

GEOGRAPHY AS AREA SOCIAL SCIENCE

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The location of man and the products of his work form patterns on the earth. The character of these patterns of location reflects the influence of both the physical environment in which man lives and the attitudes he has developed through cultural contacts. Geography describes and interprets patterns of location.

Anything that explains location seems to fall within the scrutiny of geography. On the other hand, geography is not the only discipline concerned with location, and sometimes the geographer turns to other disciplines for findings which pertain to location. If the location of man and his cultural products are the interest, then the social sciences become important sources of data. If, however, location of features of the physical environment is the primary concern, the geographer turns to the physical sciences for information.

In lower schools, and within the European tradition, geography has divided with history the job of explaining man's behavior. Geography explains locational patterns; history explains time patterns. It is not difficult to see why geography turned to physical science for assistance in interpreting the ever-present influence of the physical environment on location. It seems logical also that history turned to the humanities to explain the influence of individuals on chronology of events. Both disciplines are, however, greatly interested in problems of social science.

The relationships between history and geography would not be complete without recognition of the need for understanding locational patterns by historians and the need for geographers to understand events that occur in time. The historian teaches changes in man's behavior with the elapse of time and the occupation of different areas. Geographers understand that resources of the physical environment may be destroyed; they understand that society's attitudes and changes in technology alter the need for use of resources and the need for saving them. The characteristics of an area are always recognized as having not only qualities of the moment but also qualities which change with time.

POPULATION, GEOGRAPHY, REGIONS

Now that we have explored briefly the nature of geography and recognize its relationship with the mother of the social sciences, history, let us examine how geography may be involved with teaching social science.

Suppose we start with the concept of population, a concept which must be shared by many disciplines. Geographers are interested in population because it occupies places. Not only does it represent people with numbers, distributions, and various compositions, but populations also have cultures. Both these concepts occupy areas.

Population occupying an area or a region is a concept concerned with aspects of geography. It involves the physical environment because area

incorporates the factors of distance, direction, surface configuration, minerals, climate, soils, and vegetation. It involves the numbers, distribution, and cultural features of population. Thus, there is a completeness about regions. They have populations with their societies living in areas which influence their existence. The resulting behavior patterns are the raw materials of social science. As H. H. McCarty has said, "Since social science principles are designed to be universal in character, their true significance cannot be fully appreciated until their operation is observed under the limitations imposed by a particular physical and cultural environment."¹

Regions contain the ingredients for social studies, ingredients which are real. The physical environment is outside the window, in the community, the region, the state. People are within the room and in the community. Locations, physical environment, and population are not imaginary. They are not theoretical. They do not have to be viewed through a microscope. They are objective existence, and, as such, are more teachable than abstractions.

A GEOGRAPHIC PROBLEM

Thus far I have been referring to the nature of geography and the virtues of the geographic (regional) approach to the social studies. Let us now set ourselves a problem in the social studies and see how a geographer might go about answering it.

Let us imagine that, as at last spring's meetings, we are at San Jose State College on the very edge of the city's commercial district. A commercial district of a large city is always related to a region larger than the city itself. San Jose's financial district is no exception. Within a few blocks of this place may be found managerial and financial institutions which deal with regions far removed.

Not far away is the San Jose Chamber of Commerce which concerns itself principally with business problems within the city but also becomes involved in activities in other parts of the region on the periphery of San Francisco Bay.

The San Jose Chamber of Commerce is affiliated with the California State Chamber of Commerce, centered in San Francisco. As its name implies, the area comprising the state of California occupies the central position in the work of the "State Chamber." But it, too, becomes involved with other regions in the United States and even outside this country.

The local "chamber" has also had an influence on the nearby location of such large firms as International Business Machines, Lockheed Missiles, and General Electric, all of which operate in most areas of the world. No place is too far away to be involved in the business orbit of these firms.

Within the urban complex of which San Jose is a part, we have run the gamut from firms related principally to the local region, through those in expanding geographical locations until we have covered regions all the way around the world.

¹ H. H. McCarty and H. W. Saunders, *American Social Life*, (Dubuque, Iowa: Wm. C. Brown, 1946), p. 7.

Manifestly we cannot discuss regional relationships in all areas in a single paper. So let us consider an application of some of the earlier mentioned aspects of geography and social science to the region of California.

California has a present population of about fifteen and a half million with a physical environment as diverse as any you might find in an area of similar size in the world. It has an amazing variety of natural resources and a booming economy, both of which attracts immigrants intending to settle here. They are coming to California at an amazing rate.

When it is considered that we have, in the region of California, reduced the possible area of study from the total world to 8/10,000 of the total area of the earth, or 28/10,000 of the earth's land area, we have narrowed our study considerably. But this is still too large and complex an area to use as a problem considering the limitations of a single paper.

As an aside, let me comment that the geographic method has the fortunate advantage of reducing the size of a problem in two ways: (1) by reducing the area, and (2) by reducing the number of topics. We have reduced the area of possible investigation from the world to California. Now let us reduce the topic from all social and geographic relationships in this state to a single social and geographic problem in California water.

THE WATER PROBLEM

The problem of a shortage of water is ages old in many parts of the earth. Many of our religious and other cultural traditions were born in water-shortage regions. Most of the inhabited areas of the United States have not, however, experienced a limited water supply for any extended period of time. Only when settlers moved into the Great Plains, across the Rocky Mountains, and into California and the Southwest did a shortage of water begin to affect economic and social-political affairs to any extent.

Theoretically, there is probably enough fresh water in California to meet present and even future needs. California's water problem is basically a matter of shortage of water where it is needed and an anticipated greater shortage in the future unless man is able to distribute it from areas of surplus to those of greater need. The use of the word "where" in this statement has definitely stamped the imprint of geography on the problem. There is a "where" involved in the location of water runoff and ground water supply; "where" is related to location of population, agricultural land, recreational areas, hydroelectric power, industrial use, and flood control. Both physical and cultural geography are involved, and understanding of cultural problems must surely necessitate some understanding of the physical environment and its relationship to water supply.

Geographic Maldistribution of Water. The northern one-third of California has over 70 per cent of the stream flow. The southern two-thirds of the state, with less than 30 per cent of the stream flow, has an estimated 77 per cent of the consumptive water requirement, according to the State Water Resources Board.² This is the core of the problem concerning water in California.

² Calif. Dept. of Water Resources, *The California Water Plan*, Bulletin No. 3, May 1957, p. 14-15.

Irregularity of Supply of Water. All parts of California have an extremely dry summer. Some areas are dry both summer and winter. In addition to this regularity of irregularity, there are extended cycles both of drought and of excess of water. The State Water Resources Board reports that, while the state-wide run-off has averaged some 71,000,000 acre-feet per season (not including California rights to Colorado River waters), the actual seasonal flows have varied from as little as 18,000,000 acre-feet to more than 135,000,000 acre-feet.³

INTEGRATION OF PHYSICAL AND SOCIAL SCIENCE

At this point, we might go on to attendant economic and political problems, but it is difficult to pass by this opportunity to integrate the social studies with physical science. Furthermore, it appears that three very significant concepts may be established with a study of physical geography at this point:

- (1) the relationships of physical location and water in California;
- (2) the relationships of physical and social science—the fact that problems of this nature involve more than one facet of the school curriculum and there is a completeness in things as they really exist;
- (3) the concept of learning which makes understanding and analysis of a problem more complete by furnishing information concerning all aspects of it; and which motivates learning by producing a feeling of expertness in the minds of students.

THE PHYSICAL FACTOR

Let us now look at the climatic base as the source of water in California. The pattern of California rainfall illustrates the following facts:

1. Rainfall is greater in northern California and in higher elevations of the state.

2. Great variations in rainfall are evident between summer and winter.

No mention has been made here of how technology may alter nature to add to the water supply. The use of rain-making techniques has had success in adding to limited supplies in some areas. The improvement in techniques for low-cost removal of salt and other minerals from sea water may eventually also be used to increase the supply of fresh water in areas of need in the future. The Governor's water plan includes funds for experimentation on sea water conversion.

Neither have we mentioned periodic droughts of the late 1920's and early 1930's during which rainfall averaged about 69 per cent of the long-term means for a period of ten years. For the year 1960 it is forecast that water-year runoff will average 25-70 per cent of average in all areas except the Colorado Desert.⁴

THE POPULATION FACTOR

Time Patterns. Between 1849 and 1930 the population of California grew from 100,000 to about 5,677,000, an increase of some 5½ million

³ *Ibid.*, p. 12.

⁴ Calif. Div. of Resources Planning, *Water Conditions in California*, Mar. 1, 1960, p. 15.

people in 80 years. About twice that gain (10 million) has been made in the thirty years between 1930 and 1960.

On the average, no more rain falls on California now than in 1849. There was a shortage of water for many settlers in the early days of immigration—the shortage is becoming more evident. In Bulletin (3) of the State Water Resources Board it is estimated that our need will increase from 21 million acre feet in 1950 to 51 million acre feet in the future. By 1965 the net water shortage of developed water supply could amount to 10 million acre-feet per season.⁵ An increase in demand requires an increase in supply.

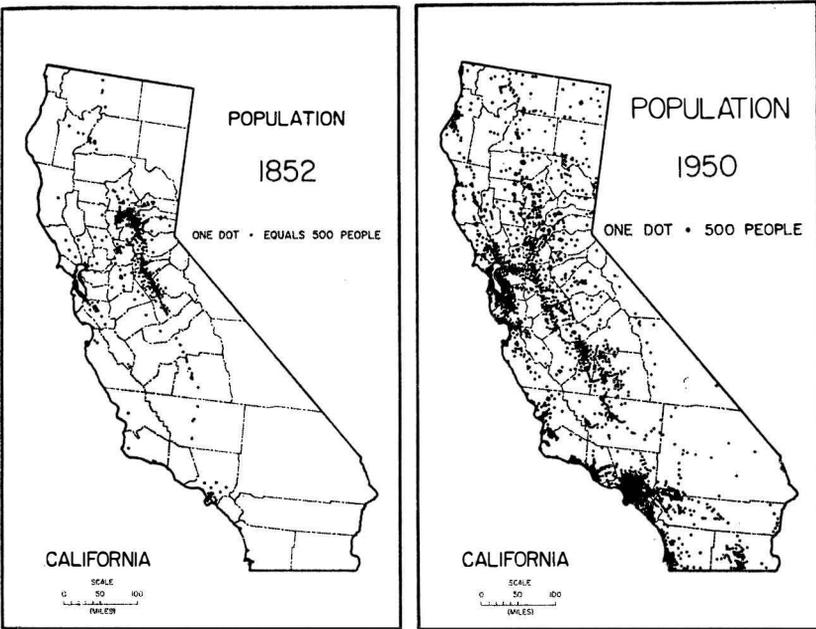


Fig. 1

Location Patterns of Population. Distribution of rainfall is a direct corollary of distribution of population of California in 1852 (Figure 1) in California. The small population of California in 1852 (Figure 1) needed only a limited supply of water. Furthermore, there were few people in the southern part of the state where present shortages are greatest.

In 1950 about 60 per cent of California's population was found in the ten water short southern counties, and 77 per cent, with an impending 80 per cent, of the consumption in the water-deficient southern two-thirds of the state. This is a problem of distribution.

⁵ Calif. Dept. of Water Resources, *The California Water Plan*, Bulletin No. 3. May, 1957.

CULTURAL ELEMENTS OF THE WATER PROBLEM

Facts and problems concerning water have been described using data from both physical and social science. We have also used both geography and history to develop a factual base from which to describe and interpret the cultural aspects of this problem.

The Economic Element. The principal cultural elements to be considered are economic and political. In addition there are certain values which become significant in any approach to this problem. We frequently speak of those values as attitudes. Let us look first at the economic factors.

The needs for water fall into two principal categories, agricultural and urban. Agriculture requires a little more than 90 per cent, 19 million acre-feet per season, of the present total use of water for beneficial purposes. Less than 10 per cent, or 1.6 million acre-feet, was used for urban and related purposes in 1950.⁶ The future agricultural demands will continue to be great, but the ratio between agricultural and urban uses will probably change to 80 per cent and 20 per cent respectively.⁷ Agricultural uses are principally for irrigation of crops; urban uses are for domestic and industrial water supply.

There are, of course, the additional water uses for hydroelectric power, for recreation and wildlife purposes, and there is the problem of flood control.

The basic economic problem is how to get water to areas of need at moderate prices. Financing distribution of water for irrigation and urban use was once either a private problem or one for a local district. A few thousand dollars, or even a few million dollars, cost can be born by individuals and local governments. But when it comes to billions (the capital expenditure on the new water plan for California is estimated at between 12 billion and 13 billion dollars), state and federal agencies must enter the picture.

The Political Element. There must always be an arbiter of a natural resource in short supply. The governments of local areas arbitrate local disputes. State and federal governments settle intra-state, interstate, and international water disputes. Several of our legislative sessions saw disputes between northern and southern California legislators over allocation and cost of water distribution.

Local and intra-state water disputes are settled on the basis of several legal procedures which have been developed over the years to fit geographic and political-economic needs.

California law recognizes several types of water rights:

1. The riparian right, which is attached to land merely by reason of its adjoining a surface or underground stream, which right neither has to be applied for nor has to be used to be retained.

2. The appropriative right, which can now be obtained against unappropriated surplus through compliance with definite legal procedures and which must be used to be retained

⁶ Ibid., p. 14.

⁷ Ibid.

3. The correlative right, applying to underground percolating water in behalf of overlying owners.

4. Pueblo rights, which were granted to a limited number of Spanish or Mexican communities, predecessors to present cities, and which are superior to all other rights.

5. Prescriptive rights, obtained by open, adverse use of water under claim of right to such use against the rights of others.⁸

Attitudes. Economic and political elements must make the plans for water distribution, decide on profitability, weigh advantages of one system over another in these respects, and generally try to keep ahead of minimum needs. But the decisions of economic and political elements are always pervaded by public attitudes. Governments, in particular, are guided in their behavior by what is right and good in the minds of their citizens. For example, the attitude that everyone has a right to water because it is needed for life is illustrated in the law of riparian rights which says that water is the property of no one; only the land may be owned. The famous Justice Oliver Wendell Holmes presents an attitude toward use of water in this statement: "We are met at the outset by the question of what rule is to be applied. A river is more than an amenity, it is a treasure. It offers a necessity of life that must be rationed among those who have power over it."

With periodic disastrous floods come renewed public insistence that high priority be placed on action to eliminate them. The floods in the Marysville-Yuba City area in 1955 brought demands from all over the state to stop this threat.

Agriculture, too, has a high priority for water, and its strong position is accepted by many in our country. Undoubtedly, Thomas Jefferson and William Jennings Bryan had something to do with this attitude by elevating the position of agriculture as a way of life. Before San Francisco could take water from the Sierra Nevada more than 150 miles away, it had to agree that *first* claim on the water (2,350 second-feet) must go to the Modesto and Turlock irrigation districts.

CONCLUSION

While the problem of water need, distribution, consumption, and control started out as a problem in geography, we very quickly became involved with history as we noted the effects of the past on the present attitudes toward water and in explaining changes in population with subsequent changes in the need for water. Many aspects of the water problem demanded that we consider economic and political aspects of water distribution and control. Social attitudes, which involve all social sciences and humanities, also became a part of understanding this problem. So, in limiting a topic to water, and in limiting the area to California, we did contract the scope of the study; but at the same time, it was found that a problem of this nature has tributaries reaching into many aspects of learning. Geographers know that tributaries work their way headward and carry with them the sediments from all areas of the watershed. At

⁸ Calif. Dept. of Water Resources, *Water Facts for Californians*, (Sacramento: State Printing Office, 1958), p. 7.

every confluence of a tributary with the main stream, another set of minerals is added to those already there. All these sediments and solutions have an influence on the character of soils, the kinds of mining possible, the base upon which buildings may be constructed. They are the raw materials upon which is based the use of the land. So, too, a geographic problem may find its raw materials for teaching coming from tributaries outside the main stream. Many of the facts and concepts necessary to careful analysis come from the social sciences, as well as branches of physical sciences and the humanities.