Paper III

A Model for Organizing Data to Understand a Place

Teaching about places is one of the objectives of geographic education. How is this done? How do we get students to think geographically about places? One way is to give students a "model," "frame of reference," or "thinking outline" suitable for the study of any place, large or small. The outline or model (Figure 1) is, as any model is, a simplified representation of any place. It is the foundation or basis for suggesting questions about a place, an organizing structure in which to organize facts, and a teaching/learning tool that has transfer value. Some educators today say "We do not want to teach just facts." This is true, but the operative word is just, not facts. Correct facts or data are the key to good thinking and decision-making. Place names are to geography like the multiplication tables are to mathematics. They are not mathematics but we cannot do without them.

A major truth applies to the model as with any tool. It is not good if it is misused. It is not to be assigned as an outline purely for facts memorization or as a repetitive assignment. That is what has hurt geography in the past. In the 2000s the leaders of education want to teach through the inquiry method, through individualized instruction, through cooperative learning, critical thinking and, in geography, spatial analysis. This is an admirable objective to increase thinking skills and to generate student interest. However, accurate data, rational models for organizing and thinking, principles, and other absolutes are desirable to creative and abstract thinking and learning. The model suggested here is one, only one, of the teaching approaches that encourage students to think geographically. The outline may be used to explain some methodological aspects of geography, as will be noted later, and it can be personalized for students in that it can be developed inductively. In addition, it can be used at any scale for any defined place.

The following is a successful way to introduce the geography model (Figure 1) for understanding a place. The teacher announces that, "Your father comes home and tells the family, 'I have some good news and some bad news. The good news is that I am being promoted in my job and I will make four times as much money as I make now, and I will increase your allowance by four hundred percent. The bad news is that we have to move to Snohomish, Washington'." (Apologies to Snohomishians, who undoubtedly have a wonderful city. It is used because it is generally not known to Florida students.)

The father continues by saying, "I know nothing about Snohomish, Washington, so I am assigning you (each student) the task of giving the family a complete picture of this city." The teacher then asks, "What should you use as an outline for your report? What do you want to know about this new place?" After little, if any response, the teacher should call on students to suggest topics and proceed to write them on the chalkboard in the order given, e.g., climate, sports, landforms, shopping, religion, population, weather, schools, jobs, where it is, malls, environment, pollution, water resources, rivers, fun, hospitals, hills, etc. The teacher must be sure that topics cover physical and cultural factors and history, as well as economic activities and the problems and prospects of the place.

Depending on the level and mood of the class, the board could be filled and the teacher should then ask if it would be appropriate to start with topic one and write the paper in the order of the subject on the boards. The students will correctly say, "No, that wouldn't make sense." The teacher would discuss the reasons why it wouldn't make sense and ask what should be done. The concept *categorize* would then be developed and implemented under headings suggested by the class through leading questions.

A GEOGRAPHIC MODEL FOR ORGANIZING DATA TO UNDERSTAND A PLACE

I. Location and Physical Characteristics
   - A. Location
     1. Mathematical
     2. Relative
   - B. Physiography
   - C. Climate
   - D. Vegetation
   - E. Soils
   - F. Natural resources (water, minerals, etc.)
   - G. Other

II. Population and Cultural Characteristics
   - A. Where people live
     1. Total Number
     2. Density (general and specific)
     3. Distribution
   - B. How people make a living
     1. Urban occupations
     2. Rural occupations
   - C. Characteristics of Populace
     1. Racial
     2. Religious
     3. Language
     4. Political
     5. Education
     6. Health
     7. Per capita income
     8. Birth and death rates
   - D. Other

III. Historical Background
(Sequent occupance)

IV. Major Economic Activities and Land Use
   - A. Agriculture
   - B. Manufacturing
   - C. Transportation
   - D. Power
   - E. Trade
   - F. Service Industries
   - G. Recreation
   - H. Extractive Industries
   - I. Other

V. Problems and Prospects
   1.
   2.

Warning: The misuse of this model as an encyclopedic outline for repetitive study is harmful to the health of geography.

Figure 1

Location and Physical Characteristics, Population and Cultural Characteristics, Historical Background, Major Economic Activity and Land Use, and Problems and Prospects are the headings to be developed. Different but similar nomenclature may be used. In doing this, the teacher should be sure to discuss these headings in some detail, then ask the students to list the subheads under each heading. This can be done by the whole class with the teacher or a student at the board, or by each student writing it on paper for a better evaluation. During this step, if on the board, the teacher should use the opportunity to ask if there are any problems or questions about each concept on the list.

This activity provides an opportunity to develop concepts such as landform and to note that hills and rivers would come under that heading. The difference between weather and climate should be discussed. Should fun be called recreation and should that be listed under culture or economic activity? There are no hard and fast rules, but logic and reason (critical thinking) should be followed (see the "Ways We Learn" article).

With a little experience, teachers can have students develop a model, possibly less complete but virtually the same as that developed above which will be distributed for their use as a learning tool. Pupils then can be instructed to use (apply) it in many different situations, and at many different scales. When used as described above to think about the location of things in place and the spatial relationships of, and within, places the model helps students reach that objective: "to think geographically."

There are several ways to appreciate and understand the Geographic Model for Organizing Data to Understand a Place. As a teaching/learning tool, it is not original; however, the model is an up-to-date tool if it is properly used. It must be stated again, if it is used only as an encyclopedic outline to fill in and memorize, it is misused and a waste. It must be learned through use as: 1) a series of questions to ask about any place; (2) an intellectual construct which

lets us understand a complete or whole place; 3) a way to organize data; 4) a way to show that every region, however defined, is a sum of its systematic parts; 5) a structure that encourages us to check on the areal distribution of phenomena in the place and to see if there is a relationship between and among the component parts (Figure 2 diagrammatically shows how the model can be used to develop relationships); 6) a construct to show that every place is made up of both physical/biological and population/cultural aspects; and, 7) a tool which is helpful to understanding how the "ways we learn" list applies to our teaching.

Because Historical Background, Economic Activity, and Problems and Prospects are of unique importance to a place, they are categorized separately although they have physical and cultural aspects. The model may be used to show that assertions of a regional/systematic and physical/cultural dualism are not valid when studying places (Figure 3). If you look at several applications of the model to places such as nations, states, or counties and you use the model vertically, you are studying regional geography. On the other hand, if you have data for multiple places such as states, you can use the model horizontally to analyze the soils or the climate or the economic characteristics of that place in a systematic study. If you eliminate all the systematic data, you know nothing about the region and vice-versa. Systematic geographers, when analyzing their data often regionalize it. Cultural activities take place in a physical setting and to understand totally an isolated physical place we must ask about its relative location to cultural activities, including in what country it is located and to what extent its air and possibly water have been modified by human activity.

The geographic model worksheet (Worksheet 1) is a very simple way to develop familiarity with the outline. In order to write complete sentences about a place (for example, a county, state, or nation), students must do library research. They must learn to generalize and to use sources such as an atlas. Describing a place by using an atlas is a worthwhile activity and will teach students to write sentences using information derived from a cartographic data source. A problem arises if the worksheet is too often repeated in the same format. Variation can have one group describe the location and physical characteristics while others should research the other topics. When the worksheet is complete and the report is well written, the students should then be asked to develop a list of relationships within and among topics (See Figure 2). Any topic chosen by the teacher and at any scale can be enhanced by the student's understanding of the model and how to use it.

Finally, it should be noted that the model can be used to research topics such as: hazardous waste problems, transportation routes, economic development, and any other spatial problem. Previously it has been mentioned that the model can be used to study regional units (Florida, North America, Russia, etc.) in the curriculum. Worksheets 2 and 3 are sample activities that may be used many different places in a geography course or in other social studies offerings for from one hour to several days. These teaching strategies are consistent with the definition of geography, the methodological ideas developed in this paper, and the paper on "Ways We Learn." As these ideas and many other good educational and geographical techniques are practiced in the classroom, students will be able to apply geographic thinking to every aspect of their lives as citizens and, in so doing, will know more names of, and factual data about, places at every scale.

Worksheet 1

GEOGRAPHIC MODEL WORKSHEET

Application of the Geographic Model to_____

I. Location & Physical Characteristics
   1.
   2
   3
   4.

II. Population & Cultural Characteristics
   1.
   2.
   3.
   4.
   5.

III. Historical Background
   1.

IV. Major Economic Activities and Land Use
   1.
   2.
   3.
   4.
   5.
   6.

V. Problems & Prospects
   1.
   2.
   3.

Instructions: (1) Use an atlas to obtain data that would fit under each of the headings. Using complete sentences, write a statement for each number in the outline. (2) On the back of the paper write five statements that identify relationships that exist in the topic place. (3) On the bottom half of the reverse page, draw and label a rough map of some aspect of the data you have identified.

Standards: May be used in the development of Standard 4 and utilized to achieve understanding of each of the other 17.

Worksheet 2

USING THE GEOGRAPHIC MODEL IN AMERICAN HISTORY

Strategy: Write the hypothesis on the board. Then have the students use their previous knowledge of American history and data they get from the atlas to discuss the questions below.

Test the Hypothesis: The physical environment suggests and limits man's activities but it does not dictate.

Objective - To gain experience in using a classroom atlas; To gain the ability to use the geographic model.

To gain an understanding of man's impact on the environment and the environment's impact on man's activities in American history

Physical Factors

Location - How has the location of the U.S. affected its history?

Landforms - What landforms have had an impact on the history of the U.S.? Give two examples (landform map).

Climate & Vegetation - Were the climate and vegetation found in the U.S. by the early European settlers more alike or different from what they were used to in England, Netherlands, etc.? How did these differences and similarities affect the settlers? (climate and vegetation maps)

Soils - Do you suppose the soils of the U.S. were good or poor for a diversified agriculture? (soils map).

Natural Resources - How has the natural resource base of the U.S. affected its history? Did the abundance of natural resources affect the country as strongly 200 years ago as it has in the last 100 years? Why? (Resources maps).

Population & Cultural Factors

Location -What physical features have affected the present location of the population in the U.S.?

Number - Most people live on what type of landform? (Compare population location and landform maps.)

Language and religion - Can we develop predictions about language or religion by looking at specific parts of the physical environment?

Economic Factors

Agriculture - Can we make general statements regarding the relationships of types of agricultural activity and landform and climate types by comparing agricultural and physical maps?

What types of agricultural activity change do we see by comparing the crops on each side of the 20" isohyet (line that connects points which receive 20" of rainfall per year)? How about in mountainous areas?

Development - How did the existence of mountains, deserts and rivers affect the development of our country? Give examples and locations.

Commerce - How does the airplane affect the impact of the physical environment on peoples activities? (Use concept of time/distance.)

Problem: From your knowledge of American history speculate how the history of our country might have changed if the Appalachian Highlands had been less than 1000 feet high with east-west valleys located 500 or so miles apart?

Are all of man's impacts on the physical environment beneficial? Give examples supporting your answer.

Test the hypothesis that the importance of the physical environment is related to the wealth of a group, their objectives and their level of technology. For example, discuss whether the environment had a bigger impact on the American Indian in A.D. 1800 than it has on U. S. citizens today. Give examples.

Standards: May be used in the development of Standards 14, 15, and 17.

Worksheet 3

WHERE IS AWAY?

Objective: To help the student understand the problem of local government officials as they try to dispose of solid and hazardous waste.

Background: How many times have you gotten through with a piece of paper, a bottle, a can or a chemical of some kind and said, "I am going to throw it away?" Well, where is away? Does the item cease to exist when you throw it away? How does it react with the environment? What problems does this create for city, county, and state government? How is a toxic waste different from solid waste or trash? Which is a greater threat to groundwater? Why?

Activities

1. Ask background questions.

2. On a county map locate trash dumps (official and unofficial). Are they satisfactorily located and managed?

3. Interview local officials about solid and toxic waste management in your county (include waste management districts). These resource people will help answer the questions in this activity.

4. What types of businesses and industry in your town have hazardous waste as a byproduct? What do they do with it?

5. Read the state law about solid and hazardous waste. (In Florida, the law governing solid and hazardous waste is Florida Statutes Ch. 403.)

6. What cost is there in your town for disposing of solid and hazardous waste?

7. Does your town have mandatory waste pick-up? What are the arguments for and against mandatory waste pick-up?

8. How does littering fit into the waste management picture? How does littering affect wildlife?

9. What are some important solid and hazardous waste management questions for your town?

Standards: May be used in the development of Standard 14.

Note: For a very complete development of this worksheet call 850/644-2007.

Worksheet 4

CONCEPT OF GLOBALISM

Primary Objective

To develop within the student the willingness and the ability to deal with global problems on a flat map. The student will exhibit his ability to handle the concept of globalism by drawing great circle routes on a flat, desk outline map.

Procedure

Step 1. Using a flat world map, a Mercator or cylindrical projection, discuss the real shape of the world, which of course is round. Use a world map centered on the U.S. if possible.

Step 2. Point to the flat wall map and ask the students this question: Which is the closest route between Washington, DC, and Manila in the Philippines? Give them the following four choices: (a) A very northwesterly direction from Washington, DC, through the eastern end of Lake Erie and over the western border of Hudson Bay; (b) A straight line from Washington, DC, through Los Angeles, California; (c) A route directly south from Washington, DC, through the Panama Canal Zone; and (d) A line from Washington, DC, toward the Rock of Gibraltar, the entrance of the Mediterranean Sea.

Step 3. Ask for a show of hands as to which route they feel is the most direct route to Manila in the Philippines. The answer is the first route - through Lake Erie and next to the Hudson Bay in Canada. This route will take you just north of the state of Alaska, south through the eastern part of Siberia and to Japan, and, finally, to the Philippines. This, of course, is the Great Circle Route.

Step 4. Ask the students why the other routes were chosen.

Step 5. Develop the concept "Great Circle Route." (A great circle route is a curved line which represents the shortest distance between any two points on the globe and which, if continued on around the globe, would divide the globe into equal halves. Each meridian is 1/2 of a great circle. The equator is the only parallel that is a great circle).

Step 6. Ask the students why it is significant that they understand the spherical nature of the globe. Ask how a businessman might be interested in it. Ask how the military man might be interested in it.

Step 7. Give the students flat desk outline maps of the world with red dots at the following locations: New York, Midway Island, north end of Lake Baykal. Ask what each of the locations has in common with New York.
Answer: They are the same distance away.

Step 8. Using a globe and a piece of string find the Great Circle routes between New York and each of the locations in Step 7 and draw the routes on the desk outline map.

Step 9. Ask pupils to draw the shortest route between Los Angeles and Moscow. Then, using a globe and a piece of string, check to see if they are correct.

This short exercise does not, by itself, constitute a complete effort in teaching globalism. To get the concept across, the teacher will have to reinforce the idea by using the globe often and plotting great circle routes on a flat map on various occasions during the course.

Standards: May be used in the development of Standards 1 and 3.

Worksheet 5

SCALE
State and County Maps

Objectives:

-To understand that maps are developed for different purposes.
-To develop the skill of gaining information from different maps.
-To gain an understanding of various aspects of the concept *scale*.
-To understand how maps may be used and to gain an appreciation of how they can be used to note landscape change.
-To develop an understanding of time/distance and the section-township and range system.

Procedure:

1. Tape a number of maps on the wall or chalkboard. The maps suggested in the materials list give a good variety.
2. Have students study each map and write down name, scale, date, and producer, on a sheet of paper.
3. Have the students write a paragraph on how the maps are different.
4. Ask the students:
   What map is best to show Florida's township and range system?
   Which map is best to identify Florida cities of over 100,000 population?
   Why is the date on a map important?
   Can you name some feature that exists but does not show up on any of the maps?
   Which map is best for showing the location of a friend's house?
   Can you locate your friend's house more generally on any of the other maps?
   What else can you do with the maps?
   What is the ratio (scale) of the State of Florida map?
5. Look at the 1987 Florida Highway map and note several interstate highways that are not on the 1967 USGS map.
6. Discuss what cultural and physical features are shown on each map.
7. On an overlay of the county map color in areas that have recently been urbanized.
8. On each map identify several beginning and end trip points. Have students note distance as a straight line and as a trip route. Develop the concept time/distance.

State and County Map Exercises

Materials:

1. Local map put out by the Chamber of Commerce, bank or real estate company (free).
2. USGS topographic sheets of local area at scales of 1:24,000 and 1:100,000 (about $2.50 and $5.00).
3. USGS topographic sheet of State of Florida 1:500,000 ($5.00).
4. Florida Department of Transportation Map of county 1:126,720 (1 in. = 2 mi.) ($.35).
5. State of Florida Highway map, Florida Department of Transportation. 1 inch equals 17 miles ($2.00).

Standards: May be used in the development of Standards 1, 2, 3, and 4.