves with the last 3500 years, beginning with the first established permanent farming villages identified so far. The "Formative" or "Pre-classic" (Table 1) period in the Valley of Mexico begins half way through the second millennium B.C. (Willey, 1960). "The Formative period itself is reasonably well understood. Its key archaeological locations are el Arbolillo, Zacatenco, Copilco, and Tlatilco. The period is known by its village sites near agricultural lands, and by its pottery, stone tools, and terra-cotta figurines" (Gibson, 1964:2). These villages occupied lakeside sites (Maldonado-Koerdell, 1954-55), as did the later urban centres.

Agriculture had been developed to quite a high degree by the Formative period and included such domesticated crops as maize, squash, and beans (Sanders and Price, 1968). Terracing of hillsides was a common practice (Gibson, 1964; Peterson, 1959); irrigation agriculture had developed in the nearby Tehuacan Valley by the late Formative (MacNeish, 1964) but there is no evidence of irrigation in the Valley of Mexico at this time. Sanders and Price (1968) have argued that irrigation must have been part of the rise of Teotihuacan but are unable to offer proof.

Of the agricultural villages of the Formative period, their social organization, and their spatial interaction, Wolf (1959:67) says that during this period

ties between communities are still tenuous, they are based upon occasional commercial contacts, and the communities are not yet subordinate to an authority which has its seat outside their limits. These seed planters are thus still primitive farmers,



not yet peasants in the strict sense of the word, because peasantry is no longer an isolated segment of society, sufficient unto itself; it is a functional part of a larger social whole in which the society has been dichotomized into a centre of power and control and a rural hinterland of dependent cultivators.

Vaillant (1944) cites archaeological evidence in the form of ceramic pottery and other designs which indicate a high degree of independent, local creation as pointing to a relatively isolated existence for these early agricultural villages. The sort of dichotomized development that Wolf speaks of comes with the extension of "effective space" around the cult centres and the true urban places that appear in the Classic period.

The religious-ceremonial aspect of these villages is clearly developed during the Formative period. Braidwood and Willey (1961) have pointed out that shrines appear as early as the first villages in Central Mexico. Willey (1961: 94) has offered the hypothesis that the differentiation of ceremonial centre from ordinary village came at a time of population increase and out-migration from the older and now overpopulated villages.

Thus the process might be envisioned as the splitting-off of new village units from old ones as the latter became too large for the available surrounding farm lands. Certain villages may have remained as the sacred centres of these expanding societies, and in these, special constructions were put up as shrines, temples, and burial places. These temples or ceremonial centres eventually became the residence of priests and rulers, the seats of market places, and . . . the foci of arts, crafts, and learning.

In the Valley of Mexico, such specialization had clearly begun by around 1350 B.C. (Peterson, 1959).

### 2:3 The Rise of Monumental Centres

The late Formative and early Classic phases in the Valley of Mexico were bridged by an intermediate stage characterized by developments in urbanism that set the pattern for all subsequent preHispanic urbanization in the Valley of Mexico. Around 1000 B.C., the population of the Valley was augmented by an influx of people from the semi-tropical coastal lowlands to the east. Roman Pina Chan (1955) discusses these migrants and the difference between their stage of urbanism and that of the local village-dwelling farmers. The original farming population remained in their villages while the newcomers, referred to as the Olmecs, gathered in what Pina Chan calls "semi-urban" groupings around monumental religious architecture. Krickeberg (1961) and Coe (1971) discuss in detail the diffusion of Olmec culture traits from the lowlands of the Gulf coast.

Peterson (1959) refers to these newcomers as the "magicians"; Wolf (1959) speaks of the ascendancy of a priest class and the development of augmented pantheons and more complex theologies and their resultant social changes. The Olmecs thus establish the pattern that was to persist for some 2000 years in the Valley of Mexico, the domination of religion in urbanism, even though theocratic rule would eventually yield to secular authority.

The first evidence of the monumental architecture of the style associated with major ceremonial centres is to be found in the ruins of Cuicuilco near the Pedregal de San Angel. Here are found the remains of a large ceremonial mound or raised platform dating from about 1000 B.C. (Cummings, 1923; Heizner and Bennyhoff, 1958). There is evidence also indicating that at about the same time

a temple mound and adjoining plaza were constructed at Teotihuacan (Millon, 1957). The first of these ceremonial platforms was probably nothing more than a mound of earth with a shrine or temple on the top.

The houses of the villagers and the residents of the ceremonial centres were adobe huts or small stone houses of a style still found in the Valley of Mexico today (Spinden, 1928; McAndrew, 1965). A loose, unplanned pattern persisted at the start of the late Formative, around 500 B.C. Peterson (1959:44-45) reconstructs the pattern of these village or semi-urban settlements in the following manner.

The typical size is not yet known and there is no formal village plan. People first erected houses wherever they pleased, with no streets in evidence. Then a central plaza was laid out, around which were grouped the main religious and civic structures - temples, markets, and houses of the main dignitaries of the community.

This pattern, if not the sequence, dramatically foreshadows the structure of the Spanish colonial town. Archaeological evidence of the pattern reconstructed above is to be found at several sites including Cuicuilco, Tlapacoya, and Teotihuacan (Peterson, 1959).

Of even greater significance were the changes in social organization that accompanied these changes in settlement morphology. For the planning and the execution of the temples and the ceremonial platforms required a strong central authority, a surplus of labour for construction work, and a sizable food surplus. Following Wittfogel, Sanders and Price (1968) have argued that only irrigation agriculture could provide the necessary authoritative control and surplus. As

mentioned earlier, there is as yet, no evidence to support this position. Others, like Soustelle (1967) and Adams (1966) have argued more cautiously for the evolution of authority in a specialized priest class and for the development of agricultural surpluses without ascribing this process to any one cause. Soustelle (1967: 202-03) has written of this period:

The beginnings of urban life had appeared on the Central Plateau by the end of the pre-Classic (late Formative) period. The population must have grown enormously as a result of the abundant food supply and the villages began to develop into townships. The construction of the pyramid of Cuicuilco required a prolonged and organized building effort under the direction of architects (perhaps priests) who wielded sufficient authority to coordinate the work of an army of labourers and stone masons; and the building of the Olmec pyramids . . . cannot have been achieved without a political structure sufficiently complex and sufficiently well-organized to mobilize the considerable labour force required.

In Wheatley's view, the development of such cult or ceremonial centres and the specialized monumental construction found therein mark the "take-off" point of urbanism.

Whenever we trace back the characteristic urban form to its beginnings, we arrive not at a settlement that is dominated by commercial relations, a primordial market, or one that is focussed on a citadel or archetypal fortress but rather at a ceremonial complex. (Wheatley, 1971:225)

Thus, Soustelle's (1961:204) summary remarks concerning the early rise and evolution of the city in the Valley of Mexico are especially pertinent in the light of Wheatley's thesis.

The ancient Mexican city was above all a ceremonial centre made up of earthworks and buildings grouped around one or more temples, together with a variety of alters, stelae, and carved monoliths. The first towns in this sense were the various

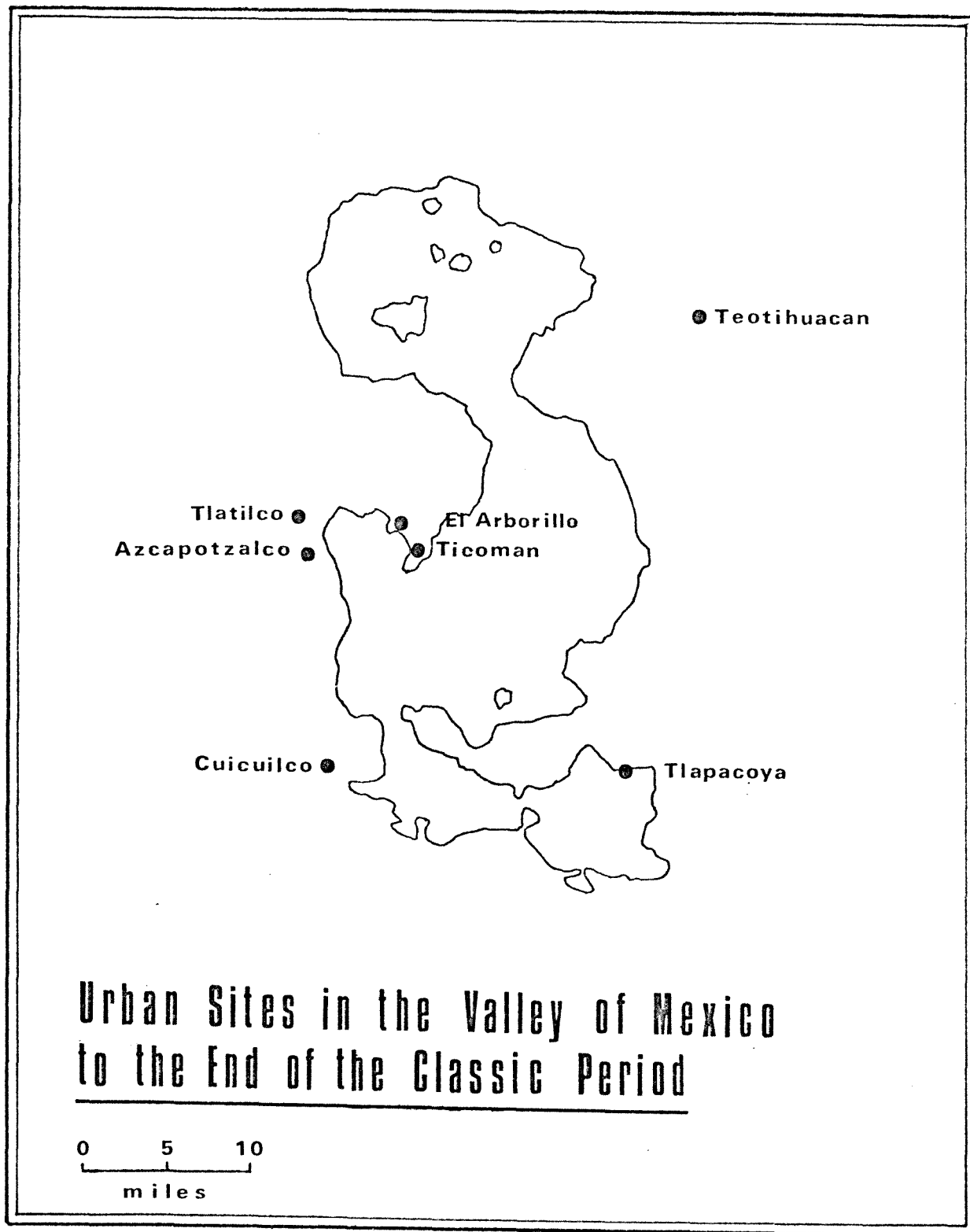
Olmec centres, . . . The urban revolution can be dated to the beginning of our era. The term of urban revolution seems entirely apt for here, as in Mesopotamia and in Egypt, the town was much more than an overgrown village. It was quite a new phenomenon: a cult centre, but also a centre of trade and a seat of authority, where the population of the surrounding area gathered to take part in religious rites, where they came to exchange their produce in the market, and where they acknowledged the spiritual or military authority of the rulers of the city.

While Adams (1966) in his comparison of the rise of urban society in Mexico and Mesopotamia rejects Childe's (1942) concept of the "Urban Revolution" in favour of the "evolution of urban society", he is in full agreement with the observations Soustelle makes about pre-Hispanic Mexican urbanism. The first "cult centre" to become a true city was Teotihuacan. The rise of Teotihuacan marks the beginning of the Classic Period in the Valley of Mexico, a period characterized by "an urban civilization of such vigour that it significantly influenced the subsequent development of most other Middle American civilizations - urban and non-urban - down to the time of the Aztecs" (Millon, 1967:38) on Map 4.

#### 2:4 Teotihuacan - Early Planned City

Teotihuacan is one of the best-preserved and most thoroughly researched of all ancient urban sites. The archaeological investigations and the discoveries made at Teotihuacan have been very well covered in both the popular and the professional literature. The fullest and most authoritative accounts of the excavations and the results of the archaeological research at Teotihuacan are to be found in Sanders (n.d.), Millon (1967), and Séjourné et Maspero (1969). The description of Teotihuacan given below will be of necessity brief and will be concerned chiefly with the relationship between the urbanism of the Classic period and that of subsequent periods.

MAP 4



**Urban Sites in the Valley of Mexico  
to the End of the Classic Period**

0 5 10  
miles

Teotihuacan was a fully planned city by any definition of that too often vague term. Willey (1961) and Wheatley (1971) have both pointed out that the architecture merits the too often cliched label "monumental"; its architectonic conception and execution indicates a consistent and effectively imposed overall plan. Millon (1967) has indicated that the results of excavations at Teotihuacan indicate that the city was radically different from all other Middle American settlements of its time. It represents (to borrow an analogue from biology) an evolutionary saltation so significant in its consequences as to almost appear to justify the use of the term "urban evolution" by Soustelle (1961) and Millon (1967).

As mentioned earlier, Teotihuacan had been the site of a major ceremonial centre during the last centuries of the Formative period, contemporaneous with Cuicuilco. By the third century A.D., the start of the Classic period, the principal axis of the city with its two main pyramids had been constructed (Hardoy, 1968). The construction of this central axis reflects a significant change that must have occurred in the organization of society and the flow of authority among the Teotihuacanos. Wheatley (1971:260) says that "the rigorously premeditated distribution of space and mass along the axis between the Pyramid of the Moon and the Temple of Quetzalcoatl presupposes a concentration of political power far in excess of that obtainable in tribal society." Wolf (1959) has observed that the construction of the Pyramid of the Sun alone would have required the labour of some 10,000 men working for twenty years.

Such urbanization required not only a shift in authority but also a significant change in the economic basis of society.

From the very last centuries of the first millenium B.C., Teotihuacan was the residence of a large and permanent population occupied in government duties, services, trade, and handicrafts without the necessity to leave the city to earn their living. This situation constituted a fundamental change in the organization of labour from that of the agricultural villages of the Formative period when all able-bodied men, and - seasonally - even the women and children left their homes to go into the fields. (Hardoy, 1968:23)

The question of whether the beginnings of urbanism lie in the concentration of authority in the ceremonial centres (Wheatley, 1971), or whether the change in the economic structure which accompanied surpluses of production (Harvey, 1972), is irrelevant to the discussion at hand. What is significant is that the change in social organization and in economic structure occurred at the same time and, in doing so, gave rise to a pattern of urban life that persisted to the arrival of the Spaniards.

At its zenith, Teotihuacan had a population of between fifty and one hundred thousand persons living within the nuclear city (Millon, 1967). Such a population required a large agricultural surplus, most likely achieved through irrigation (Sanders, 1965) or even through a form of the chinampas or floating garden system of the Aztecs (Millon, 1967). The impact of such a sizable urban population upon the rural agricultural population was great (Parsons, 1968). Sanders (1965) has indicated that there may have been attempts by the rulers of Teotihuacan to resettle dispersed rural populations in nucleated settlements similar to the *Congregaciones* established by the Spaniards. It is not clear whether this resettlement programme was an attempt to make more efficient the redistributive aspect of the economy through tribute collection or through regulated trade.



Certainly, the large urban population required an efficient system for the distribution of agricultural and other products. Millon (1967:43-45) has stressed that such economic interaction would have contributed greatly to the cohesiveness of urban life.

The market place would similarly have made an important contribution to the integration of Teotihuacan society. If the greater part of the exchange of goods and services in the city took place in one or more major markets (such as the one that may have occupied the plaza of the great compound) then not only the Teotihuacanos but also the outsiders would have an interest in maintaining the 'peace of the market.' Moreover, the religion of Teotihuacan would have imbued the city's economic institutions with a sacred quality.

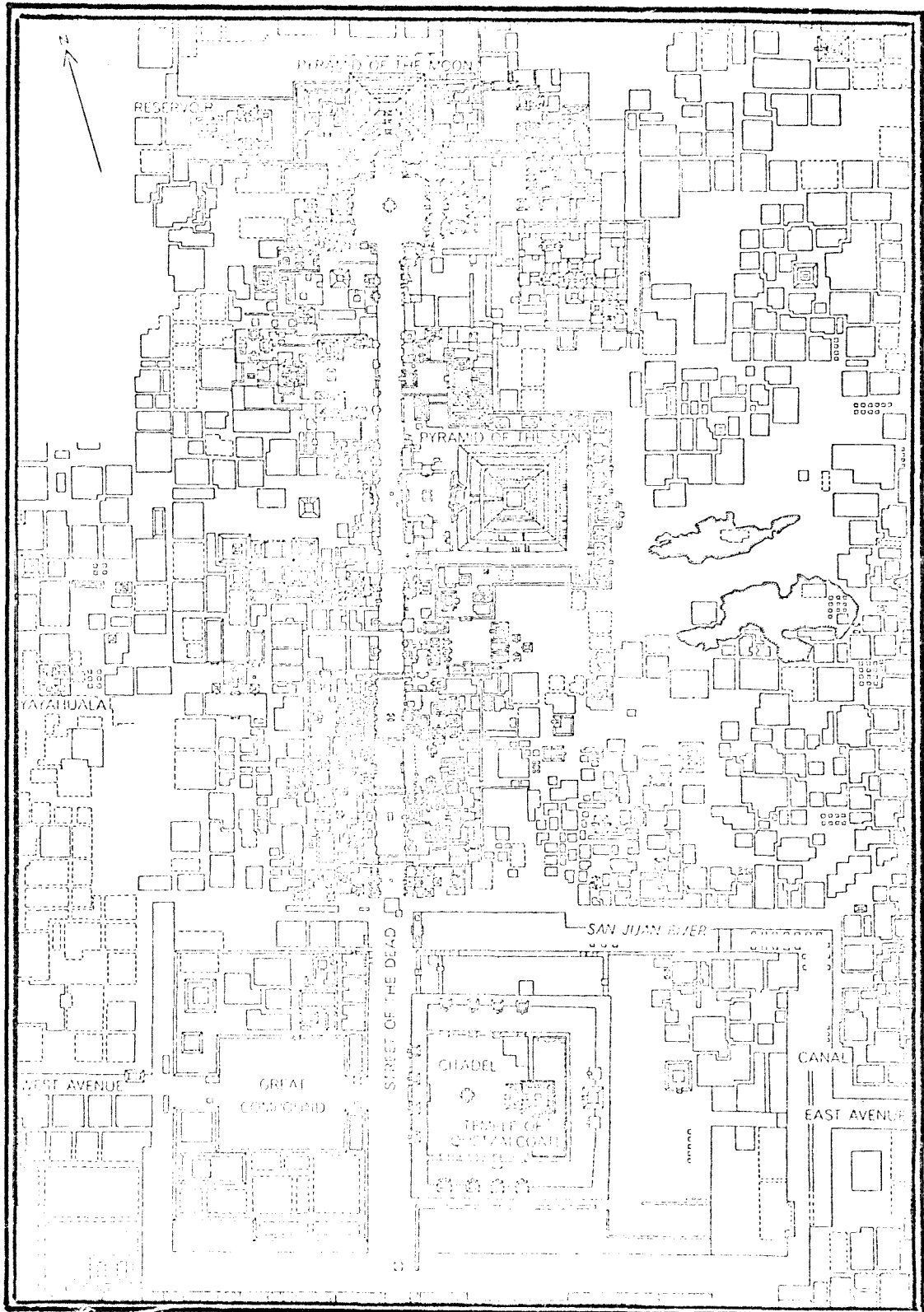
If we know little of the urban market structure, we know even less of the regional aspects of marketing and exchange. The available archaeological evidence indicates daily markets in major centres like Teotihuacan and periodic markets in regional centres. Vaillant (1944) has suggested that the period of these markets was probably twenty days, the length of a month in the Mexican calendar. Unfortunately, most of the research into the urban centres of the Classic period has concentrated upon the monumental aspects of the ceremonial centres and as a result we know very little of the agricultural and regional market centres. Wheatley's remark about archaeology quoted above seems remarkably appropriate to this period. However, we can state that, in order to maintain its population level, Teotihuacan must have extended its "effective space" sufficiently to have been able to successfully control or regulate distribution in the surrounding area.

Several aspects of Teotihuacan serve to illustrate the range over which that city's effective space extended. The first of these is the major function of

Teotihuacan as a sacred centre and pilgrimage destination. "Those who visited the city's sacred buildings must have included not only peasants and townspeople from the entire Valley of Mexico but also pilgrims from as far away as Guatemala" (Millon, 1967:45). Millon (1967), Coe (1967), and Hardoy (1968) have noted the influence of the Teotihuacan culture in the architectural styles of Tikal in Yucatan and Kaminaljuya, the modern site of Guatemala City. The priests, soldiers, and merchants of Teotihuacan must have carried the city's influence over a considerable distance. Evidence exists as well to indicate that pilgrimage and military expeditions involved trade as well and that Teotihuacan was involved in trade with the Gulf and Pacific coasts as well as Yucatan and Central America (Chapman, 1957; Millon, 1967; Sanders and Price, 1968).

One major aspects of the urban morphology of Teotihuacan (Figure 1) which appears to be repeated in Tenochtitlan and its Hispanic reconstruction, Mexico City, is the division of the city into quarters or barrios, housing the members of a particular craft specialization such as the obsidian workers, the potters, the feather craftsmen, and so on (Millon, 1967). Wolf (1959) has speculated that the residents of the barrio might be related through some form of extended kin groups, in Wolf's words "conical clans", similar to the Aztec calpulli groups described below. The excavations undertaken by Sejourne (1962) have revealed large one-storey apartment houses which may have been "solely occupied by a 'corporate group' group, its families related by occupation, kinship, or both. An arrangement of this kind, linking the apartment dwellers to one another by webs of joint interest and activity, would have promoted social stability" (Millon, 1967:43). One interesting aspect of these apartment houses is their striking resemblance to the Roman atrium house, introduced to Mexico in modified form by the Spaniards.

Figure 1  
Reconstruction of Teotihuacán Plan



From Hardoy

Ironically, the demands that extensive urbanization placed on the Valley surrounding Teotihuacan may have led to the city's decline and ultimate collapse. Covering the great ceremonial buildings with whitewash required great amounts of wood for the charcoal used to render the lime (Vaillant, 1962:49). Deforestation of the surrounding slopes most likely led to rapid erosion, which, combined with declining fertility due to overuse, meant that the agricultural base of the city could no longer support its large population (Parsons, 1968). Soustelle has speculated that the decline may have come about as a result of the pressure placed upon those towns and villages subject to Teotihuacan and required to provide tribute and labour to build and sustain the monument-city (Soustelle, 1967).

Whatever caused the decline, the population of Teotihuacan left the city and dispersed throughout the Valley of Mexico. Vaillant (1962:50) notes that "Teotihuacanos still occupied the outlying villages; and the residential cities of Portezuelo and Azcapotzalco across the lake continued to flourish."

Despite Vaillant's description of Portezuelo and Azcapotzalco as "residential cities", there is general agreement that following the decline of Teotihuacan, settlement in the Valley of Mexico was characterized by "non-urban centres" (Millon, 1967:39). A major theme throughout the early history of urbanization of the Valley of Mexico is the stability of village sites in the face. Of this, Soustelle (1967:202) has said:

The village remained the fundamental unit of Indian life throughout all the vicitudes of the great Mexican civilizations. Teotihuacan and Tula, Monte Alban and Mitla, Palenque and Uaxactun, Chichen Itza and Uxmal -- all of these cities rose to greatness, shone with incomparable brilliance, and then, one after the other, disappeared.

But all round them, caught up in their rivalries and subject to their authority, the villages stubbornly and unspectacularly survived. It was they who provided food for the cities, who supplied the labour force which built the pyramids.

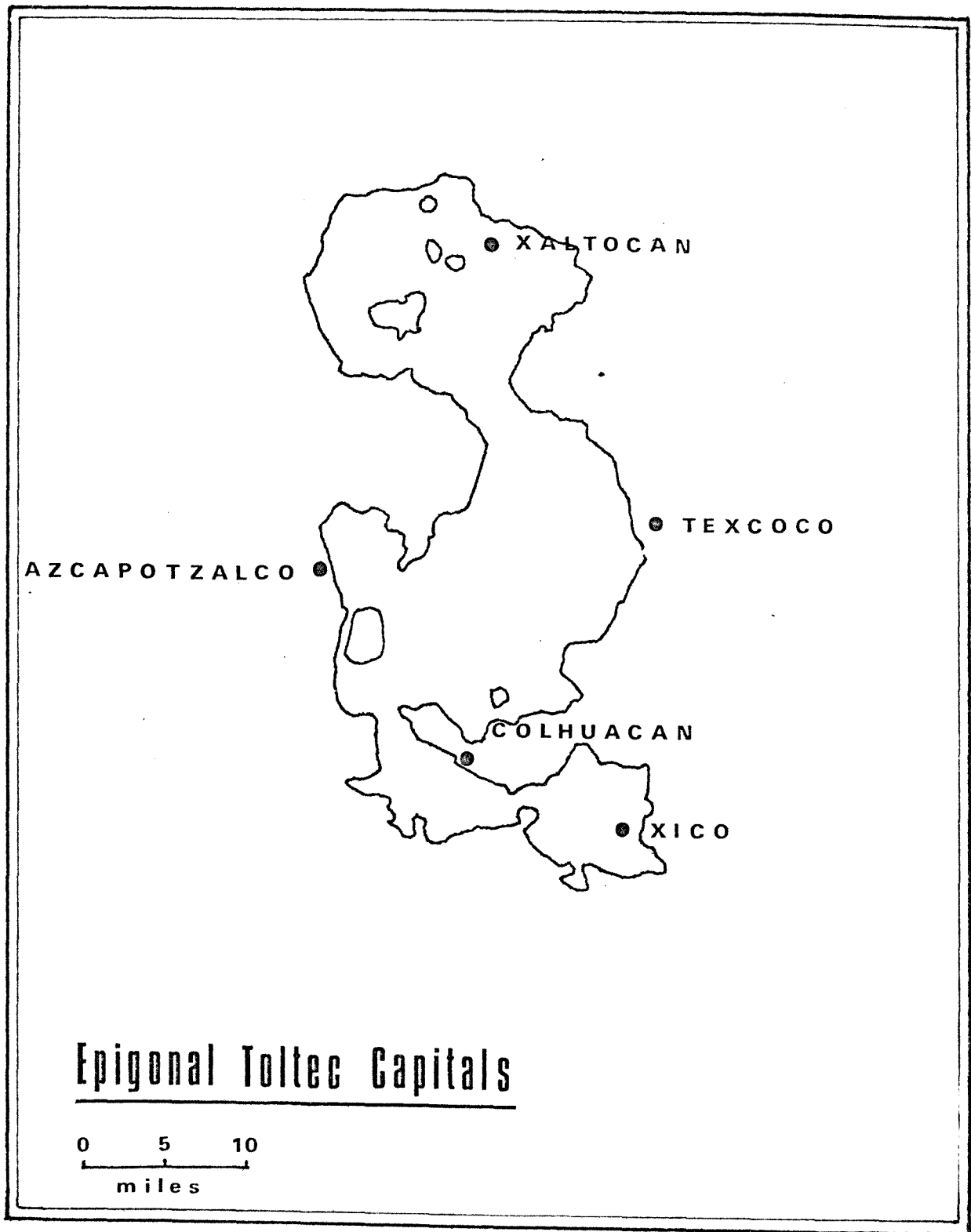
The stability of the village in the face of the changing fortunes of urban centres continued well into the colonial period despite the pressures placed upon them by the colonial regime (Gibson, 1964).

## 2:5 Toltec Urbanization

Towards the end of the Classic Period, new tribal groups brought with them to the Valley of Mexico radically different beliefs and life-styles. The ambitions of the invaders would lead to empire-building and conquest; their religion, and their life, were marked by violence. The old religion of the villagers was rooted in the soil and in agriculture; no evidence of human sacrifice has been found at Teotihuacan (Krickeberg, 1961:128). The invaders were known as the Toltecs. They were not a unified people; "their legacy passed into the hands of various epigonal groups of claimants and counterclaimants to the Toltec name" (Wolf, 1959:128).

The various Toltec groups established themselves in several of the urban cites in the Valley of Mexico. They were joined by other newcomers, barbarians, who moved down from the mountains to settle in the valley. "Thus, in the 13th and 14th centuries, their coexisted on the central plateau a late Toltec or 'epigonal' phase in towns like Colhuacan, Xolchimilco, Chapultepec, and Cholula, and a 'formative' phase of the new city-states which were then being established in considerable numbers" (Map 5) (Soustelle, 1967:230). By the fourteenth century, there were more than 25 of these city-states (Map 6).

MAP 5



Soustelle (1967:230) says of the city-states:

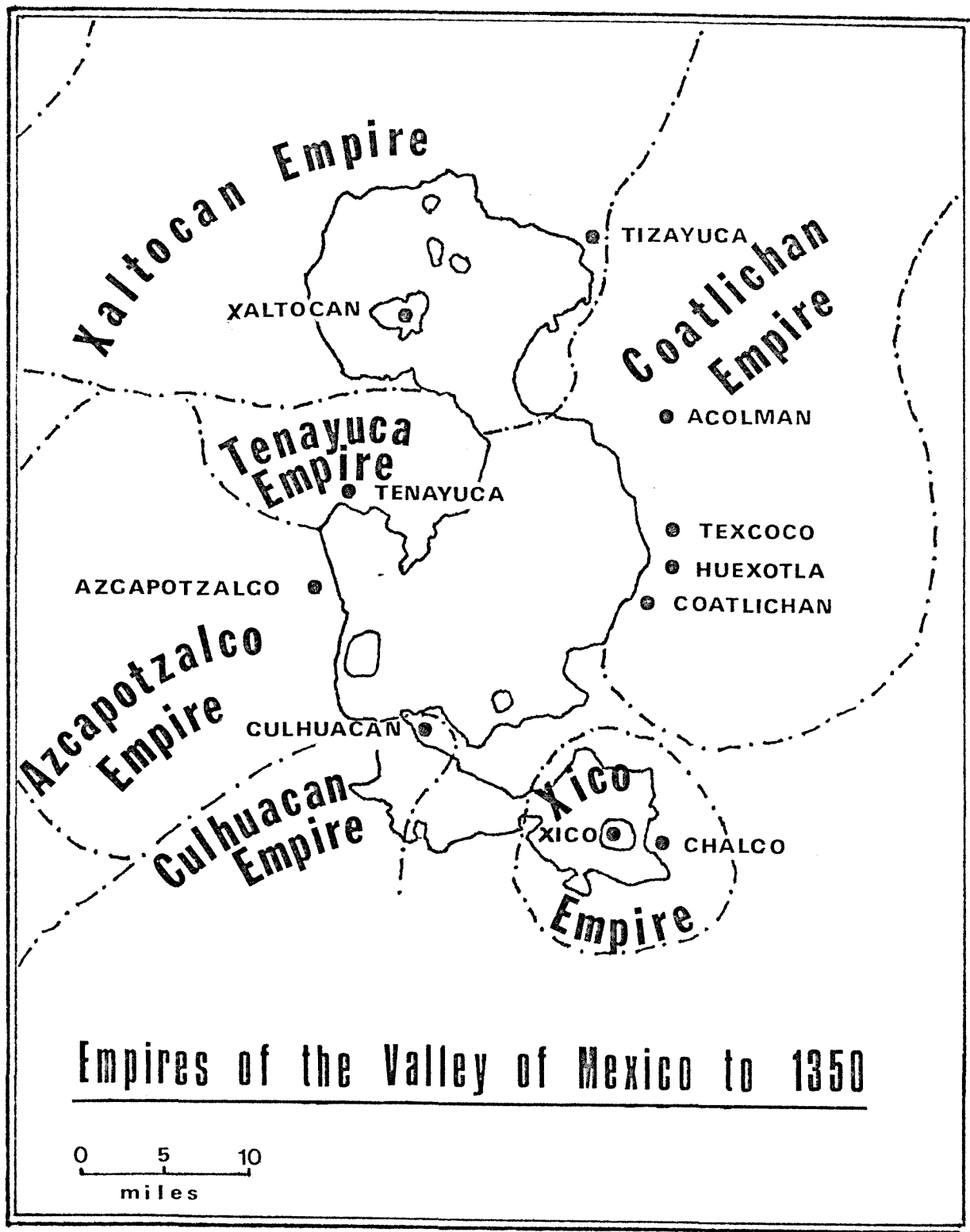
The Relaciones of Ixtlilxochitl refer to twenty eight states existing in the 14th century; the most important of these being Texcoco, Azcapotzalco, Tlaxcala, and Huexotzinco. Like the Greek cities of the ancient world... each of these states consisted of a town built round the temple of the tribal divinity and of the surrounding countryside. Trading relations grew up between the various states, and their ruling dynasties were linked to one another by marriage -- through, in spite of this, war was almost endemic between the states.

During this period there was a thorough process of Toltecization through inter-marriage with indigenous people, through peaceful contacts, and by force of arms. By the close of the fourteenth century, Nahuatl appears to have been the common language of the city-states (Portilla, 1960:9), and religious practice and social organization among them had become fairly homogeneous.

The city states had grown to small empires by the middle of the fourteenth century. Spheres of influence were fairly well delimited, with power and effective control dropping off toward the periphery. Towns and villages within the sphere of influence were sources of labour and tribute; the villages, as in the past, provided both agricultural produce and manual labour for the towns and cities.

The spatial patterns of the city-state empires in the Valley of Mexico are shown in Map 6. Villages are not shown but it is not difficult to imagine a fairly dense clustering of villages near the cities with density decreasing away from the lake shore. Urbanization proceeded rapidly during the late Classic Period which was marked by rapid population growth. Rainfall appears to have increased during this period and the increase in agricultural production enabled the support of large urban populations (Gibson, 1964:6).

MAP 6





## 2:6 Aztec Domination of the Valley of Mexico

This then was the scene upon which the Chichimec peoples, commonly known as the Aztecs, entered from northern Mexico sometime during the fourteenth century. When they entered the Valley of Mexico, they found that all of the choice settlement sites were already occupied. They came into immediate conflict with the inhabitants of those centres. Finally, driven by their enemies, they established their capital city about 1344 or 1345 C.E. on a marshy "muddy promontory extending into the lagoon of Texcoco" (Wolf, 1959:131).

From this centre, the site of present day Mexico City, the Aztecs or Culhua-Mexica as they had come to call themselves, extended their domain over the whole of the Valley of Mexico and beyond (Barlow, 1967). Imposing governorship upon and exacting tribute from those whom they could conquer and entering into alliance with those whom they could not, the Aztecs brought a measure of uniform organization to the Valley of Mexico (Peterson, 1959). Much of this is due to the prior existence of the relatively uniform urban-centred culture of the Toltecs in the area. The Aztecs adopted the basic culture of the Toltecs and used it as a vehicle in the extension and integration of their Empire (Barlow, 1967).

Over time, the number of independent city-state empires in the valley was reduced to three, Tenochtitlan, Texcoco, and Tacuba -- bitter rivals but joined in what is usually referred to as the "Triple Alliance" (Gibson, 1964:17-24). Together, these three cities held sway over the society of their day, receiving tribute and guaranteeing the security of their vassals. In reality, Texcoco and

Tacuba became increasingly subordinate to Tecnochtitlan towards the end of the fifteenth century, but the strength of the bonds that held them was often in question and warfare frequent (as it was in feudal Europe between rival princes).

Social organization in the Valley of Mexico in the fifteenth century may be loosely described as "feudal" with a complex, stratified, vertical structure (Peterson, 1959). By this time, man in the Valley of Mexico had gone far beyond the earlier village stage; he had achieved the degree of complexity of which Wolf (1959:67) speaks where the small agricultural village

is a functional part of the larger social whole in which the society has become dichotomized into a centre of power and control and a rural hinterland of dependent cultivators.

However, that village was still the economic base on which the urban community rested; it was still the most stable element in that urban system.

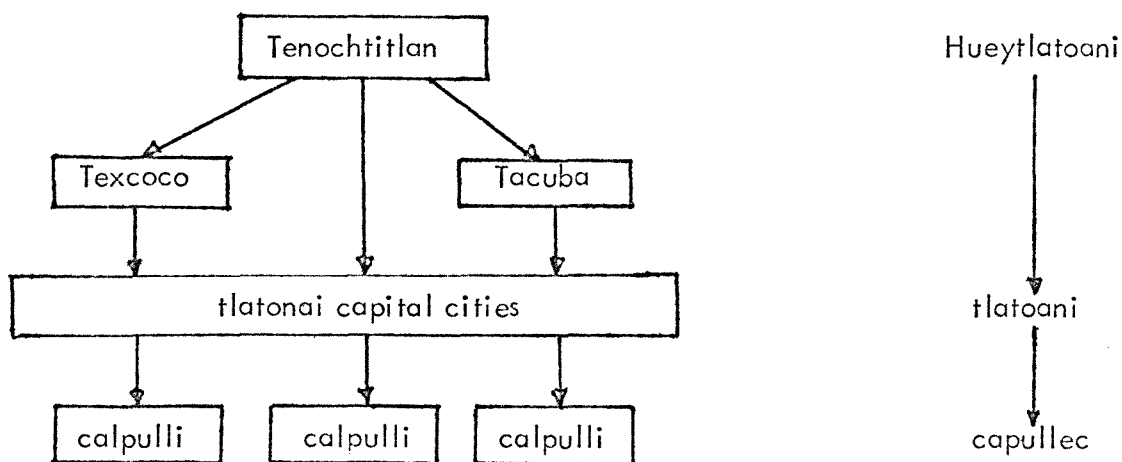
As Aztec society became more complex, so did the organization and functional character of urban places. As Marshall (1969) points out, both military and ecclesiastical organizations are essentially hierarchical in their organization; Aztec society was controlled by an aristocracy of priests and soldiers (Peterson, 1959). The spacial extension and expression of social and economic control consequently took on definitely hierarchical characteristics.

The fundamental unit of Aztec society and the lowest order urban place was the village or calpulli, "a group of families living in a single locality" (Gibson, 1964:34). The calpulli were governed by elders known as calpullec,

chosen from the tribal unit (Zorita, 1963). Each *capulli* was subordinate to a regional capital town. This town was the seat of the local ruler or *tlatoni* (pl. *tlatoque*) who received tribute from the *calpulli* subject to his capital (Zorita, 1963). Prior to the Aztec domination of the Valley, the *tlatoque* were either vassals of the smaller Toltec empires or, in some cases, independent lords in their own right. With the ascendancy of the Tripple Alliance, "all peoples in the Valley had been subordinated by way of tribute and military service to the *tlatoque* of Tenochtitlan, Texcoco, or Tacuba" (Gibson, 1964:34-35). The Aztecs permitted local lords to retain their positions and titles and utilized the existing organization in their administration of the region; selected towns became tribute collection centres. Later, the Spanish conquerers of the area were to repeat this process. The vertical organization of authority is shown diagrammatically in Figure 2.

Figure 2

The Vertical Organization of Authority



The tlatoani capitals were the sites of major temples, schools, and market places -- often located together (Peterson, 1959) . Poole (1951:39) describes the tlatoani town as "a considerable population cluster, with recognized temples and markets, serving as centres for periodic ceremonies and exchanges." The maintenance and regulation of the market place was the responsibility of the tlatoani and only tlatoani capitals could have markets. Of these markets, Gibson (1964:352) says:

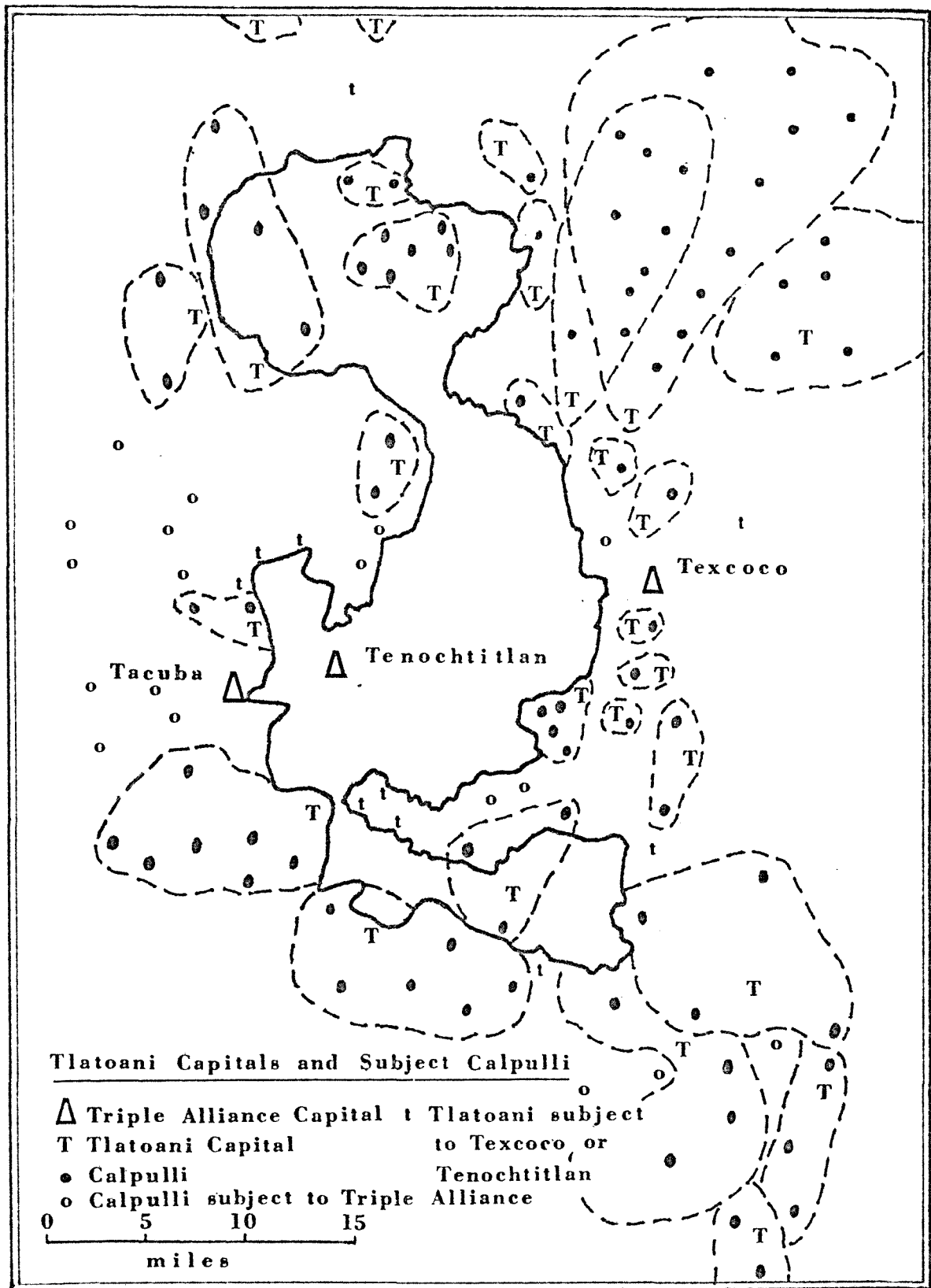
Economic exchange was traditionally served by the tianquez, or Indian market, which had been held at fixed locations within the Aztec towns, commonly at intervals of five, thirteen, and twenty days under the supervision of the community's tlatoani.

The basis of the market periodicity is not completely known and appears to have varied somewhat from centre to centre. Five days seem to have been most common for major centres. These periodic markets in tlatoani centres may have been in addition to smaller, regular daily markets. Peterson (1959:178) quotes Diego Duran, one of the conquistadores, as reporting that:

a law made it obligatory to go to the market to bring supplies to the town. All people who lived less than fifteen miles from a market had to go there on the regular market day -- once every five days -- or the god of the market might be offended.

Here one must submit to temptation and wonder if Berry and Garrison would ever write "Notes on the Range of a God". The range of fifteen miles seems quite considerable for a society without the wheel or draught animals. However, the location of the main urban centres on or near the lakes meant that that subordinate towns were not arranged concentrically about the centre but rather fanned outwards, away from the lakes (Map 7).

MAP 7



The largest and most famous market in the Valley of Mexico in the late fifteenth and early sixteenth century was that of Tlatelolco, a city immediately adjoining Tenochtitlan. This market is vividly described by the Spanish leader Cortes in his letters:

The city has many open squares in which markets are continuously held and the general business of buying and selling proceeds. One square in particular is twice as big as that of Salamanca and completely surrounded by arcades where there are daily more than sixty thousand folk buying and selling. Every kind of merchandise such as may be met with in every land is for sale there, whether of food and victuals, or ornaments of gold and silver, or lead, brass, copper, tin, precious stones, bones, shells, snails, and feathers; limestone for building is likewise sold there, stone both rough and polished, bricks burnt and unburnt, wood of all kinds and in all stages of preparation. (Cortes, 1962:87)

Cortes' description of the market continues for two more pages. Soustelle (1961:29) cites evidence from another contemporary observer that indicates that Cortes may be describing a weekly market day rather than the daily market of Tlatelolco:

20,000 to 25,000 buyers and sellers came there every day, and . . . every fifth day there was a great market attended by 40,000 or 50,000.

This account would appear to support the view that the tlatoani urban centres of all sizes served as periodic markets for the rural villagers who lived in the surrounding areas.

Major market centres tended to develop increasingly specialized functions: dogs were offered for sale at Alcoman, slaves at Azcapotzalco, and birds at Otumba (Gibson, 1964:352). The periodic markets were served by a special class of merchants, pochteca, who, in addition to making the rounds of the markets of the Valley, travelled far and wide to acquire goods for trade (Acosta Saignes, 1945).

Given the redistributive nature of the Aztec imperial economy, it is possible to speculate that the tlatoani markets may have also served as collection points for tribute simultaneously with their regular functions. Pyle (1970) casts doubt on this view, but contemporaneous observers like Diaz (1548) report seeing tax collections at the markets. It is possible that they refer to the collection of a local market tax rather than imperial tribute.

## 2:7 Rank Size Relationships at the End of the Pre-Colonial Era

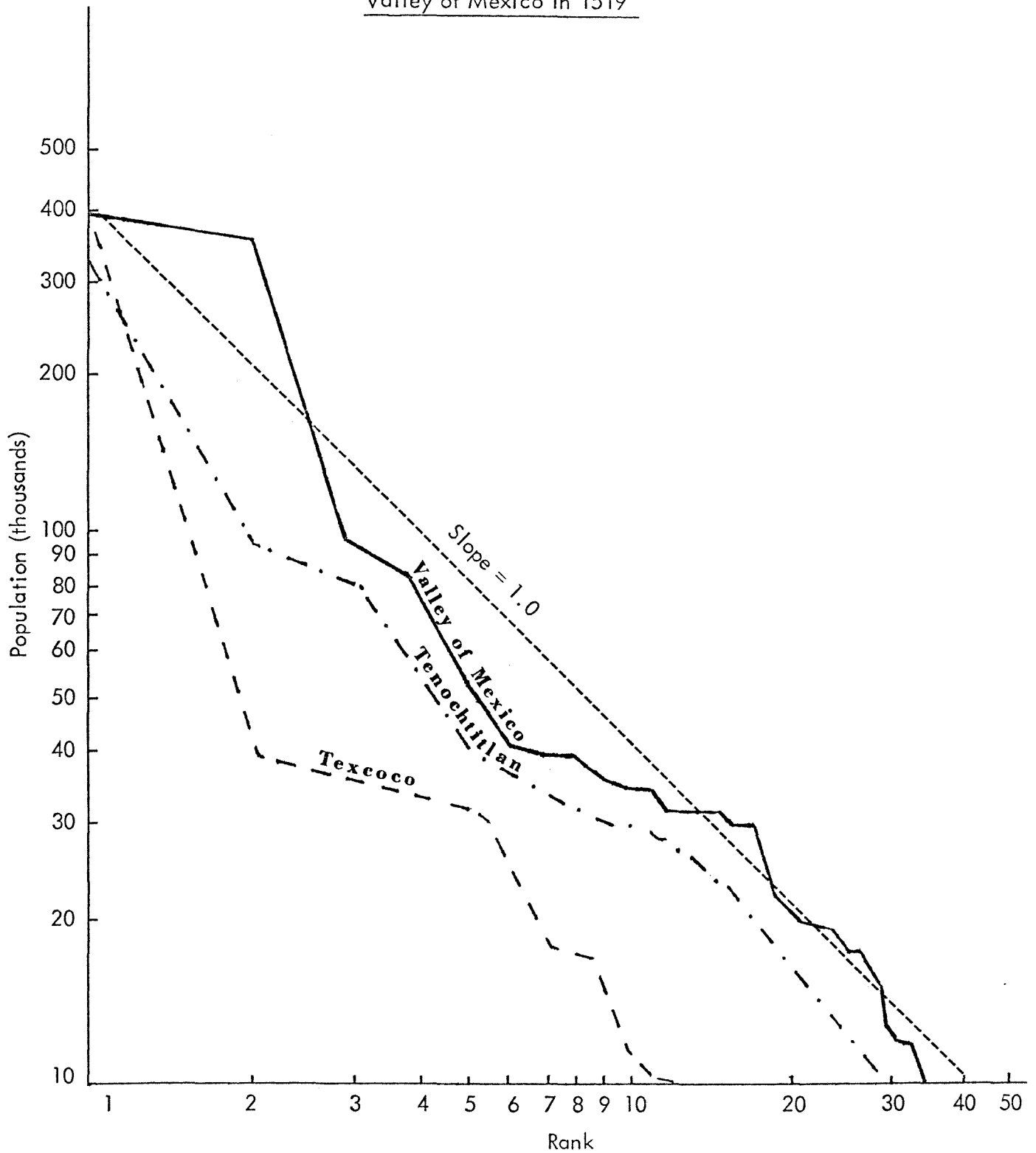
At the start of the sixteenth century, there still were three urban systems each with their own hierarchies of social, political, and economic power. While Tacuba and Texcoco were subject to the power of the Aztec empire centred on the capital city of Tenochtitlan, they retained some measure of dominance within their own systems. This was particularly true of Texcoco; Tacuba had been in decline for some years by 1519 (Gibson, 1964).

Using the population estimates of Borah and Cook (1960; 1963), Cook and Simpson (1948), and the observations of Cortes (1962), Gage (1648) and others, it is possible to develop approximate population figures (Appendix I) for the tlatoani towns of the Valley of Mexico identified by Gibson (1964). Using these approximate populations, a rank-size distribution graph can be plotted for the towns of the Valley of Mexico (Figure 3).

Figure 3

The Relationship between Rank and Size for Towns over 10,000 Persons in the

Valley of Mexico in 1519





The graph shows clearly that the two largest centres, Texcoco and Tenochtitlan, are very close in size, with a considerable gap separating them from the third-ranked place, Xochimilco. Stewart (1958:223) has observed that "the region to which [the rank-size rule] applies must be complete, that is, not part of a larger region or greatly overlapping another region." The initial rank-size distribution suggested that there were separate urban systems in the Valley of Mexico.

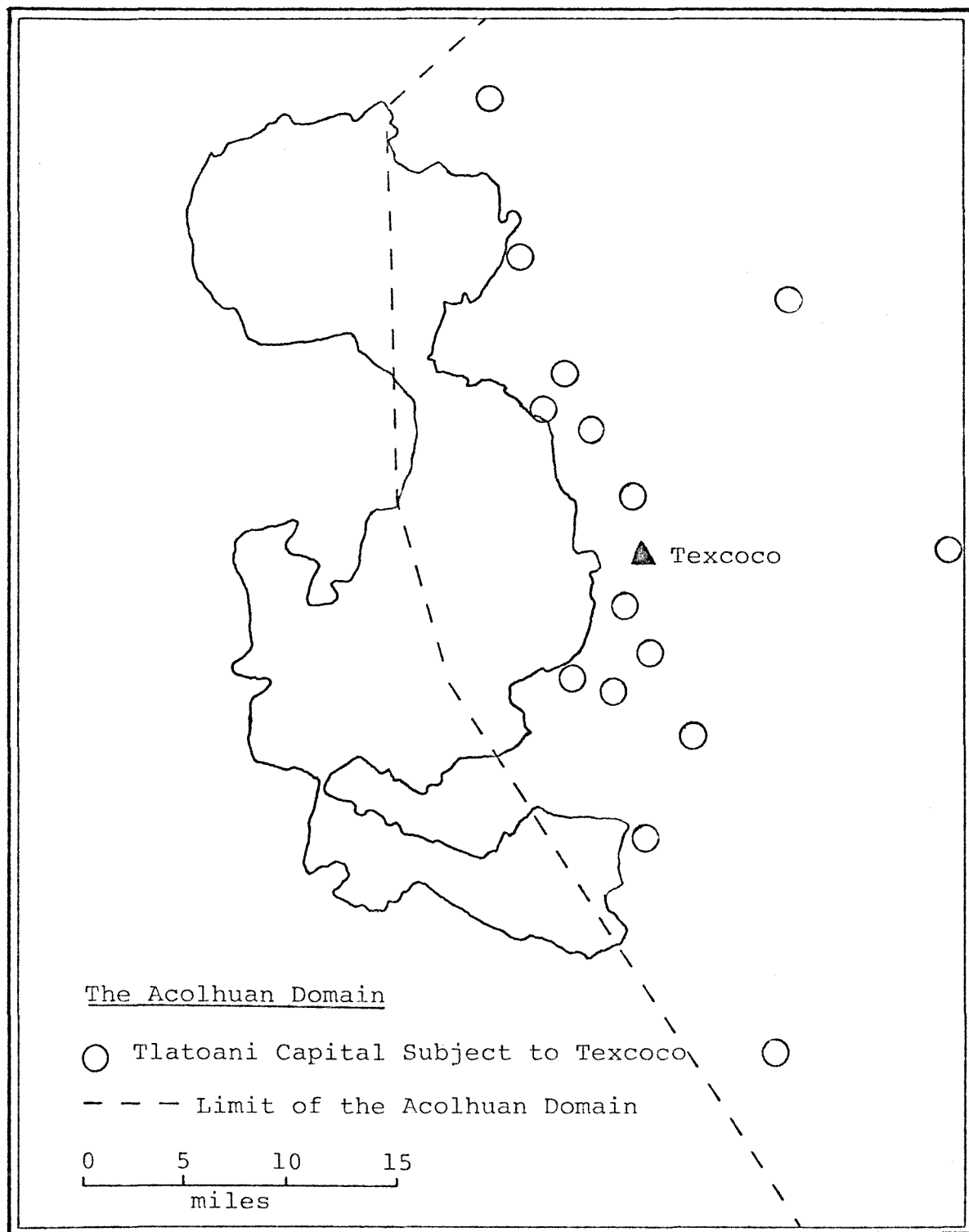
Following Gibson (1956) it is possible to identify the spatial extent of the Acolhuan hegemony, centred on Texcoco (Map 8). Separating the tlatoani towns subject to Texcoco from those paying tribute to Tenochtitlan-Tacuba by the early sixteenth century had ceded any effective power to the Aztec capital - the rank-size distributions were replotted (Figure 4). The resulting graph shows clearly the presence of two systems, each dominated by a primate city.

## 2:8 Aztec Urban Life in 1519

All of the descriptions of Tenochtitlan in 1519 that were recorded by the conquistadores indicate that it was a splendid imperial city. Cortes' (1522) description in a letter to the king of Spain goes on for nearly 10 pages. Diaz del Castillo (1942) was moved to compare the city to the mythological cities of romantic literature. The descriptions of Moctezuma's capital in both closely parallel Johnson's (1970) description of the primate capital in pre-industrial countries.

MAP 8

The Acolhuan Domain



There is less evidence describing Texcoco, which was totally destroyed by Cortes in 1520 (Gerhard, 1972). Gillmor (1968) in The Flute of the Smoking Mirror has reconstructed the life of the capital city of the Empire of Acolhuacan. Gibson (1956) notes that Texcoco had declined in power during the fourteenth century but had regained authority during the fifteenth. Warfare and rivalry was rife between Texcoco and Tenochtitlan (Padden, 1967).

Texcoco was noted for its stone masons and engineering (Gibson, 1964). The Acolhuan ruler, Neza huacoyotl was responsible for a monumental series of dykes and other flood control measures on Lake Texcoco. To provide these specialized services, Texcoco had to have had a large number of skilled and unskilled labourers available. Gage (1648) notes that the Texcocans were able to provide some 400,000 soldiers to assist Cortes in the overthrow of Tenochtitlan.

The only available European description of Texcoco as it was in 1519 is that of Cortes (1522) who characterizes it as a "large city". Gage (1648:52) writing one hundred years after the conquest noted in his diary:

Three leagues from [Coatepec] on our right hand as we travelled we discovered Texcoco by the side of the lake and out of the road. Yet it ministered unto us a matter of a large discourse, taken from the time of Cortes and the first conquerors, who found it a great city and at that time even as big as Mexico [City] .

Cook and Simpson's (1958) estimates of the population of Texcoco in 1565, after the epidemics of the 1540's and the earlier total destruction of the city of Cortes in 1520 as punishment for rebelling against Spanish domination, indicate that Texcoco, with a population of around 400,000, may have been larger than Tenochtitlan in 1519.

Further research may well provide more insights into the urban character of Texcoco. Needed too, is an examination of the lesser towns, some of which persist under their original names of this day (Plano de la Ciudad de Mexico, 1970). A great deal remains to be learned about the urban system that the Spaniards encountered and largely destroyed in the early decades of the sixteenth century.

Despite the physical destruction of Texcoco and Tenochtitlan, many prehispanic urban elements in the Valley of Mexico persisted under Spanish rule (Gibson, 1964). The pages that follow provide a brief examination of the transition from Aztec to Spanish urban patterns in the Valley of Mexico.

## Chapter 3

## SPANISH COLONIAL URBANIZATION IN THE VALLEY OF MEXICO

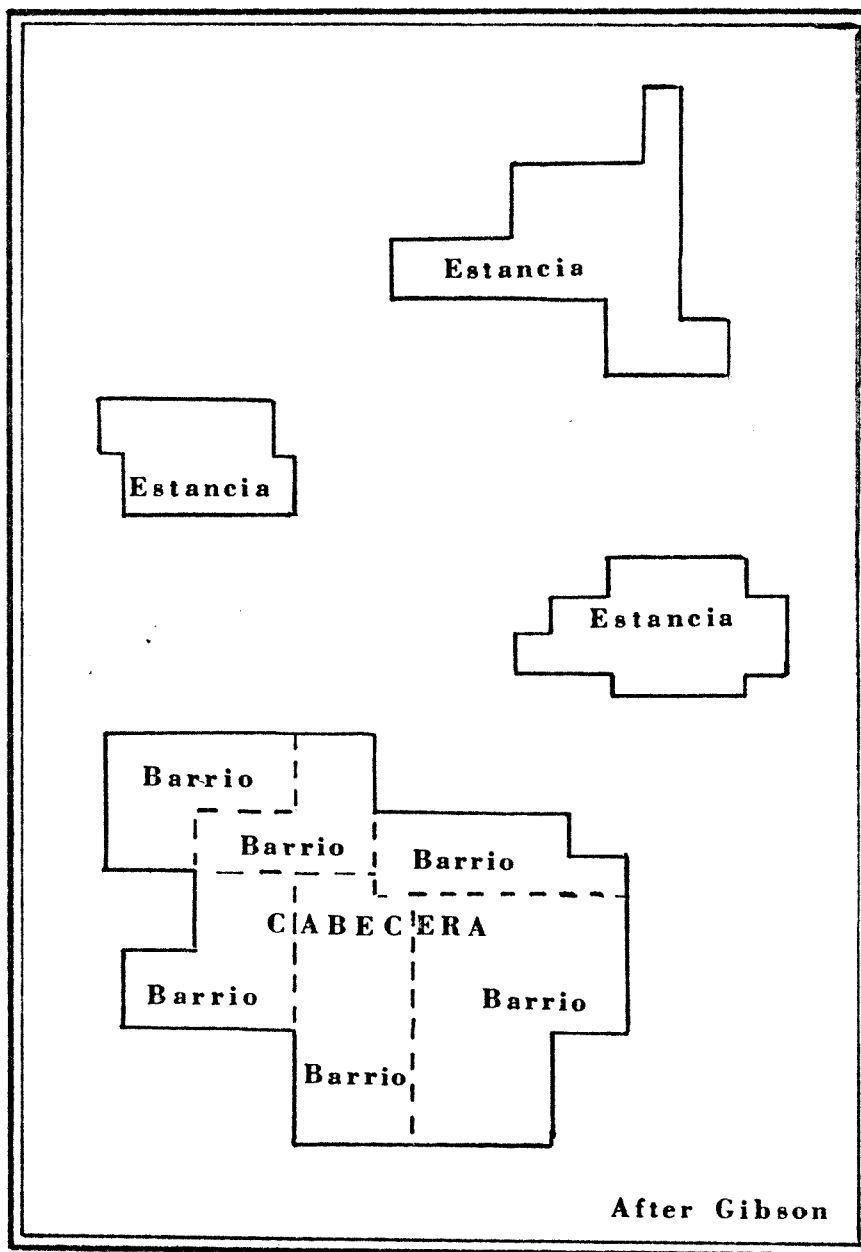
## 3:1 Arrival of the Spaniards

After the defeat of the Aztecs and the fall of Tenochtitlan, the Spanish leader Hernan Cortes elected to construct a new capital on the site of the fallen Mexican city. This action was strongly contrary to the wishes of the other Spaniards who accompanied him and very nearly led to a mutiny. Cortes' act moved in the face of conventional wisdom; Tenochtitlan was located in a wet marshy area which was perceived to be disease ridden. (Beltran, 1958). His troops wanted the new city to be built in the drier hills surrounding the Valley. Cortes was aware that the selection of a site for a "ciudad de españoles" from which a handful of Spaniards could govern several million Indians in Meso-America, required that the continuity of the previous power structure be preserved. Tenochtitlan was the centre of that system.

Cortes further strengthened the power of México-Tenochtitlan by taking over and maintaining the Aztec tribute system (Barlow, 1949; Molins Fabrega, 1954; Molins Fabrega, 1956). The relationships between urban places developed under the Spaniards maintained the old order as tlatoani towns became cabeceras (literally "head" towns) and the calpulli, estancias or sujetos subject to the cabeceras (see Figure 4) (Gibson, 1964).

Figure 4

Schematic Representation of a cabecera with its barrios and estancias or sujetos.



### 3:2 Disruptions in Traditional Patterns

A series of disastrous plagues and epidemics, especially smallpox during the 1540's, followed the Spanish Conquest (Gibson, 1964; Gerhard, 1972). The impact of the diseases was a decimation of the indigenous population of the Valley of Mexico (see Figure 5) (Borah and Cook, 1962; Gerhard, 1972). While population dropped rapidly at all levels of Indian society, small villages were most dramatically affected.

In order to be able to maintain programmes of religious conversion of the Indians and to maintain effective control over a disrupted populace, the Spaniards ordered massive, centralizing resettlement of villagers (Cline, 1949). These congregaciones civiles or reducciones decreased the number of dispersed settlements and strengthened the cabecera towns as nucleated settlements retaining only their nearby-by sujetos. Around Chiconautla, to cite one example, 59 small settlements were "reduced" during the congregations of 1600 - 1604 (Gerhard, 1972). There were two periods of large scale reductions - during the 1550's, and again around 1600 (Cline, 1949).

### 3:3 Rank-size Relations after Conquest

The impact of the colonial reductions may be demonstrated by looking at the rank-size relationships in the Valley of Mexico based on the census of 1565 (Borah and Cook, 1963). These relationships are shown in Figure 6. The duality of systems noted in 1519 remains despite the reduction in population and Texcoco's loss of political authority. The impact of disease and civil congregation can be seen at the low end of the rank-size scale where the curve drops sharply below the 1.0 slope line, demonstrating the sudden decline of the smaller centres.

Figure 5

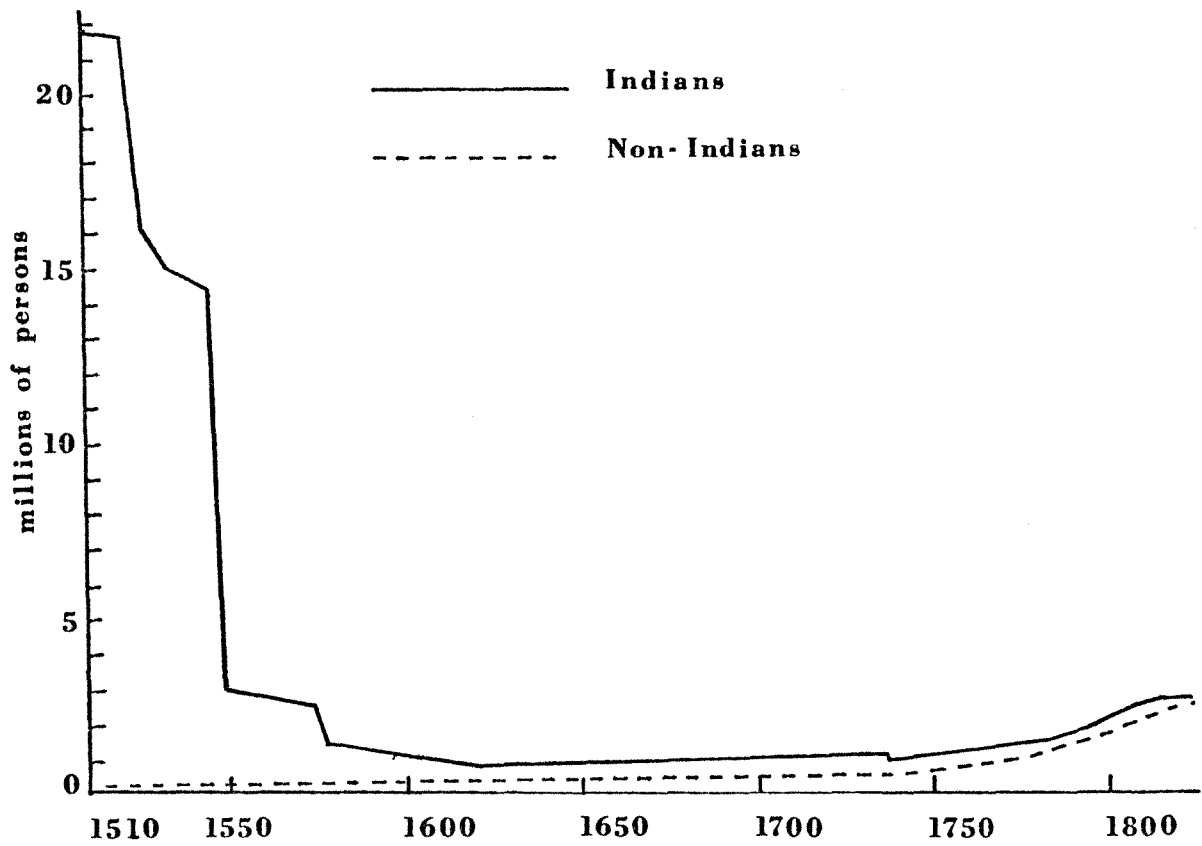
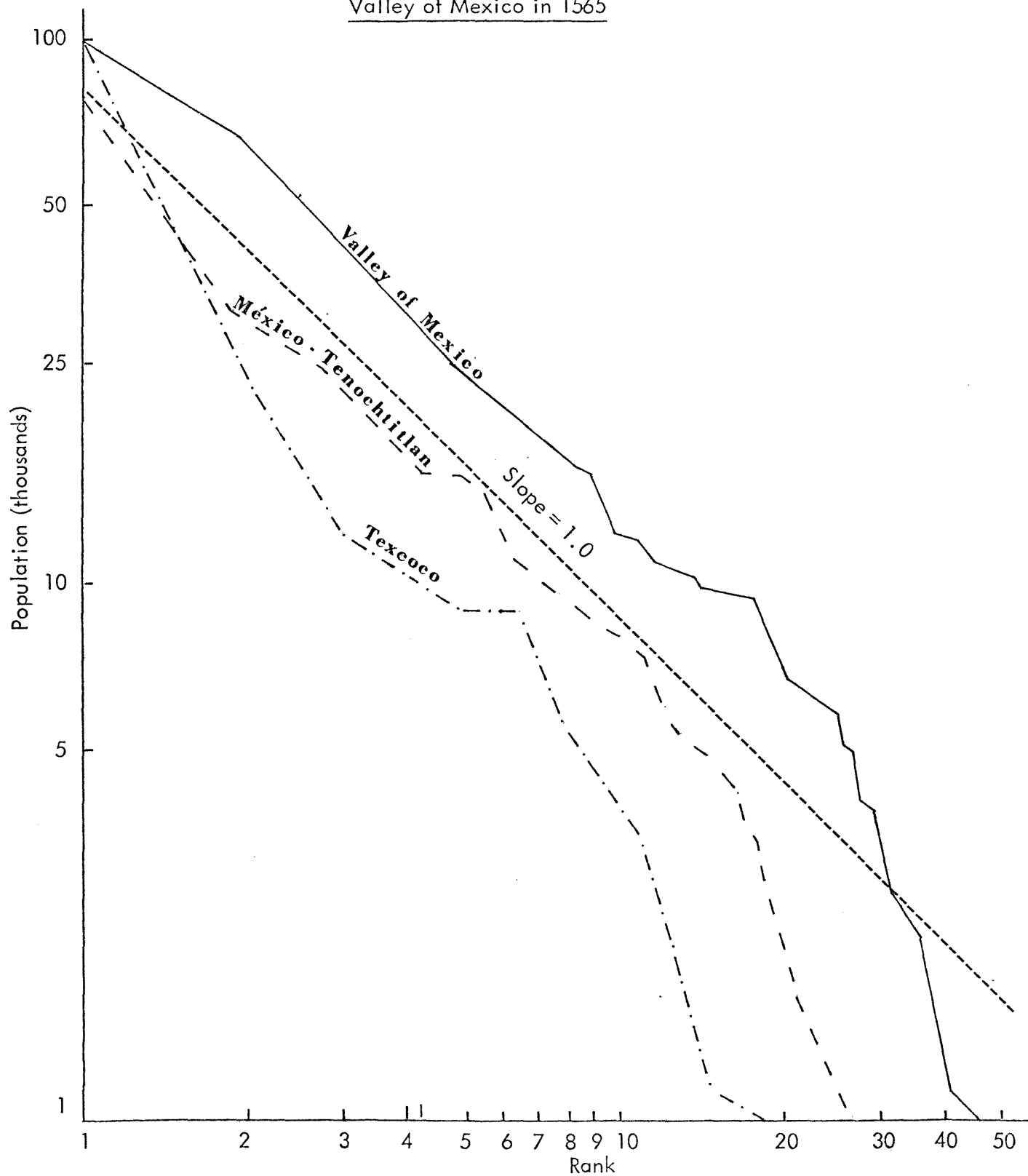
POPULATION CHANGE IN NEW SPAIN 1510-1800



Figure 6.

The Relationship between Rank and Size for Towns over 1,000 Persons in the  
Valley of Mexico in 1565



The impact of Spanish colonial rule on the top end of the urban hierarchy was felt much more slowly. For half a century after the conquest, Texcoco remained a larger city than Mexico-Tenochtitlan (Borah and Cook, 1963). The granting of city charters and privileges to a number of places including Texcoco, Tacuba, Tenochtitlan, and Xochimilco (Borah and Cook, 1960; Gibson, 1964) led to vigorous competition among urban centres for power.

With the creation of a "ciudad de españoles" on the site of Tenochtitlan, and the concentration of civil, ecclesiastical and political power and symbols - the cathedral and Vice-regal palace - in one place, México, as it was known by the end of the sixteenth century, grew at the expense of the other centres.

The building of Mexico City and the erection of new monumental and ceremonial structures required the mobilization of a large labour force during the sixteenth century. Forced drafts of labour were drawn as tribute from the villages of the Valley of Mexico (Gibson, 1964). The forced labour drafts further reduced the populations of smaller centres while adding to the growth of Mexico-Tenochtitlan.

The seventeenth century saw many marked changes in urban patterns in the Valley of Mexico. In addition to forced population shifts and disease, heavy flooding along the shores of Lake Texcoco had severely affected many towns (Gibson, 1964). The English traveller Thomas Gage (1648:7) observed that:

This lake [Texcoco] had formerly some four score towns, some say more, situated round about it; many of them containing five thousand households, some ten thousand, yea, and Tezcuco was as big as Mexico. But when I was there, there might be thirty towns and villages about it, scarce any above five hundred households between Spaniards and Indians.

In Zipf's terms, during this period, forces of concentration were at work in the Valley of Mexico.

Following the seventeenth century, which Borah (1951) has called "New Spain's Century of Depression", the colonial economy and population stabilized. Those centres that had survived the period of declining populations began to grow again. Specialized market and administrative functions emerged (Gibson, 1964; Gerhard, 1972). By the end of the eighteenth century, the rank-size relationships in the Valley of Mexico (Figure 7), show a single urban system marked by relative stability but retaining the drop-off among the smaller centres that characterizes the rank-size curve of two centuries earlier.

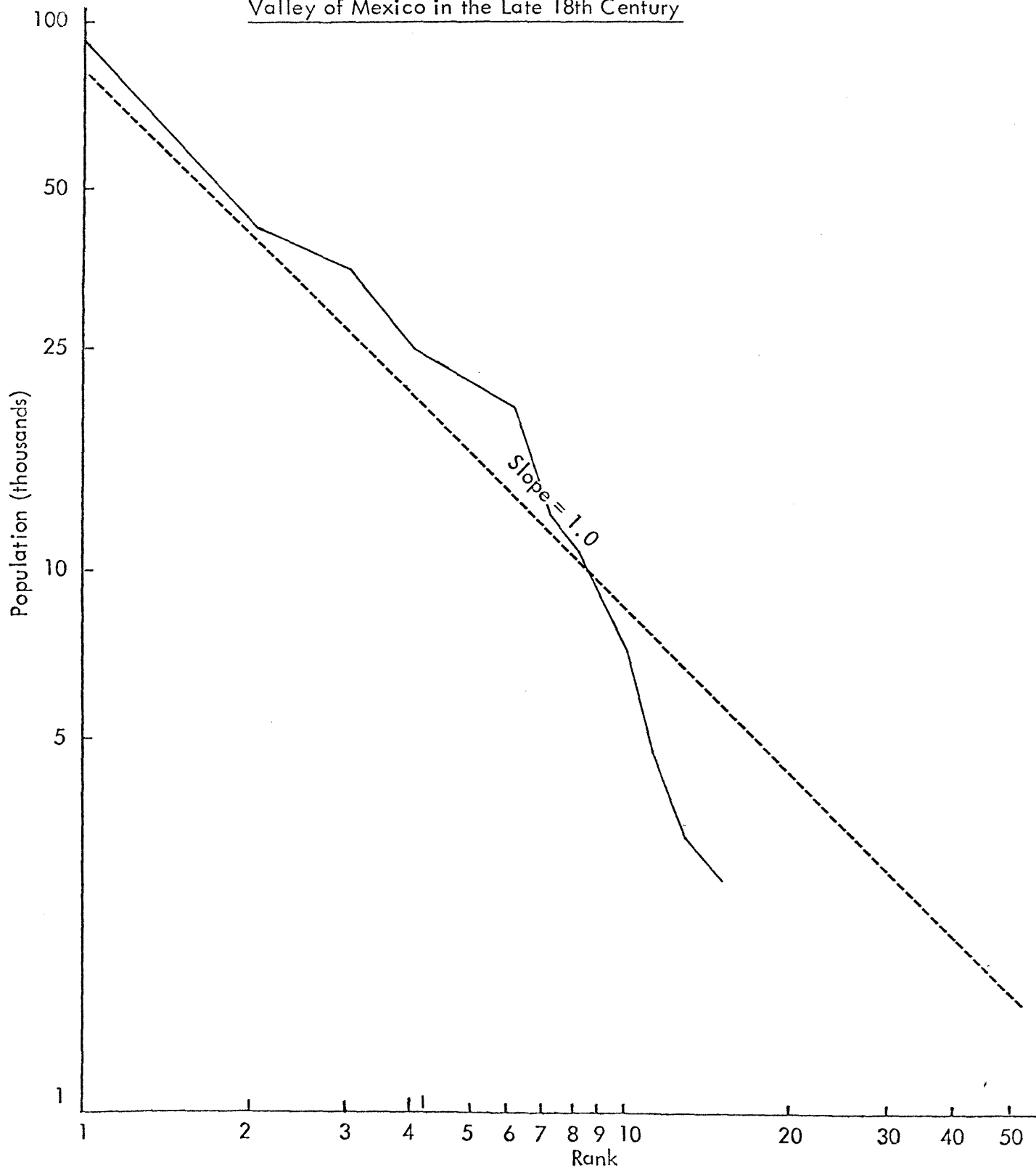
From the nineteenth century on, Mexico City continued to grow faster than any other centre in Mexico, rapidly becoming a true primate city. Today, Mexico City is nearly six times as large as Guadalaajara, the country's second city; nearly one third of all Mexicans live within the Valley of Mexico (Bataillon, 1967; Rejon Nuñez, 1968).

### 3:4 Summary

The transition from Aztec to Spanish control over the Valley of Mexico was greatly eased by the placing of the colonial capital on the site of the Aztec centre of authority. The concentration of imperial power in Mexico City during the colonial era allowed it to achieve primacy over the whole colony, something that Texcoco and Tenochtitlan had known only on a smaller scale.

Figure 7

The Relationship between Rank and Size for Towns over 1,000 Persons in the Valley of Mexico in the Late 18th Century



At the same time disease, civil congregation, and forced labour drafts reduced the stability of village base of the urban systems of the Valley of Mexico. This undoubtedly contributed to the rapid change in the distribution of power throughout the system despite the resistance of the once powerful urban rivals to Tenochtitlan. In succession each of the imperial capitals, from Teotihuacan to Tenochtitlan had experienced primacy over a small galaxy of cities and villages in the Valley of Mexico. With the improved technology, particularly the wheel and gunpowder, the Spaniards were able to extend the effective control of their capital over all of the Valley of Mexico and, ultimately, to all of the colony of New Spain. In modern times the process of the growth of the power of Mexico started nearly five centuries ago, continues.

## Chapter 4

### CONCLUSIONS

It would be unrealistic to claim for the results of this study; based on fragmentary and often approximate data, to have significantly advanced the science of urban geography. The results, however, generally bear out the relationships postulated by the model and generalizations explored in this essay.

The development of urban systems in the Valley of Mexico - throughout the various pre-Aztec periods, during the Aztec Empire, and following Spanish colonization of the region - clearly demonstrates the importance of the symbolic and ceremonial nature of the pre-industrial city. This supports the generalizations developed by Wheatley (1973) in his examination of several pre-industrial urban civilizations.

Wolf's (1959) concept of the importance of the small agrarian village is borne out at all stages of urbanization in the Valley of Mexico. The impact of forced changes and population reduction at the village level during colonial times, clearly demonstrates this importance.

Finally, Johnson's (1970) contention that the demands for labourers, artisans, and servants generated by ceremonial centres or imperial capitals combined with the attractions that such centres hold for the populace of surrounding areas, lead to the creation of primate cities is clearly borne out by evidence from the Valley of Mexico. At all stages, from Teotihuacan to modern Mexico City, primacy has been a characteristic of capital cities in the Valley of Mexico.

Zipf's rank-size rule has proven to be a useful empirical device in support of other evidence about urban-relationships in the absence of other quantitative data. A possibly fruitful line of future research would be to examine relationships between rank and number of tributary centres, or between rank and distance from capital cities to aid in the analysis of spatial distribution of urban places in the study area.

Further research, utilizing interdisciplinary techniques of analysis, is required before it is possible to fully understand the entire process of urbanization in the Valley of Mexico. The techniques of the geographer have a great deal of potential in assisting such research.

## Appendix I

APPROXIMATE POPULATION AND RANK OF URBAN PLACES IN THE  
VALLEY OF MEXICO IN 1519 AND 1565

Site	1519*		1565**	
	Population	Rank	Population	Rank
Acolman	17,500	26	5,616	27
Amecameca	18,000	25	6,068	26
Axapusco	15,000	28	5,248	28
Azcapotzalco	22,000	19	7,200	20
Calpulalpan	15,000	29	5,200	29
Chalco Atenco	6,000	39	2,200	38
Chiauhtla	-	-	-	-
Chicoloapa	3,000	44	1,100	42
Chiconuahtla	6,000	40	2,112	39
Chimalhuacan A.	11,000	34	3,600	32
Chimalhuacan C.	21,000	29	7,050	21
Citaltepec	2,400	45	800	45
Coatepec	3,000	43	964	44
Coatlíchan	31,000	12	10,400	14
Coyoacan		(included in Tacubaya data)		
Cuauhtitlan	85,000	4	28,364	4
Cuitlahuac	-	-	-	-
Culhuacan	12,000	32	4,080	31
Ecatepec	31,000	13	10,400	15
Huexotla	30,000	17	10,000	18
Huehuetoca	19,000	23	6,420	24
Hueypoxtla	34,000	11	11,540	12
Huitzilopochco	-	-	-	-
Ixtapalapa	40,000	8	2,680	35
Ixtapaluca	4,000	41	1,480	41
Mexicalzingo	15,000	30	1,108	43
Milpa Alta	34,500	10	11,200	13
Mixquic	8,000	34	2,683	34
Otumba	17,500	27	23,635	5
Tacuba	36,000	9	18,800	6
Tacubaya	30,000	16	18,120	7
Tecama	7,500	37	2,528	36
Tenango	12,000	33	3,976	33
Tenayuca	12,500	31	4,100	30
Tenochtitlan - Tlatelolco	350,000	2	74,895	2
Teotihuacan	20,000	21	6,716	22
Tepetlaoztoc	37,000	8	11,788	11
Tepexpan	19,000	24	6,316	25
Tepozotlan	31,000	15	10,264	17
Tequicistlan	-	-	-	-



## Appendix I (cont'd)

Site	1519*		1565**	
	Population	Rank	Population	Rank
Tequixquiac	19,500	22	6,652	23
Texcoco	400,000	1	83,966	1
Tezayuca	-	-	-	-
Tezontepec	31,000	14	10,300	16
Tizayuca	40,500	7	13,552	10
Tlamanalco	53,000	5	17,680	8
Tlalnepantla	41,000	6	13,600	9
Toltitlan	-	-	-	-
Xaltocan	3,400	42	1,162	40
Xilotzingo	6,800	38	2,336	37
Xochimilco	100,000	3	33,766	3
Zumpango	25,000	18	8,520	19

\* 1519 data based on Borah, Woodrow, and S.F. Cook, The Aboriginal Population of Central Mexico on the Eve of the Spanish Conquest, Ibero-Americana #45, Berkeley, (1963), pp. 72-88, and on Borah and Cook, The Population of Central Mexico in 1548: An Analysis of the Suma de Visitas, Ibero-Americana #43, Berkeley, (1960).

\*\* The data for 1565 is from Cook, Shelburne F., and L.B. Simpson, The Population of Central Mexico in the Sixteenth Century, Ibero-Americana #31, Berkeley, (1948), Appendix I, pp. 50-58.

## Appendix II

STATUS OF THE URBAN CENTRES IN THE VALLEY OF MEXICO

<u>Urban Centre</u>	<u>Tlatoani in 1519</u>	<u>Cabecera</u>	<u>Cabecera de Doctrina</u>	<u>Centre of Encomienda</u>	<u>Spanish Ranking</u>
Acolman	yes	yes	yes	yes	Pueblo
Amecameca	yes	yes	yes	yes	Pueblo
Axapusco	no	no	no	yes	not known
Azcapotzalco	yes	yes	yes	yes	Pueblo
Calpulalpan	no	no	yes	no	not known
Chalco Atenco	no	no	yes	yes	Pueblo
Chiauhtla	yes	disputed	yes	(a)	Pueblo
Chicoloapa	no	yes	no	yes	Pueblo
Chiconauhtla	yes	yes	no	no	Pueblo
Chimalhuacan (A)	yes	yes	yes	yes	Pueblo
Chimalhuacan (C)	yes	yes	yes	yes	Pueblo
Citlaltepec	yes	yes	no	no	Pueblo
Coatepec	Calpixqui	yes	yes	yes	Pueblo
Coatlichan	yes	disputed	yes	no	Pueblo
Coyoacan	yes	yes	yes	yes	Villa
Cuauhtitlan	yes	yes	yes	(b)	Pueblo
Cuitlahuac	yes	yes	yes	(b)	Pueblo
Culhuacan	yes	yes	yes	no	Pueblo
Ecatepec	yes	yes	yes	yes	Pueblo
Huexotla	yes	disputed	yes	(a)	Pueblo
Huehuetoca	no	no	yes	no	not known
Hueypoxtla	yes	yes	yes	yes	Pueblo
Huitzilopochco	yes	yes	yes	yes	Pueblo
Ixtapalapa	yes	yes	yes	(c)	Pueblo
Ixtapaluca	Calpixqui	yes	no	no	Pueblo
Mexicalzingo	yes	yes	yes	no	Pueblo
Milpa Alta	no	no	yes	no	not known
Mixquic	yes	yes	yes	no	Pueblo
Otumba	yes	yes	yes	yes	Pueblo
Tacuba	yes	yes	yes	yes	Ciudad
Tacubaya	yes	disputed	yes	(b)	Villa
Tecama	no	yes	no	yes	Pueblo
Tenango	yes	yes	yes	yes	Pueblo
Tenauyca	no	yes	no	(b)	Pueblo
Tenochtitlan	Hueytlatoani	yes	yes	yes	Ciudad
Teocalhueyacan	no	yes	no	no	not known
Teotihuacan	yes	yes	yes	yes	Pueblo
Tepetlaoztoc	yes	yes	yes	yes	Pueblo
Tepexpan	yes	yes	no	yes	Pueblo
Tepozotlan	yes	yes	yes	yes	Pueblo
Tequicistlan	unknown	yes	yes	yes	Pueblo

## Appendix II (cont'd)

<u>Urban Centre</u>	<u>Tlatoani in 1519</u>	<u>Cabecera</u>	<u>Cabecera de Doctrina</u>	<u>Centre of Encomienda</u>	<u>Spanish Ranking</u>
Tequixquiac	yes	yes	yes	yes	Pueblo
Texcoco	Nezahualcoyotl	yes	yes	(a)	Ciudad
Tezayuca	yes	disputed	no	(a)	Pueblo
Tezontepec	unknown	yes	yes	yes	Pueblo
Tizayuca	Calpixqui	yes	yes	yes	Pueblo
Tlalmanalco	yes	yes	yes	(b)	Pueblo
Tlalnepantla	no	yes	yes	no	Pueblo
Tlatelolco	yes	yes	yes	yes	Pueblo
Tlaxitlan	yes	yes	no	yes	Pueblo
Xaltocan	Calpixqui	yes	no	no	Pueblo
Xilotzingo	yes	yes	no	yes	Pueblo
Xochimilco	yes	yes	yes	yes	Ciudad
Zumpango	yes	yes	yes	no	Pueblo

Notes: Tlatoani data, Gibson, pp. 34-44; Cabecera data, Gibson, Appendix II, Cabeceras de Doctrina, Gibson, pp. 108-109; Encomiendas, Gibson, pp. 58-80; Spanish Rankings, Borah and Cook, (1960).

- (A) Atenco
- (C) Chalco
- (a) Encomienda comprising five Cabeceras under Texcoco
- (b) Cabeceras granted to Cortes but escheated by 1531

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