

Some Aspects of Settlement Patterns—A Case Study in South Central Indiana

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Geographers are interested in population and settlement as a basic element in the cultural landscape. The study of the arrangement of habitations on the land is of primary concern to those who attempt to describe, analyze and explain areal differentiation in settlement, whether it be in terms of structure, process, or stage.

In the state of Indiana there are four important sources which might provide fairly reliable means of examining and mapping rural settlements:

- (1) County highway maps with dwellings included as of 1937;
- (2) Maps or records of county officials—county engineer or county agent for example;
- (3) Aerial photographs;
- (4) United States Geological Survey topographic quadrangles.

Almost uniform coverage of the entire state exists in county highway maps, although accuracy may leave something to be desired. County records may be excellent for studies of historical significance, but they may also be somewhat inaccessible. Aerial photos *per se* present the early problem of distinguishing dwellings from other buildings, whereas the compilation of topographic maps has solved this by combining information taken from aerial photos with field checks. Much of Indiana, of course, is still in the process of being surveyed and mapped by the U. S. G. S. However, it is common knowledge among geographers and geologists that topographic sheets, especially those made in post war years, provide a rather accurate reproduction of numerous cultural, as well as physical features. Therefore despite the lack of complete and up-to-date large scale mapping of the state, these quadrangles probably provide one of the best sources for a sample study of rural dwelling distribution.

It is the purpose of this paper to consider a dot map of rural settlement in a specific area in order to illustrate the use of topographic maps for the analysis of settlement patterns. One can establish working hypotheses by describing and analyzing a simple dot map showing habitations prior to carrying out any field research for the explanation of patterns and densities of dwellings. By tracing off the location of all dwellings from topographic quadrangles, a dot map (Fig. 1) has been prepared for a sample area in south central Indiana.

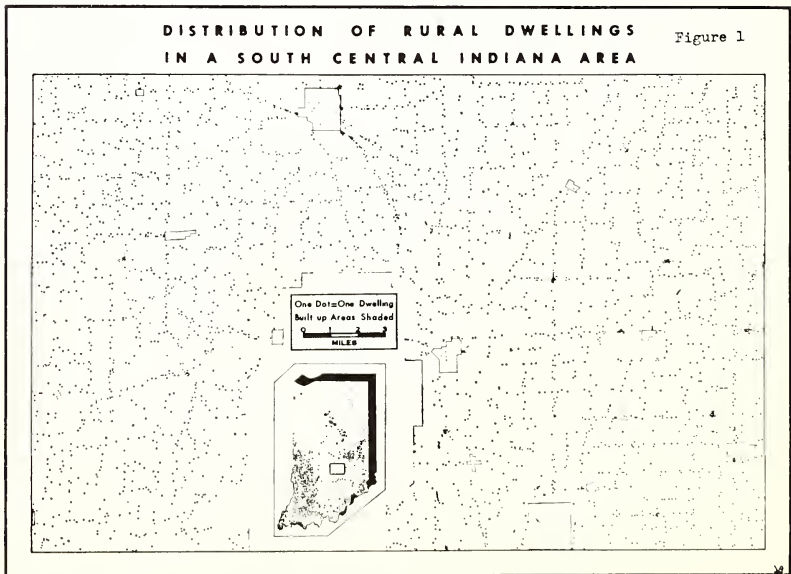
Several factors influenced the choice of an area in south central Indiana for this sample study. First, it seemed appropriate to choose an area which is covered by several quadrangles, each of which was surveyed and published at about the same date as the others. Second, it seemed important to examine an area of sufficient size to show distinctive patterns with the possibility of some contrasting patterns. Third, in an

experimental study such as this, some prior familiarity with the area is valuable to the investigator.

The study area includes southern Johnson County, southwestern Shelby County and northern parts of Brown and Bartholomew counties (Fig. 1). This area is covered by two quadrangles (Edinburg and Franklin) at the scale 1:62,500 and by eight sheets at the scale 1:24,000, all of which are dated 1946-1947. The dot map was actually constructed from the two 1:62,500 sheets, because the smaller scale proved to be more workable for an area of almost 500 square miles. However, the 1:24,000 sheets provide better information on any local detail which may be of interest. Furthermore, future studies of settlement patterns in Indiana will require almost exclusive use of the larger scale, since the two 1:62,500 sheets mentioned earlier were the only Indiana quadrangles produced at that scale after 1935.

A few preliminary problems presented themselves in making the experimental dot map. Perhaps the most obvious irregularity in the map (Fig. 1) is the large break in the center, an area devoid of any true rural settlement in 1946-1947 (and today, too) because of the existence of Camp Atterbury. Although the camp has housed many military personnel at various intervals since the end of World War II, settlements in this area have been omitted and the space used for the legend and an index map. Nevertheless it is necessary to recognize this major disruption of dot distribution, for the reservation may have had and may still have an influence on the surrounding rural settlement pattern.

Another problem in making this dot map involves the cartographic expression of agglomerated settlements as well as dispersed settlements. The presence of several small villages plus two towns with between 2,500 and 10,000 people necessitates deviations from the simple dot distribution



map. However, these places cannot be ignored because they are occupiers of space and centers of dwellings themselves. Therefore in an arbitrary manner all clusters with more than twenty-five houses have been outlined (Fig. 1). The existence of these built-up areas is an integral part of the settlement pattern as a whole.

An examination of the patterns in Figure 1 reveals any number of both simple and complex facts, most of which point to a need for further research. No doubt the most obvious thing is the apparent alignment of rural dwellings either in straight or winding sequence. Reference to the topographic sheets indicates the expected correlations of settlements (houses) to road patterns. For ease in comparing settlement patterns with road patterns, a second map might have been made to show roads only.

The map further suggests that road patterns (and in consequence patterns of dwelling distribution) probably are in some measure determined by the topography. Patterns implicit in the township and range system are apparent in the relatively level eastern half of the area, as witness the predominance of a straight line pattern of houses along what are actually section lines. The major breaks in this rather regular pattern arise from the fact that at least three important streams or rivers cross the area represented in the eastern half of the map. Also a radiating pattern of dwellings, which seems to be closely correlated with state highways, is noticeable in the vicinity of the town of Franklin (just left of upper center in Fig. 1).

In contrast to the angular and straight line arrangement of houses, the pattern in the southwestern portion of the map is distinctly irregular even though the dots still suggest the relationship to roads. The topographic sheets provide a ready answer to the pattern in this Brown County sector with its ridge and valley roads.

Aside from the description of areal differentiation of house distribution patterns, the dot map may be analyzed to determine density of settlement. Casual observation of the map (Fig. 1) gives no simple clue to densities in any part of the map other than in the hamlets or villages. Does the hilly southwestern part have as many dwellings as does the part which lies in the Tipton Till Plain and Scottsburg Lowland to the north and east? This cannot be answered without some means of measurement which permits a comparison.

Several different means could be used to measure density, but only a rather simple estimate is included here. A count was made of all individual houses by using a grid of half mile squares. Except for the outlined built-up areas no square had more than fifteen houses and few had more than five. For purposes of comparing densities in areas already noted as having different settlement patterns, a count was made for eight mile squares in each of the four corners of the map. The southeast sector has 433 rural dwellings along with four built-up areas and part of an air base; the northeast sector has 509 dwellings plus one built-up area; the northwest square has 503 dwellings plus two built-up areas; and the southwest square has 436 dwellings and only a small portion of one built-up area. Although the latter eight mile square

which is almost entirely hill country has less agglomerated settlement than the other sectors, the difference in the number of dispersed settlements is not great.

One might speculate as to why there is no greater disparity in the density of rural dwellings considering the fact that there is some areal differentiation in pattern and in topography. Interesting as it may be to pursue this further, it becomes a study of types of dwellings, types of people and types of land use.

A map such as the one described and briefly analyzed here can serve as a framework for studying rural settlement patterns—the arrangement of places and their density. The dot map also becomes a tool for more comprehensive analysis of population, since each dot representing an individual dwelling conveys fairly accurately the location of a small group of human beings—usually the family unit. A study of areal differentiation of settlement patterns could be accomplished within the state of Indiana by comparing a series of dot maps taken, for example, from each of the physiographic provinces or each of the types of farming regions.

Jean Bruhnes emphasized the importance of settlement patterns to students of geography when he wrote: "It is not the houses alone that need consideration, nor even the towns: it is the pattern, the 'fundamental seed bed,' of human settlement, a more or less closely woven network on which is built up the entire range of centres of population" (1).

Literature Cited

1. BRUHNES, JEAN, *Human Geography*, (First edition in 1910 in French; later editions available in several English translations).