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BARN TYPES OF LINCOLN COUNTY, KANSAS: THEIR SPATIAL DISTRIBUTION AND VARIATION OF FORM

by

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B.S., University of Nebraska, 1977

A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF ARCHITECTURE

College of Architecture and Design

Kansas State University
Manhattan, Kansas

May, 1985

Approved by

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ACKNOWLEDGEMENTS

The author wishes to express her sincere gratitude for the valuable assistance and guidance of the following individuals. A sincere thank-you is given to Dr. David Seamon, chairman of the advisory committee, for his wisdom, insight and patience. For without his generous contibution to the manuscript this paper would not have been completed. Also, the author would like to thank the rest of the advisory committee, Bernd Forester and Lou Seibold for their assistance in the preperation of this manuscript. Appreciation is greatly extended to Harold Vanderventer, for all of his help at Kansas State and for his assistance with the computer programs. The author would like to thank L. Carl Brandhorst for his encouragment regarding the studing of the Great Plains--its people and its architecture. Also, a special thank-you to the staff at the Kansas State Preservation Program for their assistance during the initial study and also during the completion of this manuscript. The author would also like to thank Scott Urick, Deb Mangelsdorf and Gene Seivers, Joan Cunnick and Jene Kardnial for their friendship--for without their support, encouragement and understanding, it is doubtful that this manuscript would have been completed. Finally, the author wishes to dedicate this

work to her parents, Robert and Margaret Tooker, and her family. for their trust, patience and confidence in helping to catch a dream.

Chapter I

THESIS AIMS AND HISTORICAL BACKGROUND

> ...I believe understanding them [old barns] can help us understand something about the people who built them and spent much of their lives working in them. We can learn something about the values and satisfactions, the motivations and frustrations of these...farmers of an earlier day. And in a broader sense, we can learn something about ourselves, for nearly all of us can trace our beginnings back to the soil (Apps, 1977, p. 15).

The barn was once a major architectural element across the American landscape and reflects the aspirations, dreams and accomplishments of rural America and its people. Today, however, the barn is a rapidly disappearing element on the landscape. It is important, therefore, to observe and record the barn within its landscape and cultural context before the information is lost. Thus, there has been interest in examining these buildings by geographers, folklorists, and architectural historians.(1)

This study examines the variation of barn forms in Lincoln County, Kansas, and identifies the cultural and environmental influences that may have affected the development of barn types in the county. Specifically, the focus involves three themes:

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(1) These studies will be discussed in chapter two, which reviews the history and literature on the North American barn.

(1) spatial distribution of the barns within the county which includes the location of the sites with relationship to geographical and cultural factors;
(2) construction materials which include wood and a unique rock material called post rock limestone;
(3) form type which relates to the physical shape of the building--i.e. the combination of plan, elevations and function.

The research involved two phases. First, the study made use of an inventory completed by the author in 1982 while she was an intern with the Kansas State Historical Society. The purpose of that survey was to record information on rural buildings in north-central Kansas including all agricultural buildings. The basis of this inventory is the survey form developed by the KSHS (see chapter three and appendix A). All buildings recorded, including barns, were constructed prior to 1940, a date chosen because it provides a natural break in time--i.e. construction up to World War II. After that time there were major new technological developments in agriculture and construction such as the extended use of tractors and the development of metal farm buildings such as the quonset hut and prefabricated corn cribs (Apps, 1977). The survey inventory recorded the total population of rural buildings but, for this study, the author examined only the major barns on each site. Information was gathered concerning the 492 existing barns as shown in Table 1.1.

Although the material in this table is important in studying the development and destribution of barns in Lincoln County, only a small portion of the information gathered will be examined in this study, particularly data on location, building materials along with barn form and background of builders.

TABLE 1.1

SURVEY DATA COLLECTED FOR BARNS IN LINCOLN COUNTY, KANSAS

1. Description of barns, including:
   - roof shape;
   - number of bays;
   - story height;
   - information on builder and owner;
   - date stone;
   - dormers, cupola and hayhoods (style and location);
   - building materials;
   - plan type;
   - entrance location and door types; and
   - additions (style and location).
2. Site layout, including:
   - spatial relationship among buildings remaining on the site;
   - buildings' relation to roads and lanes; and
   - buildings' north/south orientation.

The second phase of the study was to catalogue and examine factors which may have led to variations in the county distribution of barn forms. For example, topography, building materials, practical needs and the cultural background of settlers and builders. These factors were related to barn types identified in phase I. This study concludes that many elements, both environmental and cultural, need to be examined in understanding the basic causes in the development and diffusion of barn types on the Kansas landscape. Chapters two through six review the literature on barns, present the research methodology and identify relationships that may have had a major role in the development of the barn types and variations in final form.

Overall, the thesis hypothesizes that there are three particularly important factors which help explain both the the distribution of the 492 barns as a whole as well as the distribution of particular barn types. Topography is the first significant factor since large areas of flat, fertile land are easier to farm. A second significant factor is building material, which does not have that much bearing on the overall distribution of the barns but which helps to explain the location of some barn types and their physical characteristics. The third important factor is the ethnic settlement patterns in the county. This factor is important because: first, immigrants brought with them cultural baggage which included building types. Second, some immig-

rants, particularly in Lincoln County, settled together in clusters which sometimes led to the clustering of a particular barn type.

GEOGRAPHICAL AND HISTORICAL BACKGROUND OF LINCOLN COUNTY

Before examining the spatial distribution of the barn forms found in Lincoln County it is important in this introductory chapter to present the geographical and historical background of Lincoln County including its rural development, its physical attributes, and the ethnic patterns of the county.

Lincoln County is located in north-central Kansas, and is 720 square miles of predominantly agricultural land (Figure 1.1). This county is bordered by Ellsworth County on the south, Saline and Ottowa Counties on the east, Mitchell County on the north and Russell and Osborne Counties are on the west. The county is divided into twenty townships, each six miles wide and six miles long (Figure 1.2). The map on page seven shows the location of each township (Figure 1.2). The county is nearly level in the bottom lands along the Saline River and its streams and the remaining portions of the county are modestly sloping to strongly rolling to hilly (Figure 1.3). Along the streams of the county are heavily wooded areas and the upland areas are almost all devoid of timber. During the early portion of the county's development, timber was used as firewood so that it became fairly

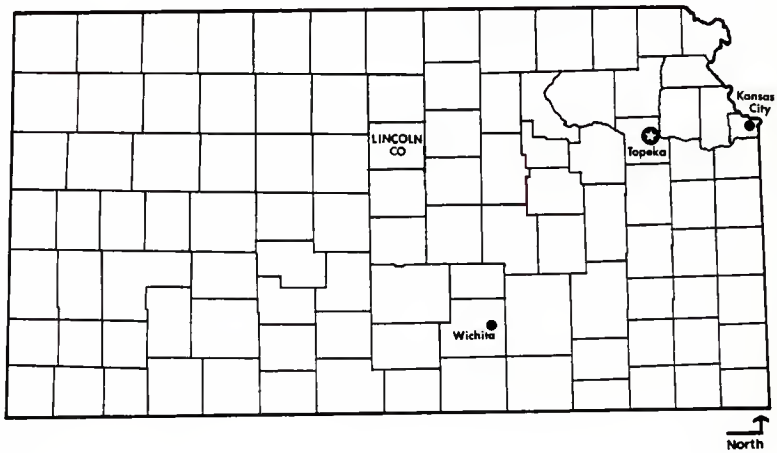

Fig. 1.1 Location of Lincoln County, Kansas.

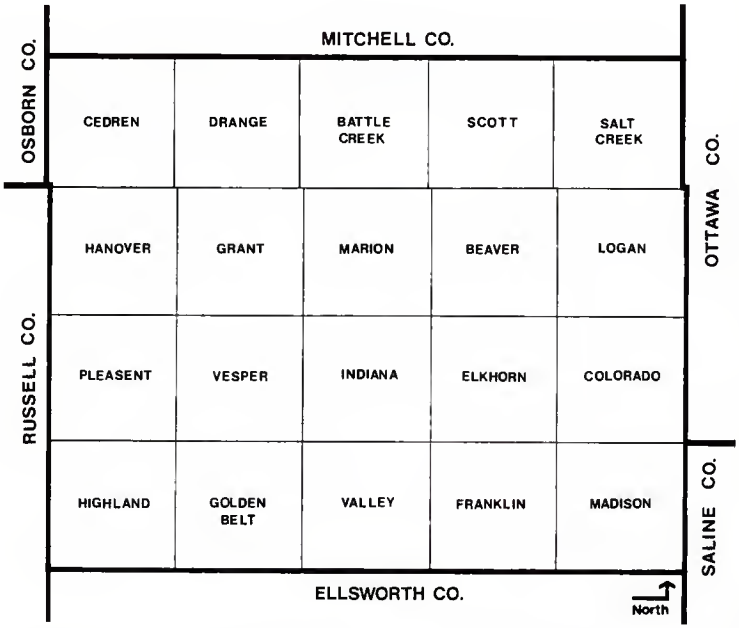

Fig. 1.2 Surrounding Counties and Townships of Lincoln County.

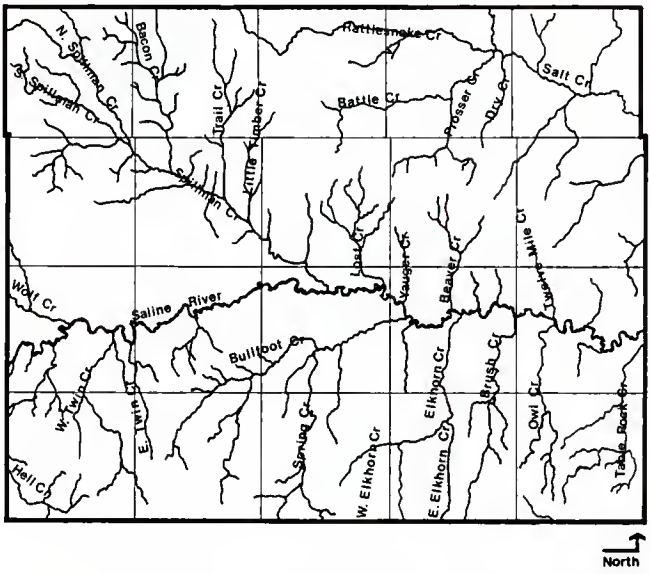

Fig. 1.3 Major Rivers and Streams of Lincoln County.

scarce, especially as a building material. The county had several saw mills in the early years that processed lumber until the railroads were able to bring in additional supplies.

One can begin to understand more clearly the geography of Lincoln County by studying a map constructed by Brandhorst (1974) which shows the intensity of slope within the county (Figure 1.4). The darkest areas of the map are those areas with a slope of zero to two percent. The medium value representing two to seven percent and the lighter areas indicate slopes over seven percent. This map is used later in this study to examine relationships between the topographical layout of the county and the distribution of barn types.

Turning to geology, one finds that Lincoln County lies within an area called the "Post Rock Region" because of a formation of limestone which lies in beds that are approximately eight to twelve inches deep. Once the surface soil is removed, the stone can be cut into either building stones or fence posts. Because it was extensivly used as fence posts in the area, it acquired its name 'Fence Post Limestone' or shortened to 'post rock'. Because the limestone did not require three-dimensional quarrying, it could be easily cut and removed; once the stone hardened it became a resilient material. Although there is an abundant supply of limestone in the area, the labor costs prohibit it from

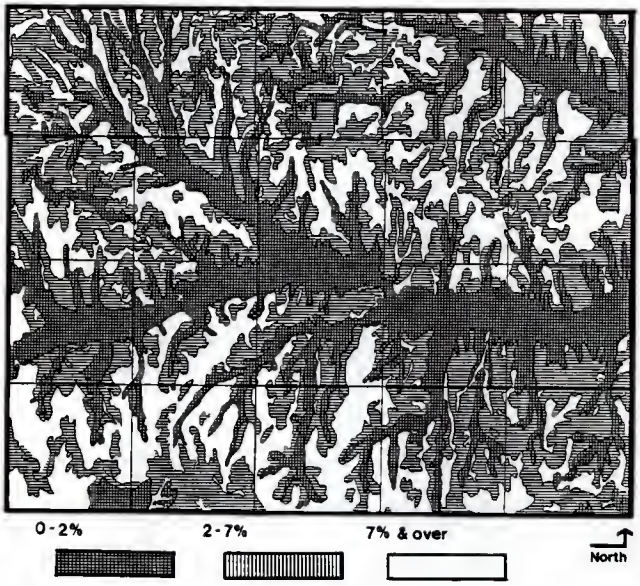

Fig. 1.4 Topographic Slope Map of Lincoln County.

being extensivly used today. What is unique about this limestone is the band of color, ranging from rust to burgundy, which runs through the center of the buff-colored limestone bed. The post rock limestone can be found throughout the county and almost every homestead had access to a quarry. Another type of building stone found in the county is sandstone. This burgundy colored rock can be found mainly in the southeastern corner of the county. Although it appears periodically in outcroppings across Lincoln County, it is used to the greatest extent as a building material in the southeast part of the county. Quarrying was generally not necessary for sandstone because it was available in the outcroppings and as fieldstone--i.e., rocks lying on the ground. The post rock limestone and the sandstone, because of their coloring, provide a feeling of continuity to the landscape.

In considering the human geography of Lincoln County, it is important to examine ethnic settlements since there may be a relationship between ethnicity and barn types. In terms of general settlement patterns, one finds that the area was permanently established in 1871. Prior to that time the county had first been a part of Ottawa and, later, Saline County. From 1870 to 1890, many settlers came from Europe and the eastern United States to claim homesteads and establish farms in the county.

In 1887 a railroad came to the county. Prior to that time, trading was done in Salina, Ellsworth or Minneapolis, Kansas, because these towns were located on the railroad lines. With the establishment of the railroad, however, the county prospered but this rate of growth has not continued. At that time, many of the farmers established their homesteads and found outlets for their crops. Farmers experimented in many grain crops and learned that wheat, corn and milo were the most productive crops to be grown in the county. The higher the yield, the more farmers could trade for building materials, farm equipment and food supplies.

If one looks at the pattern of early settlement in Lincoln County, one finds several major ethnic groups, both European and North American (1900 Federal Census; 1901 Plat Map). The larger amount of settlers immigrating to this area were the Danish, Germans, Irish, English, Bohemians and Swiss. Also a few immigrants came to Lincoln County from Sweden, Norway, France and Scotland. Europeans were not the only foreign-born settlers who came to Kansas as some Canadians migrated to the Great Plains (Federal Census Data, 1880; 1900). Of American-born settlers, the majority came from New England, the Mid Atlantic states, the Midwest as well as the Upland South (ibid).

The graphs in Figure 1.5 illustrate the ethnic concentration in the county by the use of place of birth of the major

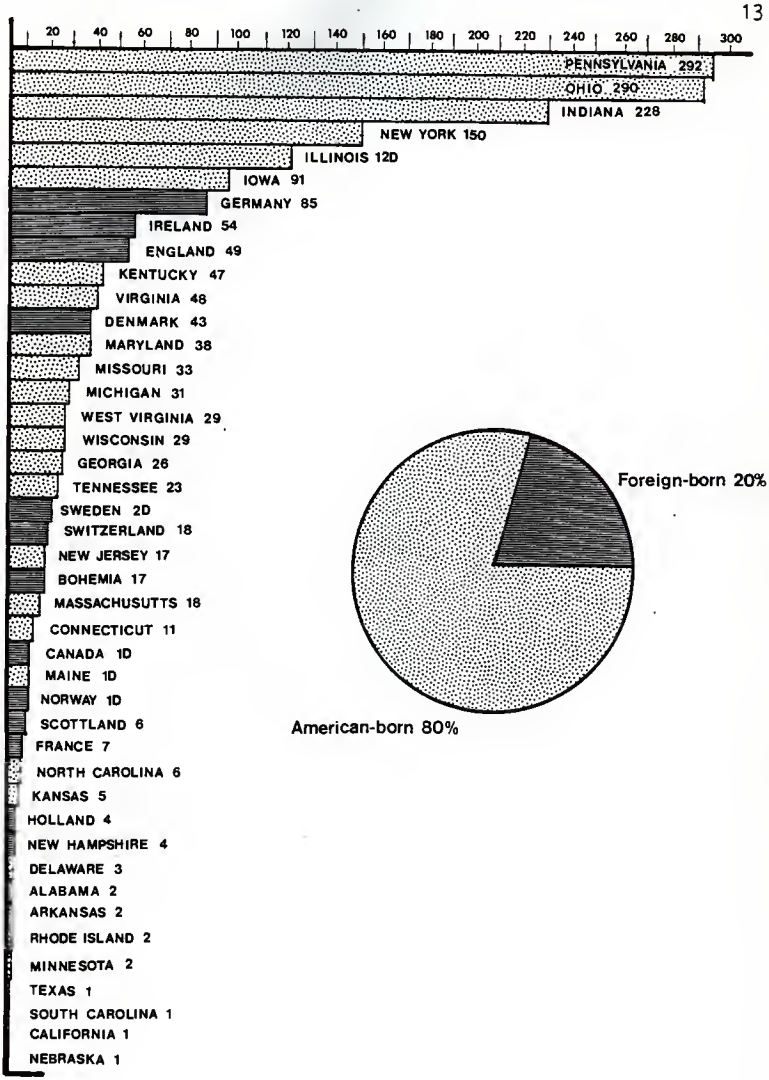

Fig. 1.5 Place of Birth of 1880 Landowners.

heads of the households. In 1880, twenty percent of the population in the county was foreign-born and eighty percent, American-born. The major European groups that settled in Lincoln County prior to 1880 were German, Irish, and English. The largest number of American-born immigrants from the Midwest to Kansas was from the states of Pennsylvania, Ohio, Indiana, New York, Illinois and Iowa. The next areas of concentration were those from Virginia and Kentucky. In total, in 1880, thirteen different countries and thirty-one states were represented by settlers in Lincoln County (1880 Federal Census).

By 1900, foreign population in the county had grown to thirty percent. At the same time, the native population decreased to seventy percent between 1880 and 1900 (Figure 1.6). Also by this time, a large foreign population, particularly German and Danish, had settled in Lincoln County. In 1880 there were eighty-five heads of households that were born in Germany but in 1900 the number had increased to 235. During that period, the number of Danes also doubled from forty-three to eighty-nine heads of households of Danish descent. In contrast, The Irish and English lost in relative numbers.

Next, one can determine the geographical distribution of these various ethnic groups by examining the major settlement patterns illustrated in Figure 1.7. These patterns are

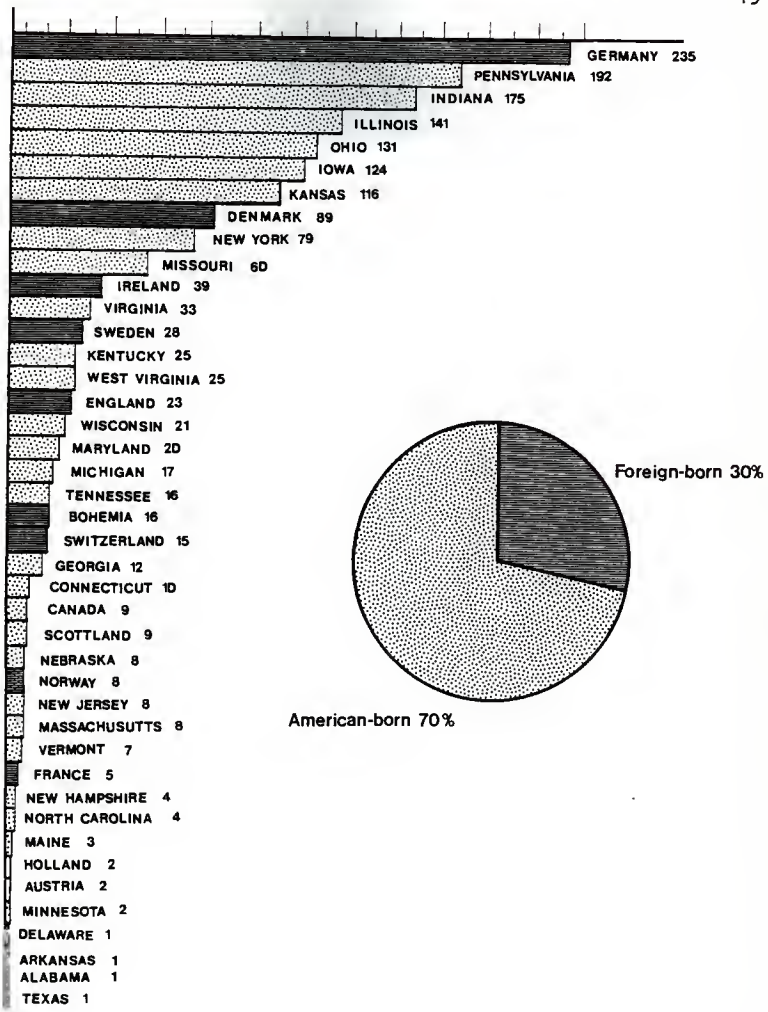

Fig. 1.6 Place of Birth of 1900 Landowners.

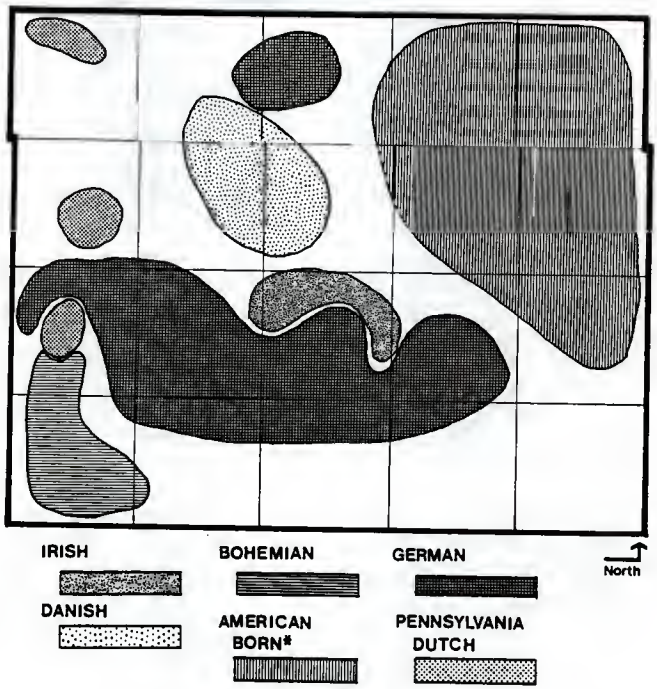

Fig. 1.7 Major Ethnic Settlement Patterns of Lincoln County (* except Pennsylvania Dutch).

also summarized by a series of maps in Appendix B. These maps illustrate the distribution of each of the ethnic groups by country or state. Also, Figure 1.8 on page 18 illustrates the four major groups in each township (see Appendix B for a complete ethnic group listing for each township). As a result, townships can be identified that maintained either a high foreign or native population. The Germans, as mentioned earlier, had the highest concentration in the county. Their highest concentrations can be seen in Elkhorn, Indiana, Vesper, Pleasent, Golden Belt, Orange, Franklin, Madison, and Battle Creek. The predominance of American-born concentration can be seen in Scott, Salt Creek, Beaver, Logan, Colorado and Cedren townships. There are clusters of Danish and other Scandinavians in the Grant and Marion townships, particularly along Spillman Creek. The Bohemians are another major foreign concentration found in Lincoln County. This group settled in the far southwest portions of the county, especially in the Highland township. The reason for such a high number of Bohemians clustering in this part of the county is that they sought to be near the Bohemian settlement in Ellsworth County, Kansas. When land was no longer available in Ellsworth County, many Bohemans settled in Lincoln County.

If one looks at the 492 barn sites indentified in this study, one finds that sixty-three percent of the barn sites could be identified in terms of ethnic origin of the 1900

Ohio 18 Iowa 15 Illinois 14 Penn. 12	Ohio 16 *Germany 13 Iowa 12 Illinois 10	Iowa 13 *Germany 11 Indiana 10 Penn. 7	Iowa 13 Ohio 12 Illinois 6	Ohio 13 Iowa 9 Penn. 8 New York 7
Penn. 29 Illinois 16 *Germany 14 Kentucky 7	*Denmark 31 *Canada 25 Conn.8 *Sweden 7	Penn. 17 *Denmark 15 Indiana 10 *Sweden 9	Indiana 10 Penn. 10 Illinois 7 Ohio 7	Indiana 17 Penn. 15 Illinois 11 *Germany 9
*Germany 24 Penn. 13 Ohio 13 Missouri 8	*Germany 28 *Ireland 8 Maryland 8 Indiana 7	*Germany 23 *Ireland 18 Illinois 12 Penn. 10	*Germany 33 Indiana 27 Illinois 13 Ohio 11	Indiana 16 New York 15 Penn. 13 Ohio 10
*Bohemia 20 Penn. 13 *Germany 12 Ohio 5	*German 14 Illinois 8 Penn. 7 *Bohemia 6	*Germany 8 New York 8 Illinois 5 Norway 4 Penn. 4	Indiana 20 *Germany 28 Kansas 12 Iowa 9	Indiana 10 *Germany 8 Iowa 6 Penn. 5

North

Fig. 1.8 Major Four Ethnic Groups per Township for Lincoln County.

owner (1900 Federal Census; 1901 plat map). On the other hand, thirty-seven percent of the sites could not be identified for ethnicity. The reason for this is that the names of the landowners could not be located within each township census information. It is presumed that those sites that could not be correlated with ethnicity because the landowners lived in another township; within the city limits of a commumity and were not considered rural landowners; or lived outside the county. Also, many of the portions of land that could not be identified with an ethnic group were owned by insurance companies and railroads. In his study of Lincoln County, Brandhorst (1974) used the same historical information and plotted farmsites of the three major ethnic groups by using the last name as an indicator of ethnicity.(2)

In summary, the historical and ethnic development of the county has been examined and this information will assist in discussing the variations of forms in the county as well as lending insight to possibile reasons for such use and distribution of plan types across the county. This analysis will be provided in chapters four and five. First, however, the history and literature of the barns in North America will be reviewed in Chapter Two.

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(2) 1901 Plat map, 1880 and 1900 Federal Census Data.

Chapter II

A REVIEW OF THE LITERATURE AND HISTORY OF NORTH AMERICAN BARNS

This chapter considers the history of barns and reviews the scholarly literature. Changing technologies in farming has caused the barn to become rapidly obsolete in the last few decade, and many stand lonely and delapidated in the American rural landscape (Hart, 1975). Barns are disappearing for several reasons. First, the barns that were built by early settlers have deteriorated as they are often not maintained because of the uncertainity of future farming needs and practices (Ennals, 1972). Another significant cause for lack of maintenance is the fact that large work animals have been replaced by sophisticated machines and equipment and, as a result, the barn as a shelter for livestock is no longer required. Furthermore, many farmers have become specialized in their production of agricultural commodities. Immeditely after harvest, grains are stored on the farm in grain bins or at local elevators and barns are no longer being used as storage areas for crops. Also the forage crops, such as alfalfa and hay, were once stored in the loft areas of the barns. Today, these crops can be more easily moved and used if bailed and often are not even stored in the barn but rather in pole sheds if protection is necessary.

In addition, specialization of agriculture has caused farmers to concentrate on producing only one or two types of crops a year. Livestock is being raised by large stock producers and the average farmer cannot compete with their production levels. Because the farmer is not required to be near the livestock all of the time, he has the freedom to move to town for convenience and thus abandons his farmstead. Another reason for the decline of the barn today is that farms are becoming larger, mainly for economical reasons. It is rapidly becoming infeasible for a farmer to support a family on the size farms which once supported his father's or grandfather's families. Because the farmer needs to acquire more land, he may purchase property which contains farm buildings that will often go unused. Brandhorst found, in his study of Lincoln County, that the average farm size in 1880 was 80 acres and by 1969 the average farm had increased to 360 acres leaving many farmsites vacent (1974; p. 236). Also he found that in 1880 there were 1,611 farms and that in 1969 only 717 farmsteads remained. With improvements in farming technology and shifts toward agri-business, a farmer can tend a larger area by himself. Thus, many farmsites lie in neglect or disappear completely from rural America. Another reason is a change in storage technology for forage crops. Another factor that has caused the disappearance of the American farm is urban expansion. Although it has not occurred in the rural county of Lincoln,

it is occurring at alarming rates in other portions of the country (Coffey, 1976). Finally, the high cost of taxes and insurance, which must be paid on farm buildings even though they are not in use, has caused many farmers to tear down their barns to reduce financial burden (Brandhorst, 1974; Rueber, 1974; Hart, 1975).

Research on barns has most often fallen under the topic of folk architecture which has focused largely on the regions of northern and midwestern North America (Kniffen, 1936, 1965, 1966; Glassie, 1965, 1966, 1968, 1969, 1970, 1972, 1974, 1975; Noble, 1974, 1977; Noble and Coffey, 1974; Noble and Geib, 1976; Noble and Hosler, 1977; Noble and Korsak, 1977). Because research has been limited to these regions, Fred Kniffen's seminal theory of diffusion of folk architecture (Kniffen, 1935, 1965) has been justified in areas only as far west as the Missouri River (Shortridge, 1980; Marshall, 1981). Kniffen was the first researcher to identify the idea of different variations of form types of vernacular architecture. It was not until his "Louisiana House Types" (Kniffen, 1935) that a theoretical order was provided to clarify the information on folk architecture in United States. Kniffen's theory of diffusion states that as settlers moved westward across America they continued to use the same form type in their architecture as they did in the East or their native county. Kniffen argued that persistent form types reappear in each settlement, continuing the orgi-

nal cultural influences. Buildings may superfically contain applied decoration but Kniffen argued that the more abiding formal characteristics, such as plan types, can identify particular cultural groups and areas of settlements. This link has been empirically demonstrated in studies of Pennsylvania German buildings (Dornbush, 1955), Mennonite farmhouses in Manitoba, Canada (Francis, 1954), Irish settlements in Canada, (Mannion, 1974), and German-Russians in Kansas (Peterson, 1976).

Henry Glassie completed additional studies in collaboration with Kniffen to demonstrate the theory of diffusion empirically (Kniffen and Glassie, 1966). Further research to support Kniffen's theory has been provided by other studies including Meyes' study of the Upland-South folk housing in Illinios, (Meyes, 1975); Pillsbury's study of folk housing in Pennsylvania, (Pillsbury, 1977); and Marshall's examination of the folk architecture in the "Little Dixie" area of Missouri (Marshall, 1981). Particular interest has been focused on the effect that settlers' ethnic backgrounds have on the buildings constructed in a particular area. Good examples here are Peterson's studies of the German-Russians in Kansas (Peterson, 1976), and Alanen and Tishler's studies of Finnish farms in the Great Lakes region (Alanen and Tishler, 1980). Both of these studies examine the persistence of building form. The Great Plains studies completed on folk architecture deal with a few isolated cultural groups, for

example, the German-Russians (Peterson, 1976); and German Hill people in Texas (Wilhelm, 1971); and with particular building materials such as the sod buildings of the pioneers (Welsch, 1968; 1969).

For many years a major research problem with barn types has been that there is no standard system to identify forms. The names given to barn forms are often local and generally vary from region to region. This naming process can reflect different forms for roof shape but does not relate to the function or form type as Kniffen observed in his diffusion theory. The roof shape of a barn can change over time, particularly in areas which are prone to tornados and heavy snowfall such as Kansas. From another angle, barn studies examine only a particular material of construction--i.e. as Glassie's study of wooden barns found in Ostego county, New York (Glassie, 1974). Again, if we believe Kniffen, such a focus is superficial and needs to be supplemented by information regarding form and function.

A major study that helps overcome the form-identification problems is Peter M. Ennals' "Nineteenth-Century Barns in Southern Ontario" (Ennals, 1968, 1972). In this essay, Ennals' identified the different forms of barns in southern Ontario and their distribution across the region. He classified the barns by their plan type along with their external features. This is a consistent approach to studing ver-

nacular architecture and, at an empirical level, parallels Kniffen's more theoretical discussion. Ennals argues that the floor plan is the element repeated over and over in vernacular architecture: "form followed function; the sequence of barns is closely correlated with the changes in farming practices" (Ennals, 1972, P.268). He noted that the forms reflect the purpose for which the buildings were constructed.

Additional studies have been completed by using Ennals' approach to the development form types as a basis. For example, Nobel has worked, in colaboration with several individuals, to test whether or not Ennals' form of identification could be justified in Ohio (Noble and Coffey, 1974; Noble and Geib, 1976; Noble and Hosler, 1977; Noble and Korsak, 1977). With the assistance of his barn type classification system, Ennals was able to identify ninety percent of the barns in his study. Ennals' method of classification of barn types was developed by identifying consistent characteristics in the barn form. Coffey, a student of Noble, was able to identify ninety-one percent of his barns into specific barn form classification and was able to expand the classification to include form types that either developed in Ohio or were not used in Ennals' study area (Coffey; 1976). Thus, with the combination of substantial research conducted by Ennals, Glassie and Noble, a solid base is beginning to appear to identify the barn types that exist on

the American landscape. The present study will argue that a method of identification, based on Ennals' approach, can be used to identify barns in Lincoln county.

SPECIFIC BARN TYPES AS INDICATED IN THE LITERATURE

While Ennals, Glassie and Nobel have concentrated on identifing general classifications, other researchers have examined specific barn forms. Overall, a review of the literature on particular barn types reveals that seven major barn types appear. These seven types are summarized graphically in Table 2.1. This table shows the studies of the major barn forms which will be found relevant to Lincoln County, Kansas, and their location across the United States and Canada. Also, the dates of research that are included in the table show that studies conducted on the North American barn forms are relatively recent. This table helps to identify those barn forms that have been extensively studied as well as where Kniffen's theory of diffusion has been tested. Because each of these seven barn types are significant in varying degree to the Lincoln County context, the next section reviews numerous barn characteristics.

1. Pennsylvania Dutch Barns and Other Multilevel Barns

The most often discussed barn is a Pennsylvania Dutch barn (Figure 2.1) which is a multilevel barn.(3) Keen interest

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(3) A multilevel barn is one in which entrance to the building can be gained on two or more levels.

TABLE 1.1
DATES AND LOCATION OF MAJOR BARN TYPES STUDIES

	English	Dutch	Wisconsin Dairy	Stable	Multi-level	Erie Shore	Connected
Baston					Wisconsin 1975		
Coffey	Ohio 1976 1978		Ohio 1976 1978		Ohio 1976 1978	Ohio 1976 1978	
Edwards					Pennsylvania 1966		
Ennals	Canada 1968 1972-73		Canada 1968 1973-73		Canada 1968 1972-73	Canada 1968 1972-73	
Ensminger					Pennsylvania and Europe 1980/81		
Fitchen		New York 1971					
Glassie	South 1965 1969 1970 New York 1974 General 1975	New York 1974	South 1965		South 1965 1966 New York 1974		
Hart	Canada 1965 General 1975				Canada 1965 General 1975		
Hubka							New England 1977
Marshall				Missouri 1981			
Noble	Ohio 1974			Ohio 1974	Ohio 1974	Ohio 1974	
Noble & Korsok	Ohio 1977		Ohio 1977	Ohio 1977	Ohio 1977		
Noble & Geib			Penn 1976				
Noble & Hosler	Ohio 1977						
Nobel & Coffery	Ohio 1974						
Zelinsky			New England 1977				New England 1958

PENNSYLVANIA DUTCH BARN

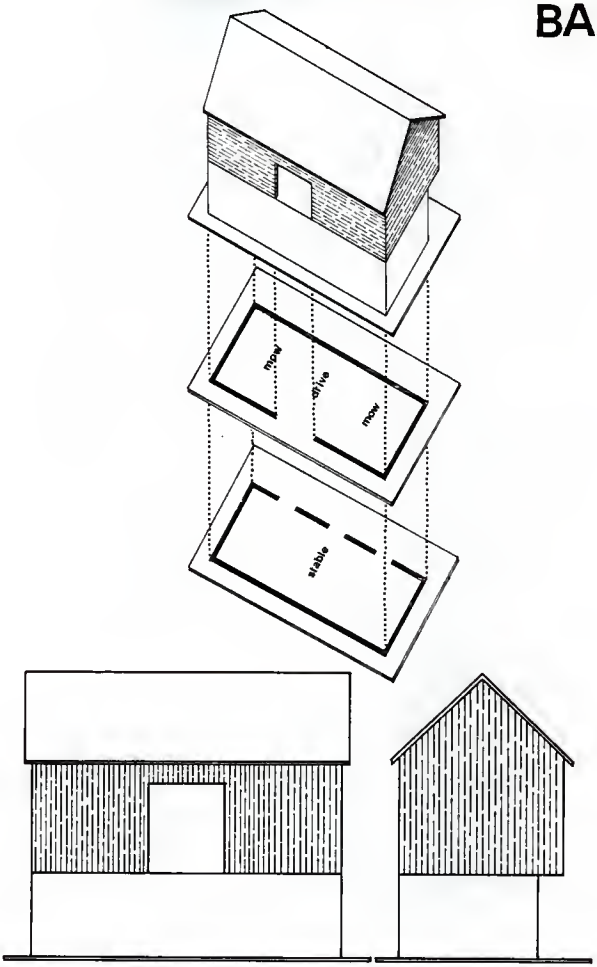

Fig. 2.1 Pennsylvania Dutch Barn: Expanded Isometric and Elevation. Source: Ennals, 1969.

has been taken in its origin. It was previouly thought that this form was developed in Pennsylvania, but additional research by Jordan (1980) and Ensminger (1980-81) found its European antecedents, specifically in the regions of southern Germany. This form was soon adapted in the Pennsylvania cultural region by farmers besides the Germans, such as the Swiss and Scotch-Irish. Jordan used the following four criteria for identifying the Pennsylvania Dutch barn: "(1) two-level height...in which an upper level devoted to hay and feed atop a lower-level stable; (2) a banked ramp providing wagon access to an entrance in the upper level of the barn; (3) The forebay--a cantilevered projection jutting from one side of the upper level; (4) double crib floor plan, consisting of two log cribs separated by a central runway or passage" (Jordan, 1980). Additional research by Charles Dornbush (1965) resulted in an extensive examination of the Pennsylvania Dutch barn and identified specific subtypes of this barn form. More specifically he has examined the variations of building materials and function locations within the barns.

What distinguishes the Pennsylvania Dutch barn from other mulitlevel barns is the addition of the forebay. This particular element has assisted scholars in locating the Pennslyvania Cultural Regions in North America as well as identifying European antecedents. This extended bay could vary by use of columns, posts or extended masonry walls to support

the forebay. Also a pent roof located in the same position is a variation of the forebay influence (Figure 2.2). The Pennsylvania Dutch barn has been found in Nebraska, Iowa, Missouri and Texas, but the author will examine if this barn type can be found in north-central Kansas as there is such a high concentration of German and Pennsylvania Dutch who have settled in this county.

The multilevel barn, as mentioned earlier, is devoid of a forebay but may maintain the same basic characteristics as the Pennsylvania Dutch barn (Figure 2.3). Entrance can be gained to the building on several levels, thus, the name bank barn. Also the size of the entrance doors may vary from a small man-size door to a large double entry door that would accomodate a large hay wagon. Whether or not the multilevel entry barn and the Pennsylvania Dutch barns are related, additional research needs to be conducted, but it is known that the multilevel barn can be seen extensivly in New York state while the Pennsylvania Dutch barns' highest concentration can be found in the Pennsylvania cultural region to the south.

2. English Barn

Another basic barn form is the English barn, which consists of a central drive perpendicular to the ridge line, that, again, is flanked on either side by either storage or stabling (Figure 2.4). The interior of the building is divided

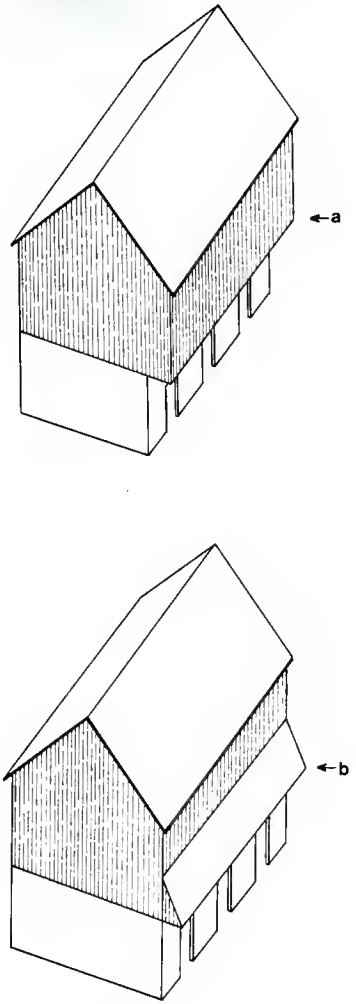

Fig. 2.2 Typical Elements found on a Pennsylvania Dutch Barn: (a) Pent Roof; (b) Forebay.

MULTI-LEVEL BARN

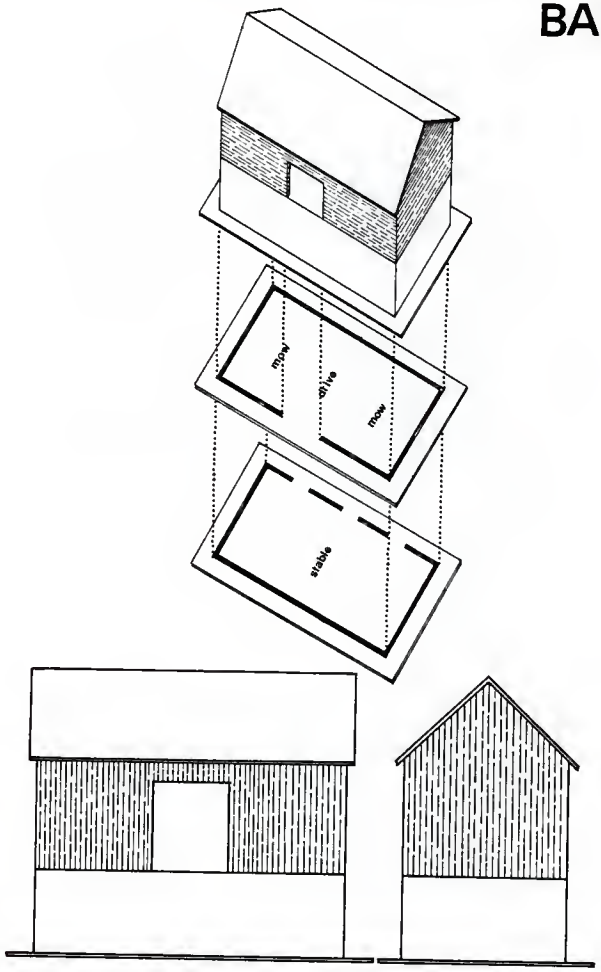

Fig. 2.3 Multi-level Barn: Expanded Isometric and Elevation. Source: Ennals, 1969.

ENGLISH BARN

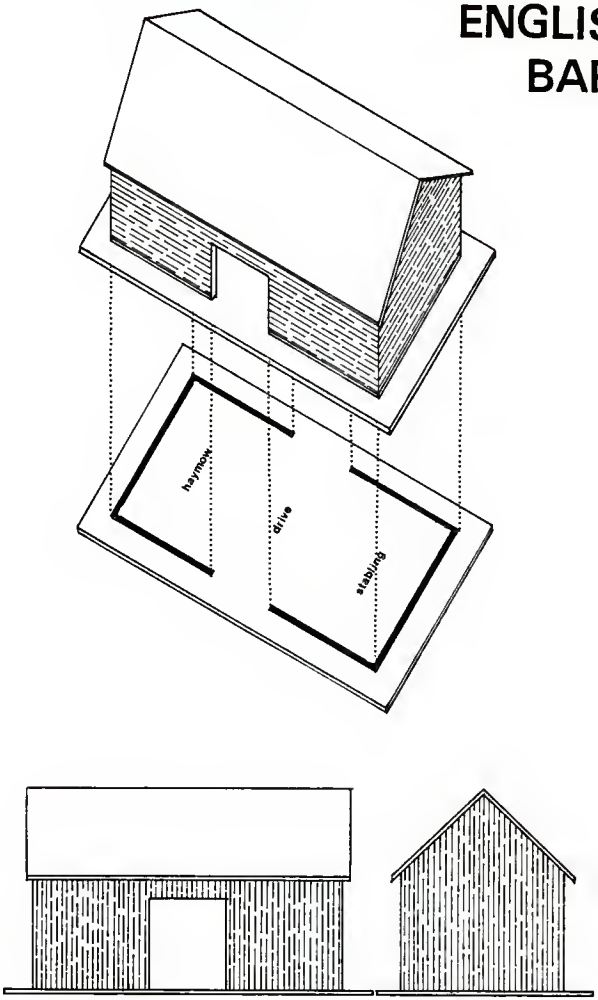

Fig. 2.4 English Barn: Expanded Isometric and Elevation.
Source: Ennals, 1969.

into three areas, the central drive or threshing floor and the storage areas on either side. The storage areas can either be a stabling area with stalls or stations or an enclosed form called a crib(4) This barn form has accumulated many names through the years i.e. English, Connecticut, Yankee, Common, Standard, New England, Two-Bay and Three-Bay.(5) Often, each name represents different locales across the country but, for this study, the name English will be used because research indicates that Britain was the probable original location of the early form type and its can be seen most often in English settlements.

3. Dutch Barn

The North American Dutch barn has been studied in depth by Fitchen (Fitchen, 1968) (Figure 2.5). This barn form originated in the flat lands of the Netherlands and was transfered by Dutch immigrants to the Hudson River Valley in New York State. The barn form consists of a central drive or threshing floor that lies parallel to the ridge line which is flanked by storage or livestock stalls. This type is often called a "basilican plan" because it repeats the form found in Romanesque and Early Christian churches across

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(4) A crib is one of the basic forms of a barn. A few barn types are called crib barns because this portion of the building is completely enclosed.

(5) The word bay is another name of the basic division of space within a barn, similiar to a crib except it is not enclosed. A bay, in theory, is approximately sixteen feet wide which was the width of an oxen yoke.

DUTCH BARN

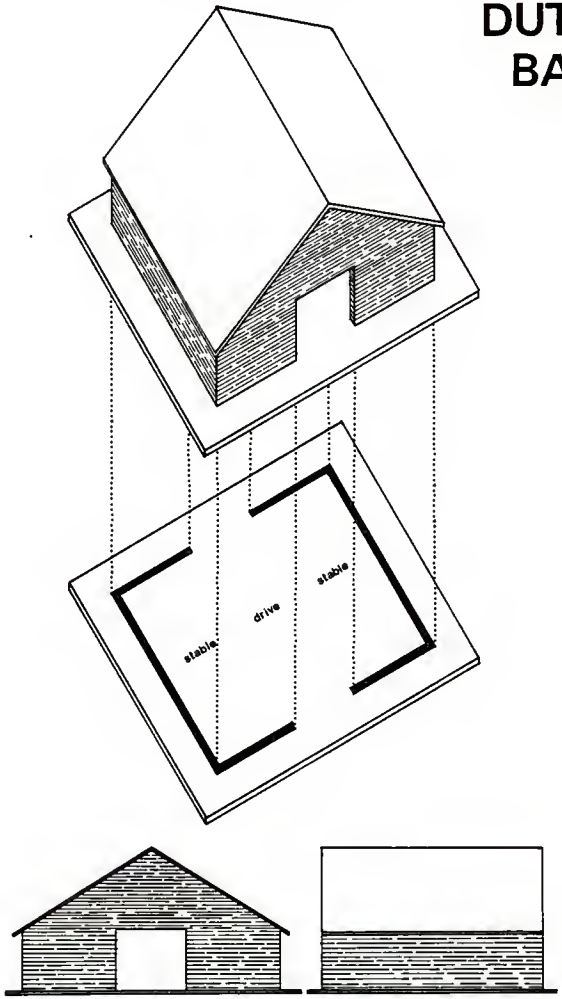

Fig. 2.5 Dutch Barn: Expanded Isometric and Elevation.
Source: Fitchen, 1968.

Europe. When this barn was in Europe it often housed people in one end of the building but this aspect of the building was not duplicated extensively when it was brought to America. The Dutch barns have a shorter ridge line than their width. This study will examine how this form type has been transplanted to Kansas and what variations may have occurred.

4. Wisconsin Dairy Barn

The fourth type is the Wisconsin Dairy barn (Figure 2.6). Whereas the first three types were developed from cultural origins, the dairy barn is a product of technological advances in agriculture, specifically the development of the Wisconsin Agricultural Experiment Station in the late nineteenth century. This barn form does not have a drive-through as the previously discussed barns have but entrance is gained through dutch doors on the ends and sometimes on the sides. There are two characteristics which occur most often in the Dairy barn, namely a series of windows along the first floor and the use of the gambrel roof. This roof shape provides a greater storage capacity than the gable because of its overlapping beams and wooden trusses in which the cross beams are no longer used. This allows a greater storage capacity for hay for cattle which are fed below. Although the gambrel roof can most often be seen in the Dairy barn, this study will examine if it can be a true indicator of the barn type.

WISCONSIN DAIRY BARN

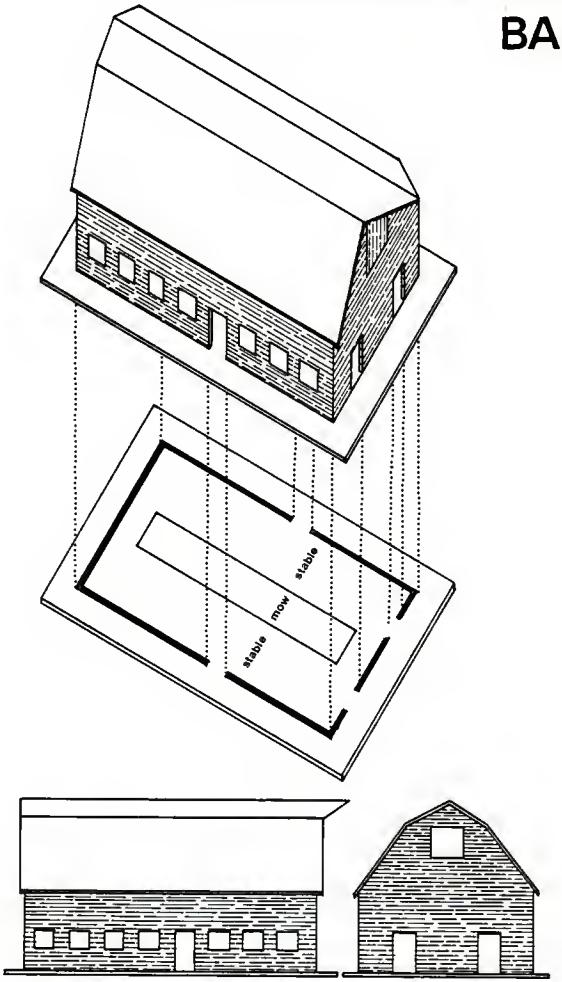

Fig. 2.6 Wisconsin Dairy Barn: Expanded Isometric and Elevation. Source: Ennals, 1969.

5. Stable Barn

Another barn type which must be considered because of its presence in Lincoln county is the stable barn (Figure 2.7). Glassie (1965) was the first to examine this type which can be found in the areas of the south where the Pennsylvania Dutch culture has extended. Marshall (1981) also found this barn in his study of the "Little Dixie" area in Missouri. Marshall calls this barn form a "Mountain Stable Barn" because it was found in the mountain areas in his study. This barn is a three-bay form but rather than having a central drive like those found in the English barn form this type has a central walkway which is flanked on both sides of the passageway by stabling or storage areas. Usually, Dutch doors can be seen on this barn with three on one of the long sides, often, opening to the yard area and two doors on the other side which lead into the feed lot or pasture. Opposite the central door is a ladder which leads from the central passageway to the loft. The gable roof was the most common roof type found with this form. Also, log construction was the most common method of construction used in building this barn type. This study will examine what adaptions occurred in this form type from the mountainous areas of the south to the Great Plains.

STABLE BARN

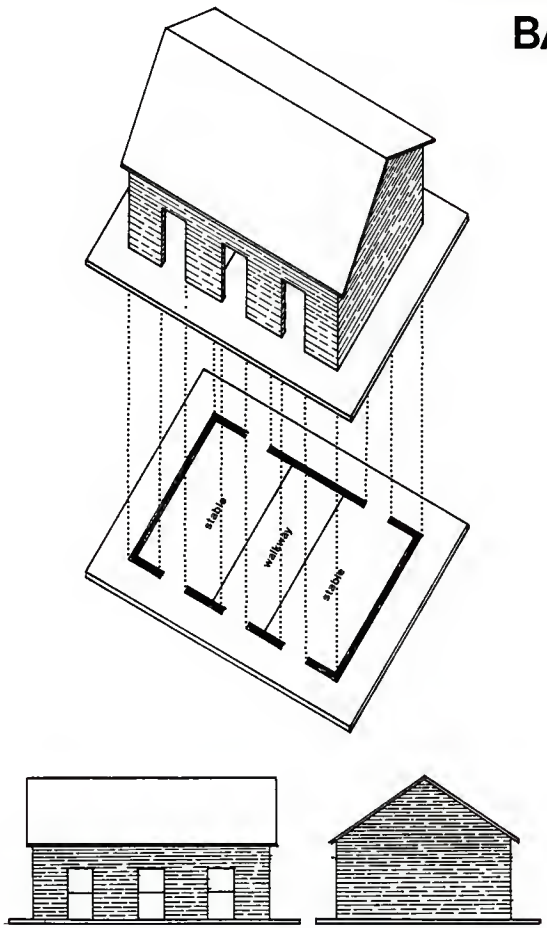

Fig. 2.7 Stable Barn: Expanded Isometric and Elevation.
Source: Glassie, 1965.

6. Erie Shore Barn

Another barn which is discussed in the literature is the Erie Shore barn (Figure 2.8). This type can be identified by a drive passageway on one end of the building which lies perpendicular to the ridge line. The other end of the building is the stabling area. This portion of the building is very similiar to the Wisconsin dairy barn because the entrances, interior division and use are similiar. The upper story is used for hay storage, often under a gambrel roof. The barn form was named by Ennals in his study of Ontario barns. He found that a high concentration of this barn type could be seen concentrated around the shores of Lake Erie, thus its name.

7. Connected Barn

A last barn type relevant to Lincoln County that has been the subject of some research is the Connected barn of New England studied by Hubka and Zelinsky (Hubka, 1977 and 1979; Zelinsky, 1958) (Figure 2.9). Although this type cannot be limited to a specific type of barn, it involves barns and farmhouses that are adjacent horizontally or vertically by having either adjoining walls or ceiling and floor. The Connected barns can be seen as a metamorphic change of the barn over time. They are not generally built at one time but actually develop over years or decades as the farming operations expand, thus, protecting the farmer from harsh

ERIE SHORE BARN

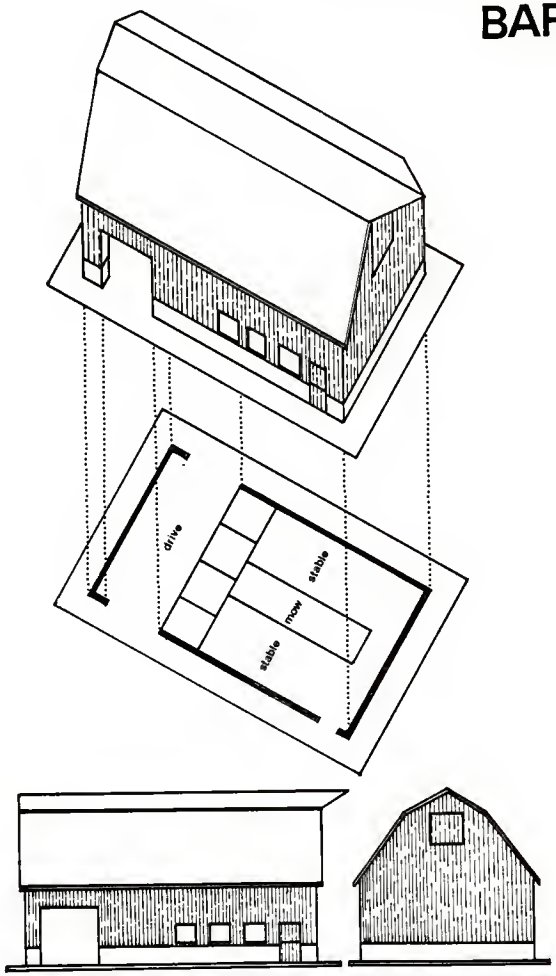

Fig. 2.8 Erie Shore Barn: Expanded Isometric and Elevation. Source: Ennals, 1969.

CONNECTED BARN

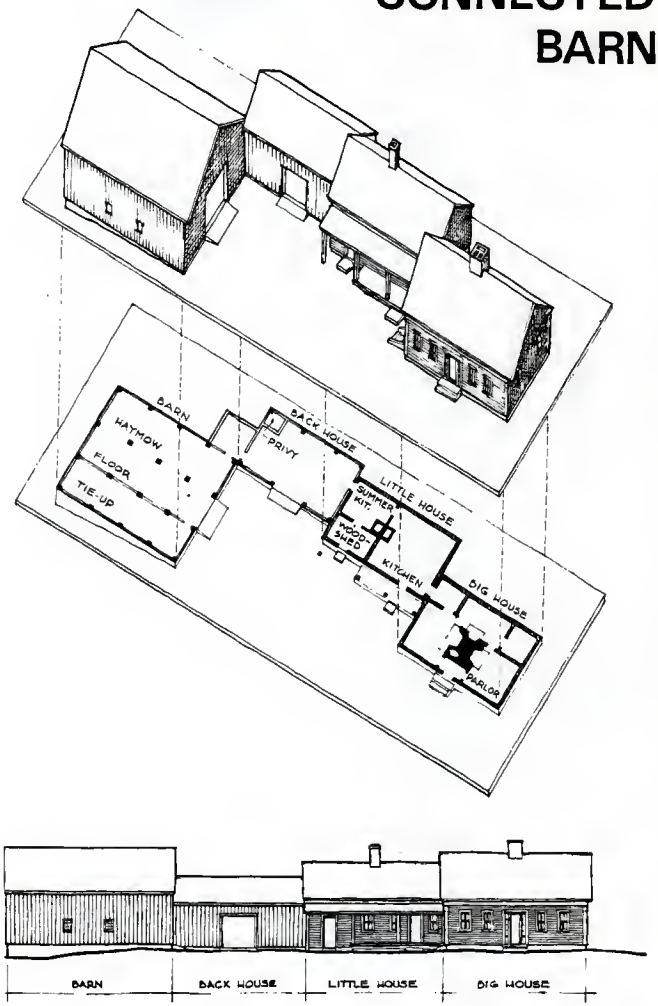

Fig. 2.9 Connected Barn: Expanded Isometric and Elevation Source: Hubka, 1984. pp. 5, 7 (Illustrated by Hubka).

winds and weather. It is thought that this concept of connectiveness of buildings did not diffuse into other areas of the country and this thesis will examine if this form type diffused to Lincoln County, Kansas.

The barn types that have been discussed so far--the English, Wisconsin dairy, Dutch, Pennsylvania Dutch, Erie Shore, stable, and the connected barn--comprise the major barn forms of North America that have been documented in previous studies. The following chapters will look at these barn types in relation to the landscape of Lincoln County, their distribution and variations as well as new form types that may occur. The author will also consider the environmental and cultural influences that may have affected the development of barn types in Lincoln County.

Chapter III

METHODS FOR EXAMINING THE BARNS OF LINCOLN COUNTY: DATA COLLECTION AND ANALYSIS

As has already been said, the main aim of this thesis is (1) to examine the overall spatial distribution of the barns of Lincoln County, and (2) to examine the distribution of particular barn types in the county. In order to examine these two themes, some method of data collection and analysis is necessary. This chapter examines the methodology of the present study and highlights its strengths and weaknesses. The chapter is organized in two sections: (1) data collection; and (2) anaylsis. In the same respect that data collection is important to the validity and depth of a study, it is also important to understand the method of analysis used in a study. For example, in his pictorial study of barns, Sloane (1954; 1966) does not inform the reader as to how he collected his data, let alone how he analyzed the information to come up with his graphics. If Sloane had included this information along with his unique method of graphic illustration, one could possibily understand, evaluate, and compare barn types better. Also an accurate account of data analysis is important because personal impressions of a cultural landscape do not necessarily reflect what is really there. Even though frequencies, percents and

correlations do not reflect the exact character of a plan, they do provide one kind of subjective information base. If additional research is to be conducted which would add to our knowledge of barns, an account of the data collection process must be noted so that future researchers can identify whether or not the methods are applicable to their focus of study.

METHODS OF DATA COLLECTION

The first difficulty that one comes to in a study of barn types is collecting accurate information. When one looks at various methodologies used in data collection on barns, one finds four major types: (1) direct recording of each site in a designated area (on-site recording); (2) direct recording of pre-determined sites (traverse method); (3) secondhand data collection; and (4) archival study (historical data). Overall, these four methods apply to most research on vernacular architecture (Brunskill, 1978; Kansas State Historical Society, 1984).

The first method is the direct recording of each site in a designated area, better known as on-site recording. This method distinguishes itself from others because prior to surveying particular barns, a detailed base map is completed, locating all the known sites in the area. The bases for this map are such sources as the U.S.G.S. topographic maps, historical atlas, plat maps and homestead claim maps. Then,

every located site is visited for detailed description of each building on the site. Site procedures include measured drawings, survey forms, photography and personal interviews. The advantage of this method is that it gives a detailed synopsis of the data in a specific area. The disadvantage of on-site recording is that it is time-consuming and thus works best for the study of small areas. Still, on-site recording is the most accurate method of detailed data collection. A good example of a study using this method is Glassie's (1974) analysis of barns in Otsego County in New York.

Another method of data collection is the direct recording of pre-determined sites, or traverse method, as it is often called. In this method, one records sites along a predetermined route. This method can depend greatly on road quality in the area to be studied, number of sites in the area, and sites located in an area made by a grid overlaying a base map. Usually, with the traverse method, no on-site visits are made; rather, observation is made from an auto, on a public right-of-way. Thus, this method is sometimes disparagingly call a "windshield survey". One study which used this method was Rueber's (1974) study of barns in Fayette County, Iowa. The advantage of this method of study is that a large area can be examined in a relatively short period of time. The method's weakness is that the researcher may miss many barns that would contribute significantly to the overall cultural landscape of a given area. A second type of

data collection related to selected sites is close examination of a specific barn. This method was employed in the study of a Pennsylvanina barn in Texas by Jordan (1980). Although the method provides an excellent examination of a particular barn and offers insights into that barn type, the approach does not reflect thoroughly that barn in relationship to other barns in the area or its larger geographic and cultural context.

The third method used to collect information is secondhand data collection. This method includes such tools as mailed questionnaires and aerial photographs. A good example of this method is Noble's (1977) study of barns in Indiana. Here, questionnaires were sent to all the county extension agents in the state. As Noble (1977, p. 16) explains in relation to this questionnaire method, "...very much depends upon the care with which the respondent studies the chart provided, as well as his perception of the rural landscape." He goes on to state that confusion may have occurred in his study because it was possible that some of the respondents were not familiar with the different types of roof shapes and major entrances and were not able the distinguish between the varying types. In spite of these difficulties, he concludes that the method "was found to be reasonably succussful for generalizing regional trends" (Noble, 1977, p.30). The most effective use of this method would be to gather general data for a better understanding

of where a more time consuming direct on-site study would be desirable.

The fourth method of data collection is archival study which involves the use of current and historic information to describe the barns. The information used in this method can come from diaries, old photographs, historic maps, newspapers and public records. The most effective use of this method of data collection is to use the material gathered as a basis for one of the other three methods previously discussed. This information often adds insight that cannot be gained from just a site visit. Brunskill (1970), in his book on vernacular architecture, discusses sources and locations for archival studies.

Each of these methods serves a purpose and one is often chosen over another for several reasons--e.g., specific characteristics of the sites and areas to be examined or time and energy available for data collection. In this thesis, the research methods used were on-site recording and archival study. These two methods proved to be the most satisfactory means of data collection because of the size of the area to be examined and the relatively small number of barns--492--located in Lincoln County. So that readers will have a clear understanding of these methods as they are used in chapters four and five, they will now be discussed in detail.

DATA COLLECTION FOR THE LINCOLN COUNTY BARNS

The first step in collecting data on the barns studied in this thesis was to transfer the location of farm sites found on a 1901 atlas, which was the earlist landownership map of the county, to a U.S.G.S. topographic base map. The combination of the two maps (the 1901 atlas, and the U.S.G.S. map) provided information which located all the existing sites. This base map assisted the author in making on-site visits to all the barns in the county constructed before 1940. In the fall of 1982, the author made these visits and recorded information on all 492 barns in Lincoln County. The author chose to collect data from the total barn population rather than to use the traverse method which would miss many of the distinct barns and thus foster an incorrect impression of the barns in the county. Because the land divisions are based on the Grid or Section System, it was easy to plan a route which included all the sites since all areas are evenly spaced in a rectangular grid of roads.

The basic survey form in Appendix A was to be used originally to gather data for an eventual comprehensive Historic Preservation plan of Lincoln County. This information was gathered to identify the cultural heritage of the county and possibly to provide information for tourism which might provide future economic benifit to the area. If one looks at the questionnaire, one notes that it has two interrelated sections. Part one consists of basic data regarding the

type of sites to be surveyed, legal descriptions, and information regarding the landowners. Also in this section, a sketch of the site plan was drawn regarding the spatial relationship of the buildings on the sites. Part two of the survey recorded detailed information regarding the major building on the site. In most cases the house was considered the most important building on the site and most information was gathered regarding it. Also, the information that was gathered provided little data regarding particular characteristics of the buildings. The author believed, however, that additional categories were necessary to give a more detailed perspective of the data, particularly relating to the barn. To collect this information the author completed detailed descriptive maps of the sites including additional data on the barns. The value of these maps was that they identified specific locations of particular elements of entrances, additions, number of bays, and location and types of hayhoods. In addition to the map, photographs of the site including the barn were taken. Many of these photographs were used in the analysis of the barns discussed in chapters four and five of this thesis.

All the information from the survey forms, maps and photographs was later transferred to a data sheet which located each barn in the county and summarized each of the characteristics (Appendix C). A follow-up survey was completed in the spring of 1984 to verify the data collected in 1982.

ANALYSIS OF THE LINCOLN COUNTY BARNS

The second step in the study of the 492 barns of Lincoln County was the analysis of the data collected in section one. In existing cultural landscape research, the major tools of analysis are relatively simple and involve frequencies, percentages, cross-tabulations of particular variables, and spatial correlations using maps. The use of these methods of analysis can be found in studies by Glass (1973), Coffey (1974) and Nobel (1977).

In the first stage of analyzing the data in this thesis, the information from the data sheets was entered into a computer and frequencies and cross-tabulations were conducted between the variables and their values using the SAS (Stastical Analysis System) computer program. The frequency information provided correlations as to the number of times that a particular variable and its values occurred in the county. Then, cross-tabulations were used to identify relationships between the variables. After examining the results, the author identified significant correlations which were recorded spatially by using the SAS/Graph program. Then, by using a plotter with the computer, a series of maps showing the distribution of particular correlations could be plotted on a series of county distribution maps. For example, a particular barn type was plotted and its relationship between the variables of ethnicity and building materials could be analysed. As a result, barn frequencies were re-

corded and, by using acetate overlays marking particular variables of the plots, various correlations could be identified--e.g., the relation between a particular barn type and topography or ethnic settlement.

The next step in the analysis of the barns was to study in detail the various correlations between barns and other variables especially topograhy, building materials and ethnic settlements. A major difficulty was that spatical clustering as well as relationships needed to be identified. A difficulty here was determining what objectively constitutes a meaningful cluster. In this study, clusters were arbitrarily determined by drawing a line around barns which appeared to form a spatial grouping. Thus, for example, barns and ethnicity of builders were associated and the resulting spatial pattern was analyzed in terms of the relationship of barns one to another. As a result, clusters were identified to have a higher type of ethnic concentration over another cluster. One future research project is to apply quantitative methods that human geographers (Haggett, 1965) have develeped to measure clusters statistically.

One strength of this study is that, because of the combined use of the U.S.G.S. maps and the 1901 atlas, (the author is confident that) the total population of barns were surveyed. One the other hand, one weakness is that a complete on-site survey could not be completed for several of

barns (fifteen) since only limited access could be obtained to the property. In these cases only characteristics visable to public viewing were recorded, resulting in the fact that these barns are not classified as a particular barn type and are therefore placed in an unclassified category (see chapter five). One disadvantage of using the plotter with the computer is that the precision of the plotting device only allowed barns to be located in relationship to coordinants. However, since the computer plotter was only a basic tool to identify additional relationship, misaligned plots were adjusted in the final maps.

Chapter IV

THE OVERALL DISTRIBUTION OF BARNS IN LINCOLN COUNTY, KANSAS

As a first step in better understanding the barn types in Lincoln County a mapping analysis was conducted of the overall spatial distribution of the 492 barns. By doing this, one finds links with particular natural and cultural elements. The overall distribution of barns in Lincoln County is shown in Figure 4.1. If one studies the distribution, one notes that the barns are not distributed evenly across the county; rather, clustering occurs in some areas while no barns appear in other areas. The main aim in this chapter is to present information to understand this distribution better by examining it in terms of topography, building materials and ethnic settlement. Such analysis leads to a better understanding as to where and why farmers built their barns the way they did.

TOPOGRAPHY AND OVERALL BARN DISTRIBUTION

Topography is a first factor important in understanding overall barn distribution. The ideal land for agriculture in the Mid-West is relatively flat, well drained and fertile. As Figure 1.4 indicated in chapter one, land with

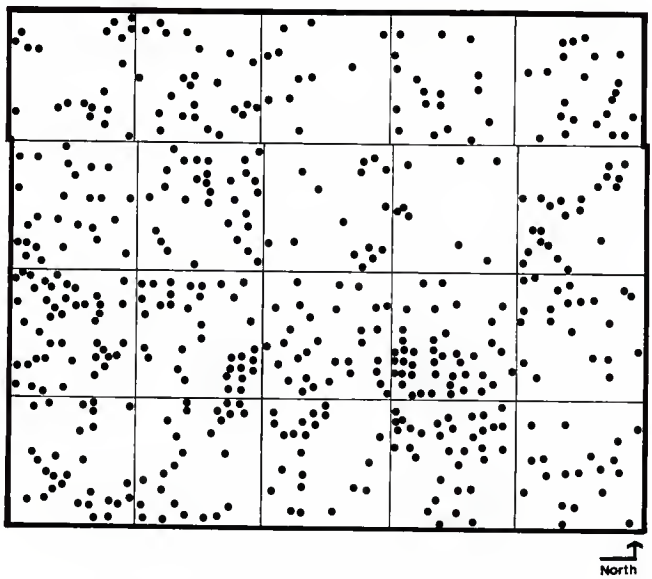

Fig. 4.1 Overall Distribution Map of Barns.

minimal slope in the county is located within the two-percent slope areas located on the rich bottom lands along the Saline River and its major streams such as the Salt, Spillman and Elkhorn Creeks. The areas with a slope of three to seven percent also provide productive farm land (see Figure 1.4), but those areas with a slope of more than seven percent are too rugged to be farmed and even in some cases they are even too extreme for livestock grazing. Many of the higher percentage slopes have rugged out-croppings of stone in which little vegetation could grow, let alone provide nutritment for livestock. These areas can be seen as the lighter areas on the map and, although they appear throughout the county, the slopes above seven percent can prodominantly be seen in Beaver township and the southern portions of the county. In these townships there are a minimal amount of barns as Figure 4.2 indicates. There are several reasons for the small number of barns in this part of the county. First, there is not enough land to provide a minimum farming income. Second, if this area were to be used for ranching, more land would be needed, thus, fewer farm and ranch sites and barns.

In examining the potential relationship between topography and barn distribution, it is important to note that the land in the county is divided by means of a land-divison method known as the Grid System which is based on mile-square sections (Stilgoe, 1982). Contrary to land-division

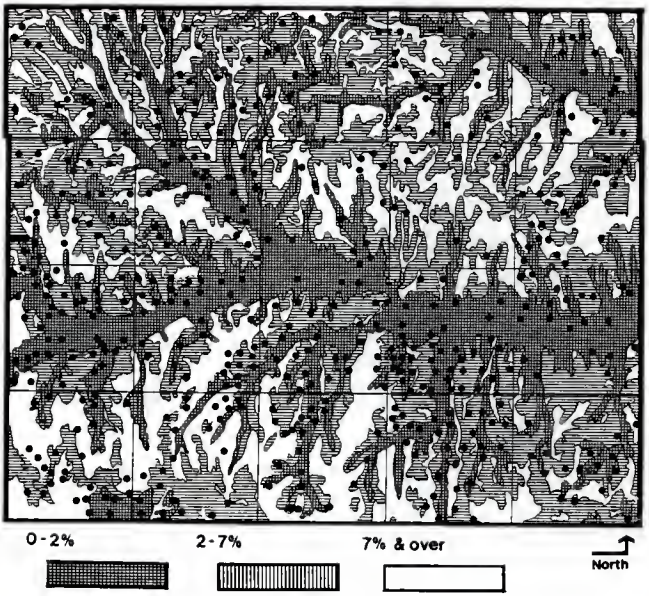

Fig. 4.2 Overall Distribution of Barns and Topography.

in the eastern United States and Europe, division of land in the Midwest preceded settlement rather than the other way around. A public county road ideally exists along every section line, providing easy access to each site. Each of these sections was in turn divided into quarters on which homestead claims and later land patents were based. Theoretically, if land were fertile and level, a farmsite could be located on every quarter section of the county. Due to Lincoln County's varied terrain, however, the potential for settlement is different from place to place because a farm cannot easily support itself on infertile land with steep slopes.

The result is that, when one examines the relationship between the 492 barns and topography, one notes that the concentration of barns in the county is located overwhelmingly within areas of the land where slopes are less than two percent (Figure 4.2). These areas can support higher settlement concentrations and thus, since there were more barns here to begin with, many still remain in these areas. No matter where a farm was located within the county, a water source for livestock and humans was a requisite. These water sources were creeks, springs or shallow wells whose construction did not require drilling through stone. As a result, only a few barns are located in the uplands of the county which have a minimal slope but no direct water sources.

Some of the 492 barns in Lincoln County are found along Bullfoot and Elkhorn Creek in the southern portion of the county. These streams are located in some of the rough terrain with slopes seven percent and higher. In these areas people concentrated more on raising livestock than farming but a barn still was neccessary for grain storage and for protecting livestock in harsh weather. The largest number of barns on higher sloped lands is located in the southwest portion of the county where the Bohemian immigrants settled. Reasons for Bohemian barn construction in this part of the county will be considered when the relation between ethnicity and barn distibution is discussed.

In conclusion, an analysis of the relationship between the distribution of the barns and the topography found in Lincoln County indicates that physical landscape is an important factor in the distribution of the barns. Immigrants chose to settle along the rich bottom lands and near the major water sources in the county. Although, theoretically, distribution of the barns across the county could be four per section, in reality the distribution was considerably affected by the topography of the county. The following sections will examine if topography was the only factor in the general spatial distribution of the barns across the county or if the availablity of building materials and ethnic settlements also influenced barn distribution.

BUILDING MATERIALS AND OVERALL BARN DISTRIBUTION

A second factor in better understanding the overall pattern of the 492 barns is the distribution of potential building materials found in the county. In general, barn building materials in Lincoln County are of two major types--wood and stone. In terms of structural support, all barns require a combination of these two materials, and wood is extensivly used in the roofs and interior structural system while stone is necessary for the foundation of the barn. In the present discussion, the author is not concerned with foundation and structual materials of barns but, rather with their exterior-wall material which, in the case of Lincoln County, is stone, wood and a combination of the two.

Table 4.1 shows the distribution of the general building materials found in the county based on barn data from the survey (Table 4.1, page fifty-nine; also see Figure 1.1, page six). This table points out that forty-eight percent of the surveyed barns were constructed completely out of wood; ten percent were constructed out of stone; and fifty-two percent were constructed out of a combination of wood and stone. Figure 4.3 presents the spatial distribution of these barns based on material types in Lincoln County. To understand this distribution more completely, it is important to consider each barn type specifically and also to provide background on the process of acquiring and refining building materials.

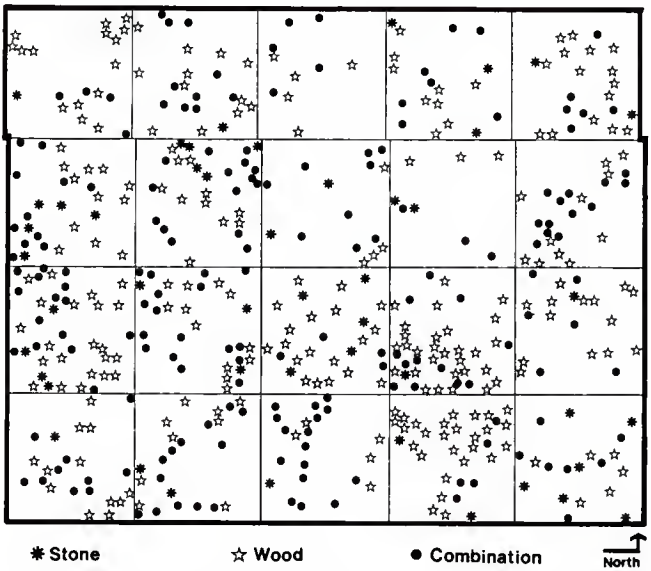

Fig. 4.3 Overall Distribution of Barns and Building Materials.

TABLE 4.1

BARN TYPES BASED ON BUILDING MATERIALS

	Number	Percent
All Wood	233	48%
All Stone	51	10%
Combination of Stone and Wood	208	42%
Total	492	100%

As Figure 4.3 indicates, use of wood as a major building material can be found along the the Saline River and the major streams in the county. Early in Lincoln County's development, saw mills were built along the water ways to provide milled lumber (Brandhorest, 1974). In contrast to the bottom lands, the uplands of the county were almost devoid of lumber while the bottom lands did not have the accessibility to stone. As a result, a builder would trade a load of lumber for a load of stone. A good example can be found in Grant township, where a landowner had a timber claim along Spillman Creek and would trade a load of lumber for a load of stone.(6) As a result, he was able to build a stone wall around his land, and in return others would have access to lumber.

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(6) Personal interview with Penny Andresen, Curator, Lincoln County Historical Society, April, 1984.

In terms of spatial distribution of wood barn types, one finds clustering in particular areas of the county (Figure 4.3). The most striking pattern is the clustering of wooden barns in the area south of the Saline River in the Elkhorn township and the northern portions of the Franklin township. This clustering is probably the result of two factors. First, the area is one of the lowest and most level in the county so the outcroppings of limestone and sandstone were not so readily accessible and stone would have to be obtained from more distant quarry sites. Also, this area is close to the Saline River where saw mills were located in the earlist years of settlement (Brandhorst, 1974). Local timber along the river and streams could be milled and used in construction. In a few of the barns in the county large, unmilled timber beams were used. These barns can be found predominantly in the Pleasant and Highland Townships. Log construction was known to exist in the early barns and may still exist today but if barns of log construction are present they have been covered by wooden siding or tin (Barr, 1908). The present research did not include examining for log contruction because access could not be gained into every barn. A future detailed study examining wooden barn structures and building methods would be a worthwhile project.

Next, one needs to consider stone barns and background information which helps explain their spatial distribution

(Figure 4.3). Those barns that were constructed entirely of stone can be found prodominantly in the western portions of the county although they are located, to a lesser degree, in the other areas of the county. As chapter one explained, there are two types of building stones found in Lincoln County: Postrock limestone and Colorado sandstone. Both types of stone provided a sturdy, economical building material for the area. The Colorado sandstone and the post rock limestone can be found in the county as fieldstone i.e., stone lying directly on the earth's surface. Sometimes these fieldstones were split, shaped and finished. But because the sandstone was a soft, crumbling stone, limestone, which is more resilient, would be used as quoining on buildings. Quoining is the placement of cut stones at the corners of a building to lend support, particularly to buildings made out of stone rubble or fieldstone. An interesting combination occurred when the buff colored postrock limestone was used as quoins and the burgundy sandstone was used as the main body of the building. A fine example of this is the Yordy barn, located in the southeastern corner of the county (Figure 4.4). This combination added an unusual dimension to the Kansas landscape.

The most common method of using the postrock limestone was not as fieldstone but in block form. The process of quarrying the limestone, which was uniformly found in beds of eight to ten inches, was relatively simple and required

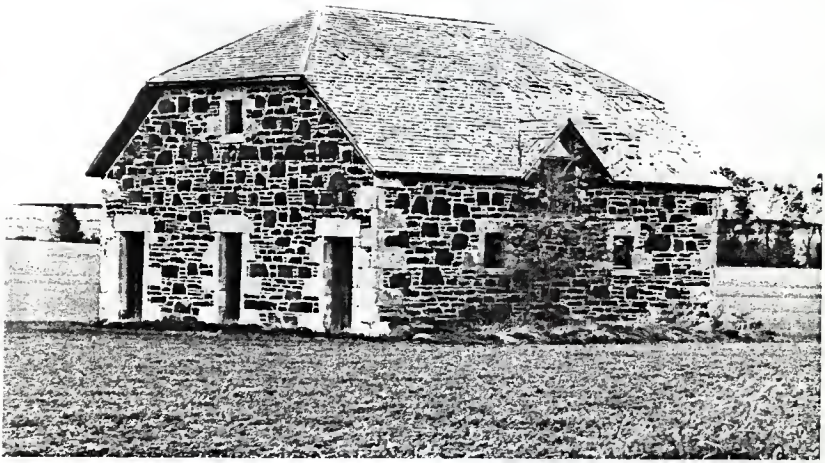

Fig. 4.4 Yordy Barn

only a miminal amount of equipment. Therefore, everyone who had access to the limestone was able to quarry it. After clearing away the overburden of soil, holes were drilled along a straight line approximatly eight inches from the edge. Then, by using a feather and wedge, the builder could split the limestone along the natural faults, creating a block of approximately eight to ten inches and extending the length of the slab. At the time the postrock limestone is excavated, the long slabs need to be cut into the correct lengths for either building stones or fence posts and finished. Once the postrock limestone has been exposed to air, it hardens into a resilient building material able to stand the harsh Kansas weather.

As Figure 4.5 suggests, postrock limestone used as a barn-construction material is found abundantly throughout Lincoln County while sandstone can be seen, in its highest concentration and use, in the southeastern corner of the county. If an accurate method of dating barns could be developed, possibly those barns constructed out of fieldstone would represent those that were built early in the county before the cut postrock limestone was used but, at this time, it is only an assumption. If such information were available, it might be possible to identify and classify additional characteristics about the barns i.e., changes of building materials over time, along with methods of construction, types of barns constructed as well as development of the barns over the years.

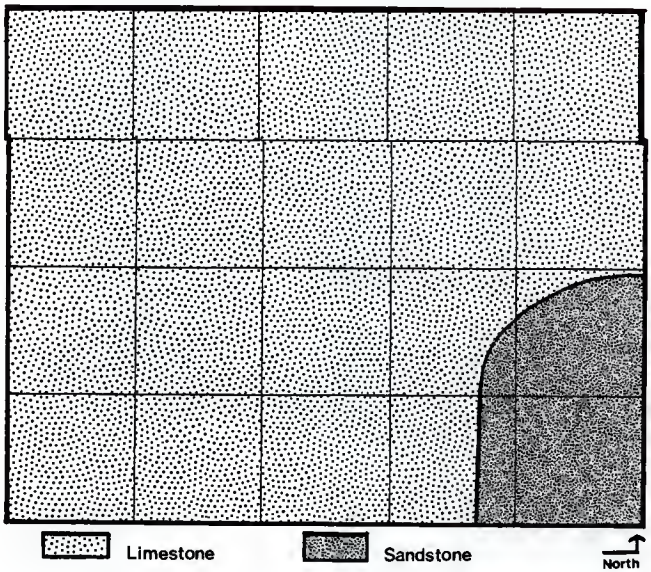

Fig. 4.5 Distribution of Post Rock Limestone and Sandstone.

Turning to barns of wood and stone in combination, one finds a variety of barn types of which the most common are those with a stone base and a wooden upper story. Here, we are not concerned with particular combinations of wood and stone but, rather, with the general pattern of barns which in one way or another integrate stone and wood in their exterior shell--particularly in wall construction. In contrast to those barns constructed completely out of stone, these barns are fairly well distributed across the county as Figure 4.4 indicates.

Several forms of wall combination are found in the barns of Lincoln County. One approach was to construct the portion of the barn that was built into a bank out of stone and then to construct the upper story out of wood. Another common building form was to build a stone base that was five to twelve feet high and then to construct the upper portion of the barn out of wood. One possible reason for this height is that the distance of five to twelve feet is generally the height that can be reached from ground level or from the top of a wagon. A second possible reason is that, at the turn of the century, many farmers thought that the use of all stone walls in a barn was a major cause of disease in livestock. To prevent this possibility while still using the abundant supply of stone available, builders constructed the upper portions of the barn out of wood. A third possible reason for this combination, as discussed earlier, was that

wood and stone were often traded among farmers in the county and it could be that the builders traded as much stone for lumber (or vice versa) as time and energy allowed. One last possible reason for the use of wood-stone combination was the bank barn form. Frequently, human adjustment to a new area may dictate that the commonly used method of building constuction in one area would be altered in another. In the case of Lincoln County, it might have been that builders were familiar with building in the bank barn method (stone base and a wood upper story) and adopted this method to other barn types besides the bank barns.

Reasons for the distribution of these combination materials barns may be the same as their variations in form--i.e., availability of materials in the area and people's adjustment to a new area. In the next chapter, we will find that the building of specific barn types may have dictated the types of building materials used.

ETHNICITY AND OVERALL BARN DISTRIBUTION

The third variable to be examined regarding the overall distribution of the 492 barns across Lincoln County is their relationship to patterns of ethnic settlement. The figure on page seventy-one illustrates the relationship between the general spatial distribution of the barn and ethnic settlements across the county. Although there was not a clear

concentration of ethnic groups, one can relate ethnic background to barn types cartographically (Figure 4.6). In making this map, the particular ethnic group associated with the building of each barn was identified by locating the name of the owner. Then, that owner's name was correlated with the data from the 1900 Federal Census which gave the birthplace of that landowner. From this information each ethnic group was plotted for distribution and concentration.

Certainly, there are weaknesses in this mapping method. As chapter one explained, sixty-three percent of the barns could be identified to their 1900 ethnicity but the remaining thirty-seven percent could not be. Yet, presently, the author has no other means to link ethnicity to barn construction. Although identifing ethnicity by classification of last name to ethnicity could have been used, this method could not identify whether or not landowners were born in a foreign county or were American-born, thus losing the connection between influence and barn types. Since some two out of three barns are identified through the identification of place of birth method, it is probably safe to assume that the map gives a fairly correct suggestion of the relation between ethnicity and barn distribution. Actual ethnic clusters were drawn on the map by arbitrarily deliniating a line around barns associated with an overlay of that particular ethnicity. The result of the six clusters is shown on Figure 4.7. Although thirty-seven percent of the barns

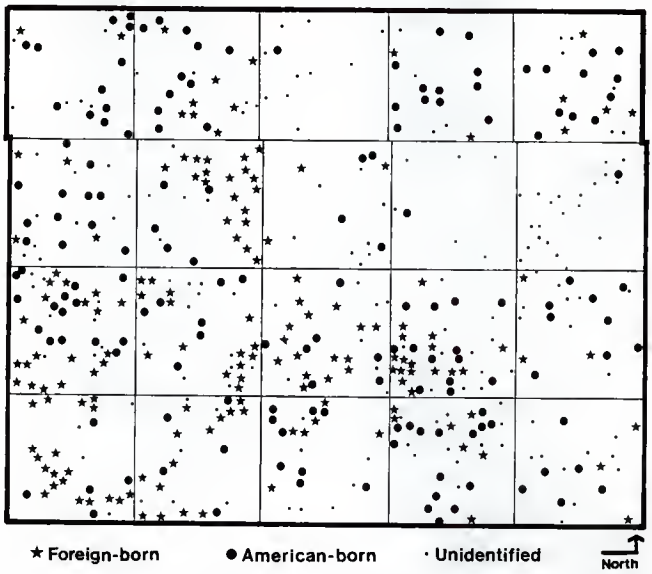

Fig. 4.6 Major Ethnic Settlement Patterns.

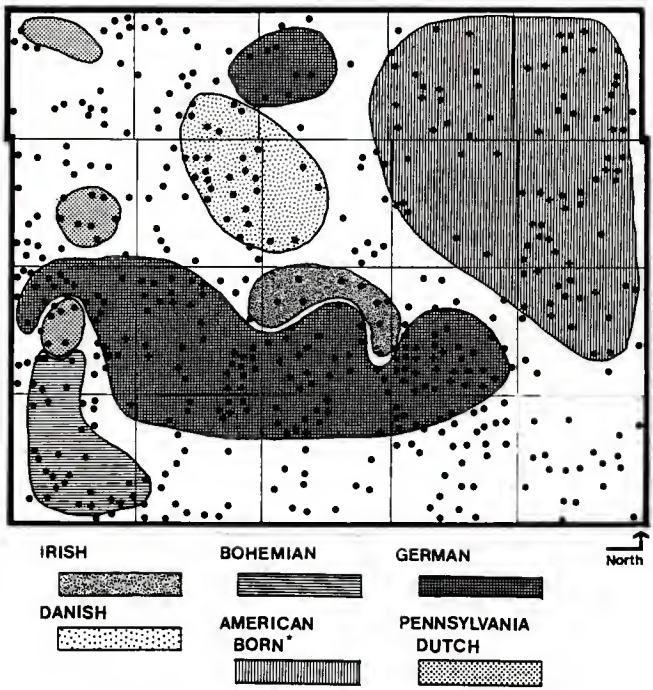

Fig. 4.7 Overall Distribution of Barns and Ethnic Settlements.

could not be identified with ethnicity, an identifiable relationship existed. By examining this map, it can be found that there are six major clusters of ethnic groups: Bohemian, German, Danish, Irish, Pennsylvania Dutch as well as American-born. Again, it is important to emphasize that these groups actually intermingled with other groups so no pure ethnic concentration can be found, only higher density of one type over another.

Immigrants moved to Lincoln County for many reasons, among them, freedom from persecution and famines in the homeland. Many times they had to leave their homes because of political conflict or droughts but, all in all, they came to establish their own farms. Some of the first land that was purchased by homesteaders was owned by the U. S. government and the railroads. The availability of this land was one reason why the Irish, the smallest of the major European ethnic clusters, settled in Lincoln County. This small group homesteaded around the Saline River in the Vesper township. This area of the county is flat to gently rolling hills. Although this group was small, they prospered in this area.

Because a homestead had to be registered at the land office in Junction City, Kansas, fifty miles to the east, many individuals and groups bought land sight unseen. In many cases, one person would scout the land to be acquired and

others depended on his decision as to what land to purchase. Other settlers decided to try areas that had been homesteaded by someone with the same backgound. This can be seen in the Bohemian group who settled in the southwestern portions of the county. The Bohemians are a good example of settlement where cultural links were more important than land quality. As chapter one explained, the Bohemians settled in this area when no more land was available around the Bohemian settlement near Wilson, Kansas, in Ellsworth County. This area of the county did not provide the best farm land in the county because it had such steep slopes and ravines but it was amoung the only remaining lands available when these later-arriving Bohemians settled in this area. Many of the early Bohemians that settled in Lincoln County were not farmers by profession but rather tradesmen and many did not have the skills at that time to farm and often were hired by surrounding farmers as laborers (Swehla, 1915).

As the map indicates, the Danes were also a closely settled cluster. Like the Bohemians, they bought much of their land sight unseen and under the direction of several advisors. But because the Danish were one of the earlest ethnic groups to settle in Lincoln County, arriving in the late 1860s, they had a better choice of farm land. Many of the Danes were forced away from Denmark during the mid-nineteenth century because of droughts and famines and because the southern portions of Denmark, Slavig-Holstein, became a

part of Germany. Rather than to submit to German rule many Danes emigrated to United States. The Danes, as well as other Scandinavians from Sweden and Norway, settled along Spillman Creek and its tributaries, particularly in Grant and Marion township. This area was chosen by the Danes "...because the land could be cultivated without removing a great many trees, it was flat and tillable, and there was plenty of running water and firewood" (Homan, 1976, pg 42) The Lincoln County settlement grew because of the common language and the similiarity of religious beliefs. The Danish established a community in the Grant township called Denmark, Kansas, which served as the location for the community cooperative creamery, a strong tradition brought over from Denmark.

As chapter one explained, the highest ethnic concentration in Lincoln County was German. Although Germans settled throughout the county, their farms are especially concentrated along the rich bottom lands south of the Saline River, particularly in the central protions of the county. As Figure 4.7 suggests, the Germans did not concentrate in as tight clusters as other groups, particularly the Danish settlement that was located along Spillman Creek. One exception is the highly concentrated German settlement in the Elkhorn township. This area as discussed earlier when the distribution of wood, was mentioned, is a relatively flat, fertile bottomland which could readily support such a set-

tlement. Other German settlements could also be found in the north and northwestern portions as well as scattered across the county.

Besides European immigrants, a large number of settlers came from other areas in the United States. One of the major North American groups were the Pennsylvania Dutch. Although the Pennsylvania Dutch were the largest American-born group to settle in Lincoln County according to the census material discussed in chapter one, few barn sites were identified as Pennsylvania Dutch because the correlation between the census data and the sites found on the 1901 map was not available. Clustering of the Pennsylvania Dutch can be seen to the greatest extent in the western portions of the county, particularly in Pleasent and Vesper townships around the Saline River. Pennsylvania Dutch settlers were also spread across the western portions of the county, especially intermixed with the Germans. Also a few can be found scattered across the county.

Another large group of people came from the midwestern states of Ohio, Indiana, Illinois and Iowa, as well as from New England and the Mid-Atlantic states and the South. Because these settlers are generally dispersed across the county, however, the only major concentrations can be seen in the northeastern portion of the county. One possibility for the higher concentrations of the American-born settlers

in this area could be that possibly they are an extension of the settlements in Ottowa county of which Lincoln County was a part at one time.

The next chapter of this study will examine the relationship of the three elements--topography, building materials and ethnicity--to specific barn types found in Lincoln County.

Chapter V

DISTRIBUTION OF SPECIFIC BARN TYPES IN LINCOLN COUNTY AND THEIR VARIATIONS

The second step in analyzing the distribution of the 492 barns was to consider the eight barn types described in chapter two. The approach used in this study is to consider these eight form types in relation to the three themes: topography, building material and ethnic settlement. In addition to the eight barn types arising from the literature review, this chapter will discuss two barn types--shed and stable and combination--that are described only infrequently in previous academic studies.

The frequencies of the ten barn types is portrayed in Table 5.1. In classifying these types, the general characteristics described in chapter two were used for identification. Although some of the barns may vary from the ideal form, they still can be classified because several of the form's characteristics are present and identifiable. As the review of the literature in chapter two explained, the three most frequently discussed barn types are the Dutch, English and Pennsylvania Dutch. Strikingly, as the table indicates, this pattern is different for Lincoln County since the Wisconsin dairy and stable barns have the highest frequencies.

Each of these ten barn types will now be discussed in the order of highest to lowest frequency.

Table 5.1
BARN TYPES IN LINCOLN COUNTY: FREQUENCIES AND PERCENTAGES

Barn Types	Frequency	Percent
Wisconsin Dairy	134	27%
Stable	91	19%
Dutch	75	15%
Multilevel	65	13%
English	51	10%
Single Crib	16	3%
Stable and Shed	11	2%
Erie Shore	9	2%
Connected	2	< 1%
Combination and unclassified barns*	38	8%

* "Unclassified" represents those barns that could not be identified precisely, either because of major exterior changes or because they did not fit any of the categories.

THE WISCONSIN DAIRY BARN IN LINCOLN COUNTY

Of the 492 barns found in Lincoln County, the Wisconsin dairy barn is the most common of the barn types making up twenty-seven percent (113 barns) of the total barns in the county (Figure 5.1). When one turns to the map showing the distribution of the Wisconsin dairy barn, it can be noted

WISCONSIN DAIRY BARN

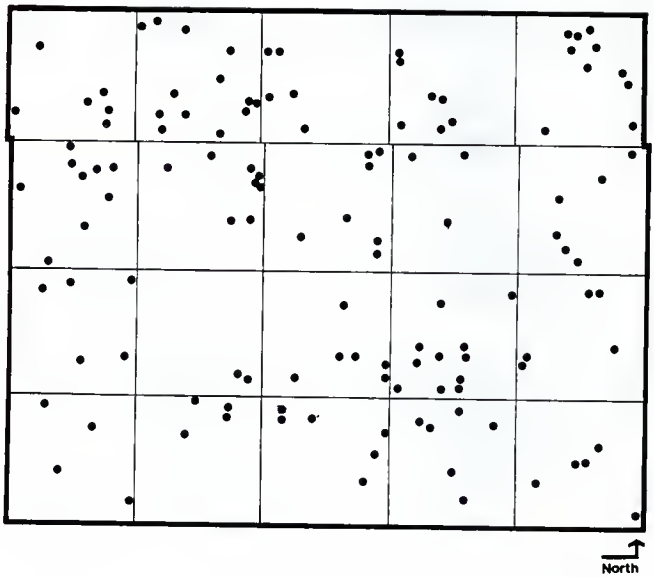

Fig. 5.1 General Distribution of the Wisconsin Dairy Barn

that the highest concentration of this barn type is located in two major clusters (Figure 5.2). The larger of these clusters is in the northwestern portions of the county along Spillman, Bacon, Trail and Little Timber Creek in the townships of Cedron, Orange, Hanover and Grant. In this part of the county, the land is generally rolling hills with a few limestone outcroppings resulting in prime grazing land. The largest ethnic settlements in this area were groups of Germans and Danes, and many settled here from Wisconsin, probably bringing this barn form with them when they emigrated to Lincoln County (Figure 5.3). The Dairy barn is said to have been developed by the Extension Experiment Stations in Wisconsin which first published the plans and made them available to the public (Ennals, 1968, 1972; Coffery, 1976, 1978).(7) Since this form was developed especially for dairy production, it is logical that it would be found in an area of high dairy concentration, particularly in the Grant township where the Danes established a cooperative creamery in 1882. Another location of high concentration of the Wisconsin dairy barn is a clustering in the south-central portions of the county in Elkhorn, Indiana, Franklin and Valley townships, south of the Saline River. Again, a majority of land

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(7) There has been considerable academic debate as to the origin of the Wisconsin dairy barn. Ennals (1968, 1972), Noble (1974) and Coffery (1976, 1978) argue that this barn type was originally developed by the Wisconsin Extension Experiment Stations in the late nineteeth century. In contrast, Hart (1975) says that the form originated in vernacular fashion in upstate New York.

WISCONSIN DAIRY BARN

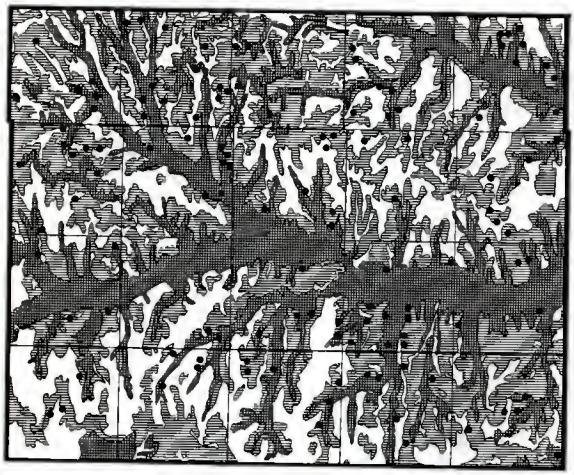


Fig. 5.2 Wisconsin Dairy Barn and Topography

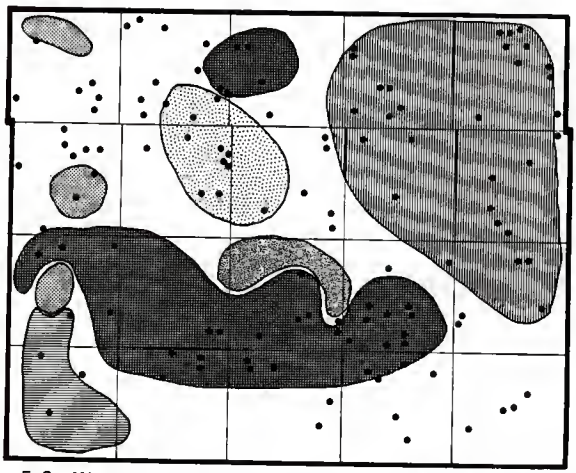


Fig. 5.3 Wisconsin Dairy Barn and Ethnic Settlement Patterns (* except Pennsylvania Dutch

in this area is rolling hills with steep sloped areas and was settled by large numbers of Germans. There are also small clusters of the dairy barns in other areas of the county particularly in Salt Creek, Scott, Logan and Marion townships but these concentrations are not as extensive as the larger clusters described above.

Regarding the building materials used in the Wisconsin dairy barn, wood was the most widely used at fifty-nine percent (seventy-three) but also a large number of wood-stone combination barns were found that represent thirty-nine percent (fifty-two) of the total. The remaining six percent (eight) of the barns were built of stone. Again, the large number of barns constructed out of wood and the stone-wood combination can be seen in the clustering of the dairy barns in areas where the use of wood construction was typically found--i.e., along the major rivers and streams and particularly in Elkhorn township as discussed in chapter one and four.

One of the most striking variations in the Wisconsin barn are differences in roof shapes. As explained in chapter two, the Wisconsin dairy barn usually has a gambrel roof which is used as a primary indicator of this type (see Figure 2.6). In the dairy barns of Lincoln County, however, the most frequent roof shape was the gable roof which was present in fifty-six percent (seventy-two) of the barns

(versus forty-four percent ((fifty-eight)) with gambrel roofs) (Figure 5.4). One of the most likley explanations here is that this barn type is located in areas of the county that had been settled by immigrants who earlier lived in Wisconsin where they learned about the Wisconsin dairy barn plan and the gambrel roof from the information available from the Agricultural Extension Experiment Stations. It is possible that this barn was first built by these settlers and eventually the plan types diffused to other parts of the county but the use of the gambrel roof shape did not. This may have happened because builders were either unwilling or unable to change from using a gable roof to the more technologically sophisticated gambrel roof. Another probability is that the added hay storage capacity that the gambrel roof provided was not a priority to many farmers' needs.

Another Lincoln County variation in the Wisconsin dairy barn involves the hayhood which is another typical characteristic found in this barn type. This was discussed in chapter two (Figure 5.4). In Lincoln County, however, only fifty percent of the Wisconsin dairy barns had the hayhoods. On the basis of present information, the author is unable to explain why hayhoods do not appear consistently in all the Wisconsin dairy barns found in Lincoln County, more research is needed on this finding.

Fig. 5.4 Wisconsin Dairy Barn: Gable Roof

THE STABLE BARN IN LINCOLN COUNTY

The second most prominent barn in Lincoln County is the stable barn (Figure 5.5). This type, as discussed in chapter two, has not been extensivly discussed in previous studies on barn forms. In Lincoln County, however, the stable barn made up eighteen percent (ninety-one) of the barn total. This barn type can be found mainly across the southern portions of the county, particularly south of the Saline River (Figure 5.6). In addition, there are small clusters on the northern peripheries of the county; the largest of these clusters are located in Logan township. This barn type, like the Wisconsin dairy barn, can be found in areas of the county with German settlement (Figure 5.7). In contrast to the dairy barn, however, it is not found in those parts of the county settled by Danes.

There is a strong possibility that the stable barn has a correlation with the German folk culture. There are several facts that support this assumption. First, this barn type is found to its greatest extent in the German and Pennsylvania settlements in Lincoln County. Though this point in itself cannot justify this relationship, more significantly, Glassie (1965) discusses this type as a possible variation of the Pennsylvania Dutch Barn and found it in extended areas that are part of the Pennsylvania Dutch cultural region. A final base for explanation is that the stable barn possibly may relate to the Germanic areas of Europe in that its

STABLE BARN

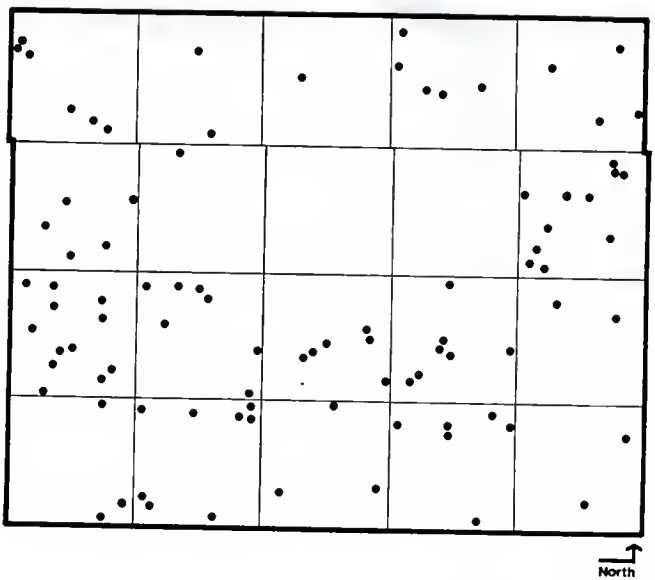


Fig. 5.5 General Distribution of the Stable Barn

Fig. 5.6 Stable Barn and Topography

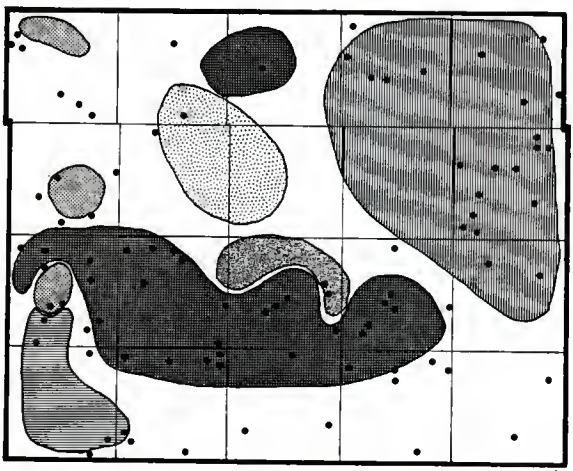


Fig. 5.7 Stable Barn and Ethnic Settlement Patterns (* except Pennsylvania Dutch).

first floor closely resembles the lower portions of the Pennsylvania Dutch barn (Figure 5.8). Specifically, its major entrances are placed parallel to the ridge line and often Dutch doors are used. Additional research on this barn type is needed to verify these assumptions.

Turning to the building materials used in the stable barn, one finds that forty-nine percent (sixty-three) are constructed all of wood. Of the remaining stable barns nineteen percent (twenty-six) were of wood-stone combination and nine percent (seven) were contructed of all stone. Figures 5.9 and 5.10 show some of the variations of building materials used on the stable barn in Lincoln County; most notable are the combination of stone and wood and the occasional use of the gambrel roof (Figure 5.11).

THE DUTCH BARN IN LINCOLN COUNTY

The third most frequent barn type in Lincoln County is the Dutch barn which represented fifteen percent (seventy-three) of the population (Figure 5.12). The Dutch barn can be found overwhelmingly in the southern portions of county, especially south of the Saline River (Figure 5.13). It can also be found to a somewhat lesser degree in the northwestern portions of the county. Like the other barns already discussed, this barn type appears to be most prominent in areas of slope less than two percent. In contrast, it is not found in the townships of Battle Creek, Salt Creek,

Fig. 5.8 Stable Barn: Gable Roof with End Addition

Fig. 5.9 Stable Barn: Stone and Wood Combination

Fig. 5.10 Stable Barn: Gambrel Roof and Hay Hood

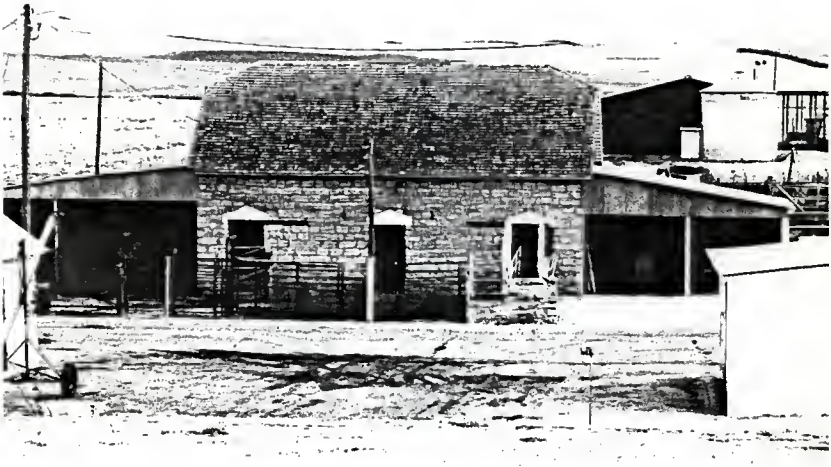
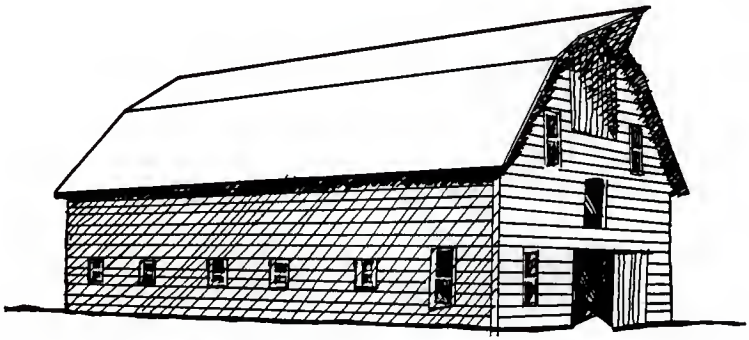


Fig. 5.11 Stable Barn: Hipped Gable Roof and Stone Construction

DUTCH BARN



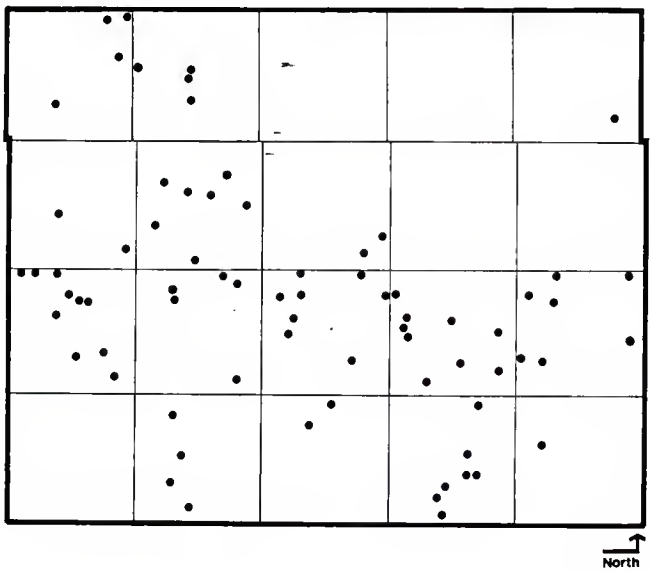


Fig. 5.12 General Distribution of the Dutch Barn

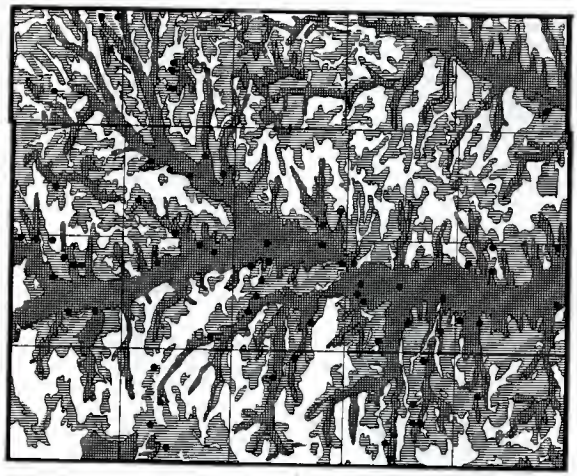


Fig. 5.13 Dutch Barn and Topography

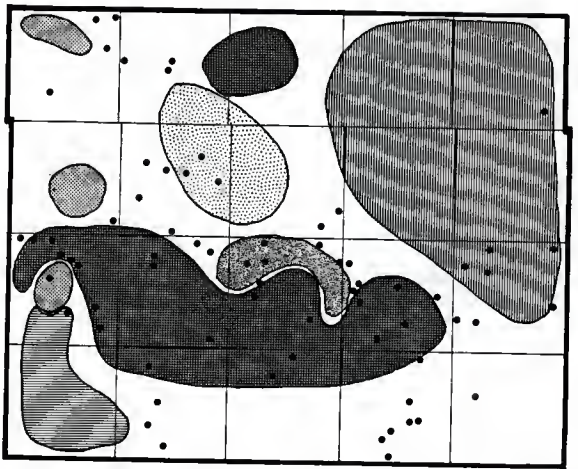


Fig. 5.14 Dutch Barn and Ethnic Settlement Patterns
(* except Pennsylvania Dutch)

Scott as well as the Highland township in the far southwest; only one barn appears in each of the townships of Logan and Madison.

In examining the distribution of the Dutch barn and its relationship with ethnic concentrations in the county, one notes the highest percent of the Dutch barns were built by the Germans and the Pennsylvania Dutch (Figure 5.14). Although correlation between the 1900 census data and the distribution of the barns indicates that a large number of the builders were American-born, this barn type does not appear in areas of this ethnic concentration. One explanation may be that American-born settlers in Lincoln County were not aware of this barn type and therefore chose other types.

The major variation of the Dutch barn in Lincoln County is that the typical barn is longer that it is wide--exactly the opposite of the ideal Dutch barn (Figure 5.15). On the other hand, this varying barn plan still maintains the typical central drive which is parallel to the ridge line with stabling areas on either side.(8) A possible reason for this is that additional space for stabling horses and cattle was needed and that the plan was modified to accomodate this requirement.

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(8) This barn type is also called the New England Barn. Hubka (1979; 1984) discussed this variation of the Dutch barn and he also notes that this barn is also known as a transverse crib barn but, in Lincoln County these two barn types are distinctly different because of the use of the enclosed crib in the transverse crib barn.

Fig. 5.15 Dutch Barn: Gambrel Roof

A major variation of the Dutch barn is called the transverse crib barn (Marshall, 1981; Noble, 1984). This plan type is different from the typical Dutch plan in that the stabling areas on either side of the central drive are replaced with enclosed cribs used for grain storage. Since this barn type is predominant in other areas of the Mid-West and the Great Plains, one could assume that the transverse crib would be a popular barn type in Lincoln County. Only a few of this variant, however, are found in Lincoln County and they were classified under the Dutch barn because they resemble it so closely.

In examining the relationship between the Dutch barn type and building materials, one finds that seventy percent (fifty-one) were wood combination (Figure 5.16). The stone and wood constructed barns represented twenty-seven percent (twenty) of the Dutch barns and five percent (four) were constructed completely out of stone (Figure 5.17). In relation to roof shape, fifty-two of the barns were gable; twenty-one were gambrel; and the remaining two incorporated either a hip or a gablet roof(9) (Figure 5.18). Also, there appears to be no correlation with the types of roofs found in the Dutch barn and their distribution across the county.

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(9) A gablet roof is often called a gabled-hip roof and can be seen in Appendix C under roof shapes.

Fig. 5.16 Dutch Barn: Gambrel Roof with Side Additions

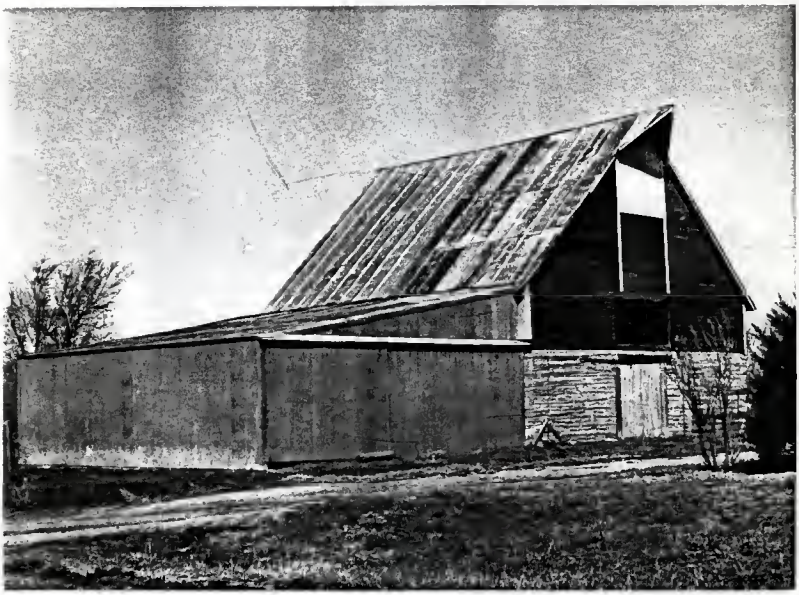


Fig. 5.17 Dutch Barn: Gable Roof with Stone and Wood Constuction

Fig. 5.18 Dutch Barn: Gambrel Roof with Stone and Wood Constuction

THE PENNSYLVANIA DUTCH BARN IN LINCOLN COUNTY

The multilevel bank barn was found in thirteen percent (sixty-five) of the barns in Lincoln County (Figure 5.19). Although this barn type can be found throughout Lincoln County, it is predominantly found in the western protions. As Figure 5.20 indicates, the greatest number of this barn type was located, in areas of the county with a slope of two percent or more. Settlers in these areas took advantage of the varying terrain to provide entrance to more than one level of the barn.

Turning to the ethnic influences on the multilevel barns in Lincoln County, one finds that the highest number of barns were constructed by Germans, then Pennsylvanians and Bohemians. As Figure 5.21 indicates, this barn type is located to the greatest extent in areas of the county which have a high population of Pennsylvanians. One reason why the Germans and Bohemians also used this barn type in their areas may have been that they were aware of this plan type prior to settling--either from their homeland or because of barns they saw on the way to Kansas. Another possibility is that they imitated in their construction of barns what they saw constructed in Lincoln County. For at least two reasons, it is difficult to verify conclusively any of these theories. First, scholors are just beginning to examine the origin of the multilevel and Pennsylvania Dutch barn by examining the possible European antecedents

MULTI-LEVEL BARN

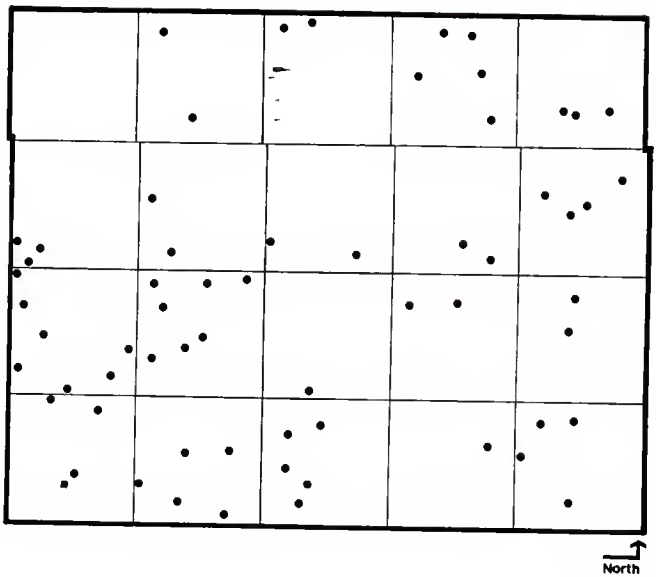


Fig. 5.19 General Distribution of the Multi-level Barn

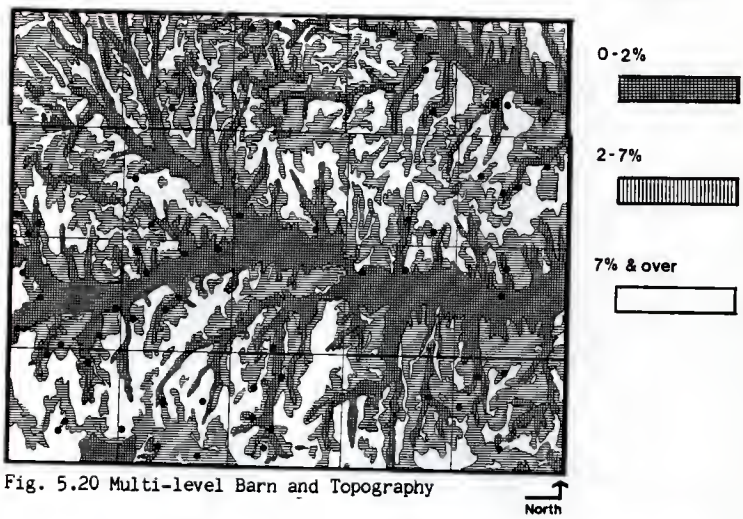


Fig. 5.20 Multi-level Barn and Topography

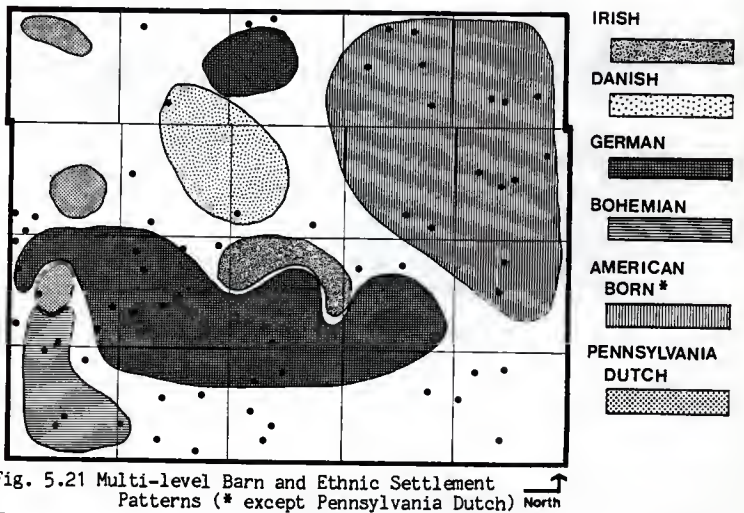


Fig. 5.21 Multi-level Barn and Ethnic Settlement Patterns (* except Pennsylvania Dutch)

(Ensminger 1980/81; Jordan 1980). Second, there is little evidence available to document the possible sources of the influences on the Bohemians as they traveled to Kansas (Swehla, 1915).

In examining the types of building materials used in the multilevel barn, one finds that eighty-six percent (fifty-six) of the barns were of stone and wood; ten percent (six) were all stone; and one percent (one) was constructed all of wood. A major reason for masonry construction in the multilevel barn was that it was better suited for building parts in direct contact with the earth. Wood presents a problem when it is in continual contact with damp soil and deteriation is probable. Also stone could more readily withstand shifting changes in temperature and seasons than wood.

The most prominent variation of the multilevel barn is how access is gained to the upper level entrance for wagons. The most commonly seen multilevel access is accomplished by constructing the barn in a partly excavated hillside or bank so that one or more sides are partially below the ground surface (Figure 5.22 and 5.23). By this means, access can be gained directly from the banked surface to the upper level entry. Another access method is seen when a bank is not completely excavated and a wooden high-drive or barn bridge was constructed between the bank and the entry (Figure 5.24). Yet again, some of the the multilevel barns are

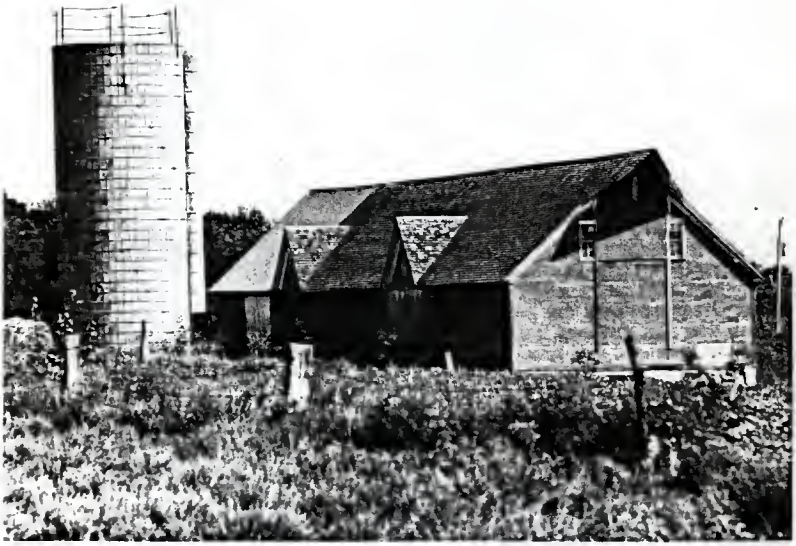


Fig. 5.22 Multi-level Barn: Upper Level Entrance

Fig. 5.23 Multi-level Barn: Lower Level Entrance

Fig. 5.24 Multi-level Barn: Wooden High Drive

located in areas of the county where the terrain is fairly flat (Figure 5.25). In these instances, earthen ramps were constructed to the second-floor entrance to provide access for the wagon. Also, in some instances, a dirt ramp to the second level entrance was constructed in both the front and rear of the barn so the wagon could move through, thus alleviating the problems that arise from backing wagons, horses and eventually tractors down a steep bank (Figure 5.26 and 5.27).

An impressive form of the multilevel barn is the Pennsylvania Dutch barn which because of its massive size, often overshadows other barn types in an area (Figure 5.28). As discussed in chapter two, the Pennsylvania Dutch barn is distinguished from other multilevel barns by the occurence of the forebay. The finest example of such a barn is the Newcomer barn built in 1898 by a Pennsylvanian in Pleasant township, an area of high Pennsylvanian settlement (Figure 5.29). This barn has a double thrashing floor and cribs that extended on either side of the ramp. Rather than driving the posts into the ground for the support of the double drive, the supports are placed perpendicular to the floor ground beams. One possible reason for this structural approach was the close proximity of the limestone beds to the surface, making it next to impossible for the builder to set the post in the typical manner (Figure 5.30). Another characteristic of a Pennsylvania barn found in Lincoln County is

Fig. 5.25 Multi-level Barn: Without Wooden High Drive

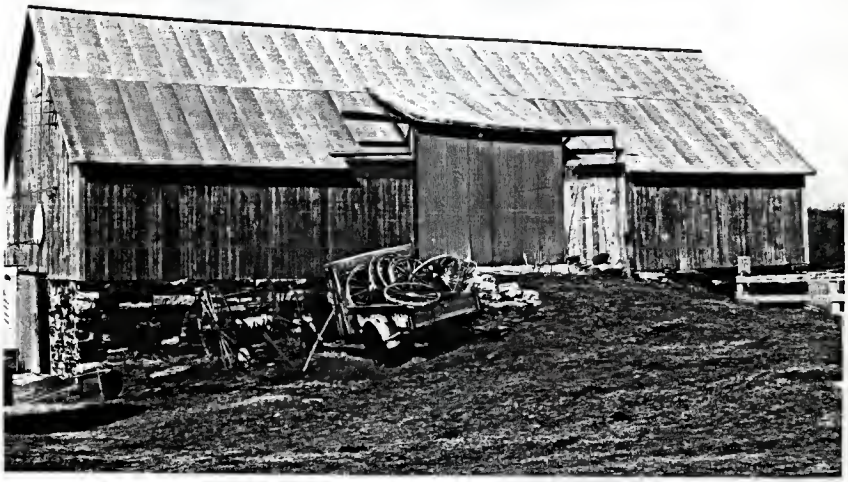


Fig. 5.26 Multi-level Barn: South Entrance

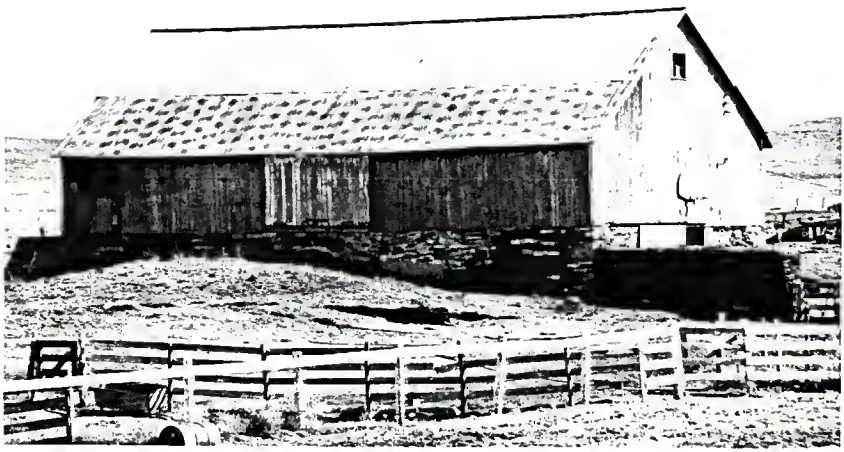


Fig. 5.27 Multi-level Barn: North Entrance

Fig. 5.28 Pennsylvania Dutch Barn: Newcommer Barn, Southeast Elevation

Fig. 5.29 Pennsylvania Dutch Barn: Newcommer Barn, North Elevation

Fig. 5.30 Pennsylvania Dutch Barn: Newcommer Barn, Floor Sills

the use of a pent roof (Figure 5.31). This element works very much like a forebay, providing shelter near the entrance doors on the lower level. Although only a few barns with these overhangs exist in Lincoln County today, over the years others may have been removed.

THE ENGLISH BARN IN LINCOLN COUNTY

The fifth most frequent barn in Lincoln County is the English barn. Ten percent (fifty-one) of the barns were English (Figure 5.32). The distribution of this barn type is in higher concentrations in the western portions of the county and in the eastern portions of the county south of the Saline River (Figure 5.33). Again, this barn type can be seen predominantly in areas where the slope is less that two percent. It is not seen, however, in the following townships: Salt Creek, Logan, Beaver, Colorado, Marion, Madison and Valley. Only one English barn was found in the Battle Creek, Franklin and Salt Creek townships. Again, ethnic settlement probably plays a substantial role in this distribution pattern (Figure 5.34). The areas that had the highest clusters of English barns are associated with the German and Bohemian settlements, predominantly in the southern portions of the county. The presence of that the English barn in the Bohemian area may have three reasons. First, this form type is not only found in England but is also known to exist in continental Europe, including

Fig. 5.31 Pennsylvania Dutch Barn: Pent Roof

ENGLISH BARN

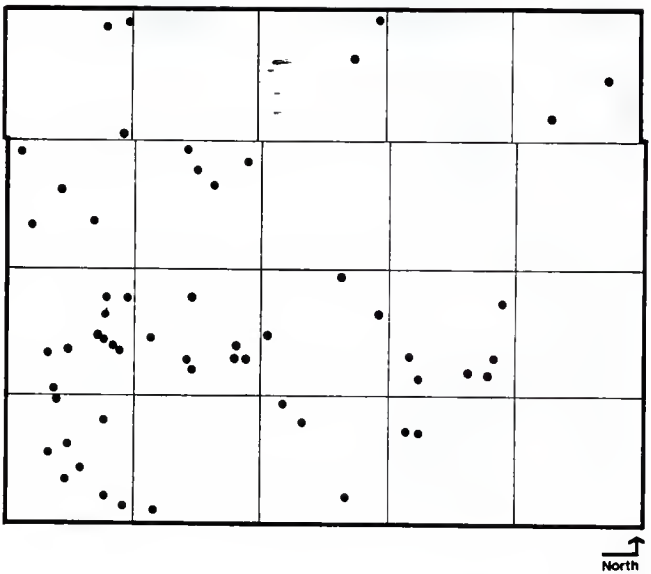


Fig. 5.32 General Distribution of the English Barn

ENGLISH BARN

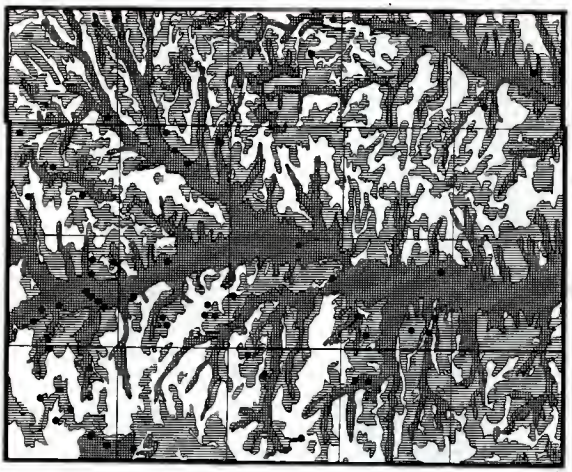


Fig. 5.33 English Barn and Topography

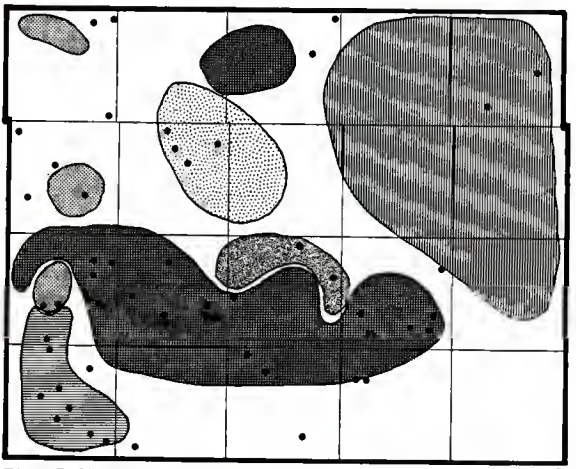


Fig. 5.34 English Barn and Ethnic Settlement Patterns (* except Penn. Dutch)

Switzerland and Germany (Glassie, 1975). Since, geographically, Bohemia is close to these countries it may have been a barn form known in Bohemia a fact which could help explain its presence in Lincoln County. A second possible explanation is that the Bohemians may have been influenced by barn types they saw while immigrating to Lincoln County. Third, it is known that the Bohemians who settled this area were merchants by trade and not farmers. They often lent themselves as labors to neighboring farmers in the area and may therefore have been influenced by buildings they saw on the surrounding farms in Lincoln County which were predominantly those of Germans (Swehla, 1915).

In relation to building materials and the English barn type, forty-nine percent (twenty-five) of the barns were of wood as the major building material; thirty-three percent (seventeen) involved a combination of stone and wood; and eighteen percent (nine) were of stone construction (Figure 5.35 and 5. 36). In regard to roof shape, the majority of the English barns had the gable roof seventy-three percent (thirty-seven) and twenty-four precent (twelve) used the gambrel and the remaining four percent (two) were either hipped or hipped gable (Figure 5.37).

Fig. 5.35 English Barn: Wood Construction and Gable Roof

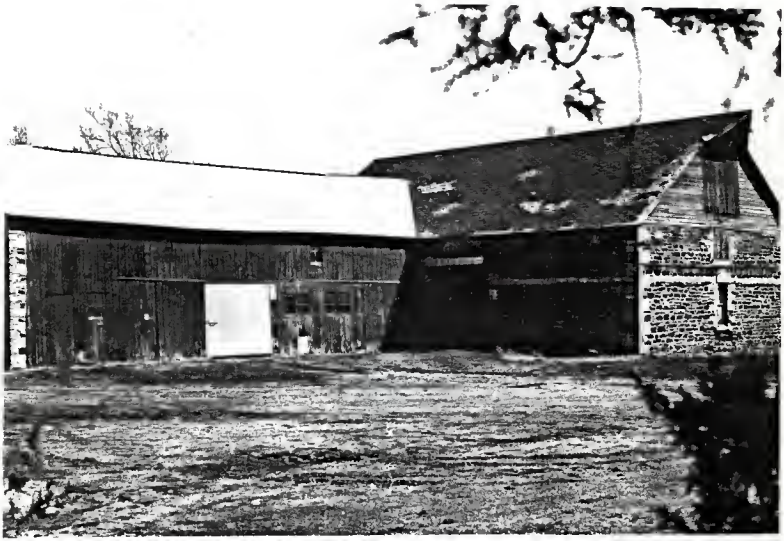


Fig. 5.36 English Barn: Stone and Wood Combination

Fig. 5.37 English Barn: Stone and Wood Combination with a Gambrel Roof

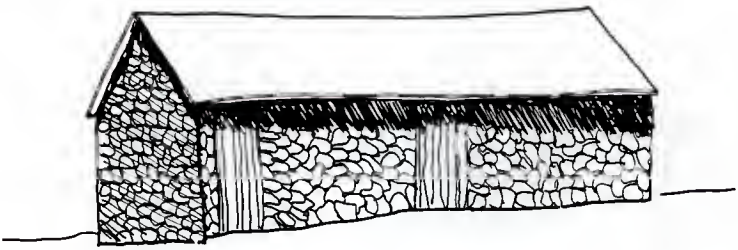
THE SINGLE-CRIB BARN IN LINCOLN COUNTY

The Single-Crib or Cabin barn can be seen in three percent (sixteen) of the barns in Lincoln County (Figure 5.38). This barn type can be found to the greatest extent in the central portion of the county, predominantly along the Saline River. The Danes, followed by the Pennsylvanians, built the greatest number of barns of this type. In relationship to Figure 5.39 on topography and Figure 5.40 on ethnic clusters, this type appears to have no relationship with either of these factors, perhaps because these barns are not restricted to general locations due to environmental and cultural factors.

The single-crib barn was often one of the first buildings constructed by early settlers and used to protect livestock and grain prior to the construction of a major permanent barn (Figure 5.41). Additional single crib barns may still remain in Lincoln County but were not recorded. This is so for two reasons. First, their function in some instances may have changed to the point that no one remembers their earlier use. Second, their physical appearance may have been altered because they have been converted into minor outbuildings such as chicken houses or machine sheds.

The highest percentage of the single-crib (cabin) barn was constructed all of stone at fifty percent (eight). Thirty-eight percent (six) of the barns were constructed of

SINGLE CRIB BARN



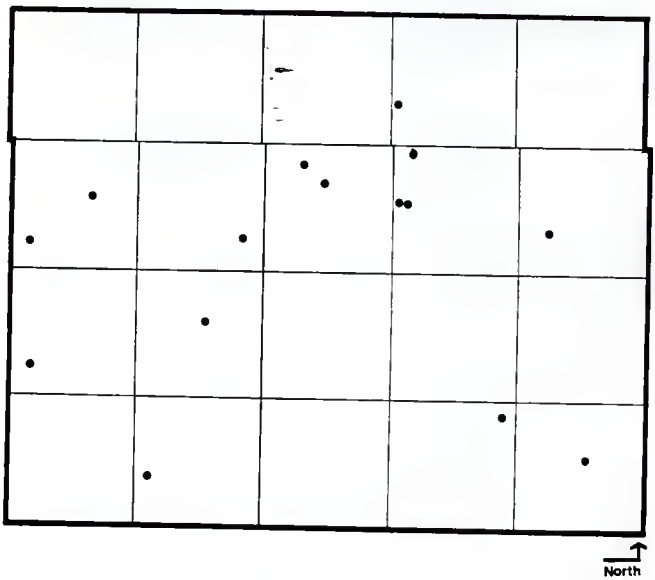


Fig. 5.38 General Distribution of the Single-Crib Barn

SINGLE CRIB BARN

Fig. 5.39 Single-Crib Barn and Topography

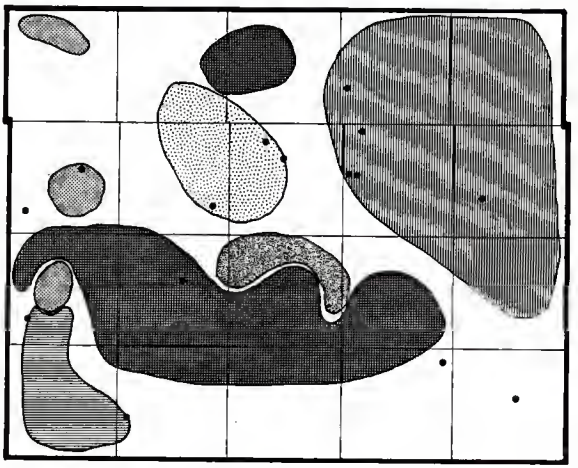


Fig. 5.40 Single-Crib Barn and Ethnic Settlement Patterns (* except Penn. Dutch)

Fig. 5.41 Single-Crib Barn: Stone Construction

wood-and-stone combination and the remaining twelve percent (two) were constructed out of wood (Figure 5.42). In previous studies, the single-crib barn is often said to be mainly of wood-construction (Glassie, 1975). One reason for this conclusion is that these studies have focused on regions where wood was readily available as a building material while in Lincoln County the early settlers were using the building material which was the easist to obtain, namely was stone--particularly field stone.

THE STABLE AND SHED BARN IN LINCOLN COUNTY

The seventh most preminant barn found in Lincoln County is the Stable and Shed (Figure 5.43). The stable and shed barn involved two percent (eleven) of the barns in Lincoln County and is especially common in the far southern portion of the county. The majority of the barns appear in the Franklin township. Stable and shed barns are found on land of less than seven percent slope (Figure 5.44). especially along Bullfoot, Spring, Elkhorn, Bush, and Owl creek, all located south of the Saline River. Regarding ethnicity and the stable and shed barn, only a few barns are within the areas associated with any ethnic cluster (Figure 5.45).

This barn type is a variation of the Crib and Gear shed barn analyzed by Glassie (1975) in his study of Appalachian barns (Figure 5.46). The stable and shed and crib and shed are similiar in form in that both have a passage way

Fig. 5.42 Single-Crib Barn: Stone and Wood Construction

STABLE AND SHED BARN

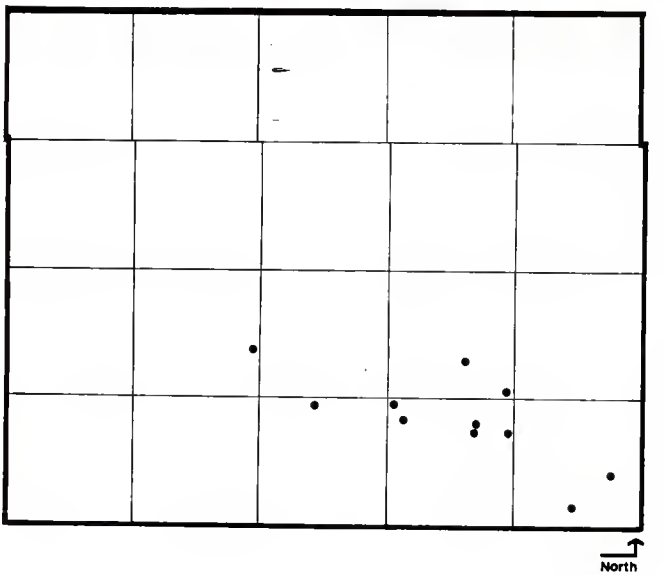


Fig. 5.43 General Distribution of the Stable and Shed Barn

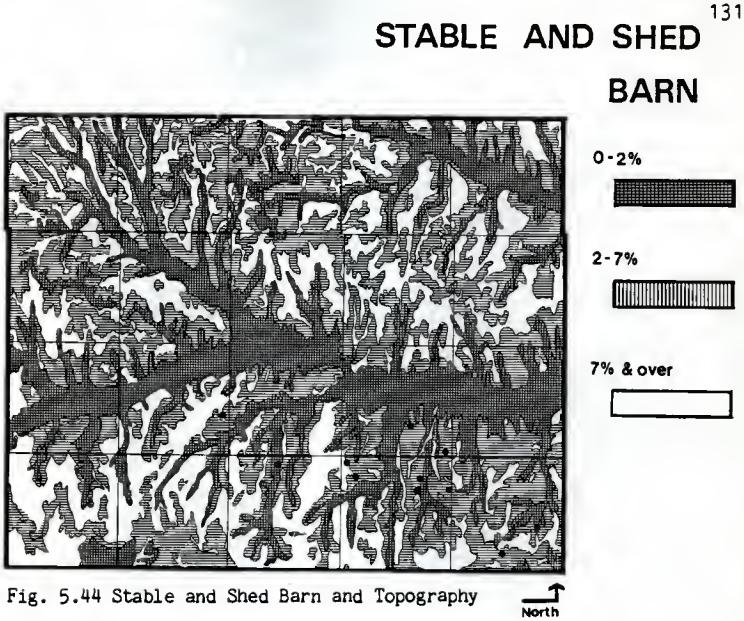


Fig. 5.44 Stable and Shed Barn and Topography

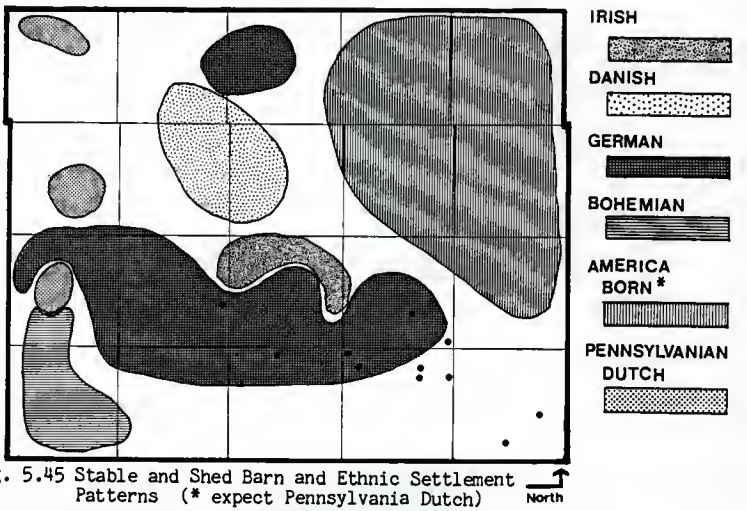


Fig. 5.45 Stable and Shed Barn and Ethnic Settlement Patterns (* expect Pennsylvania Dutch)

Fig. 5.46 Glassie's Crib and Gear Shed Barn
Source: Glassie, 1965, p. 23.

parallel to the ridge line located on one side (Figure 5.47). On the opposite side of the passage is either a crib for storing grains or for stabling livestock. The upper level of this barn often is used for hay storage. Access to this area can either be by an exterior hay door or by a hay mow located over the stabling area. If these two barn types are related, one of the probable reasons for variation between the two is settlers adapting their barn type to different crops and climates. This can be seen in the need of the Kansas farmer to protect livestock and grains more than was the case in the Appalachian region (Figure 5.48).

In turning to the building materials used, one finds in the shed and crib barn that wood occurred at the highest frequency at eightly five percent (nine); the remaining fifteen percent (two) were constructed of stone and wood. There were no shed and crib barns in Lincoln County that were constructed all of stone.

THE ERIE SHORE BARN IN LINCOLN COUNTY

The Erie Shore barn involves one percent (nine) of the barns in Lincoln County (Figure 5.49). This type is generally dispersed across the county and does not appear in one slope area more than another (Figure 5.50). As Figure 5.51 indicates it appears that no ethnic group played a major role in establishing this barn type in

STABLE AND SHED BARN

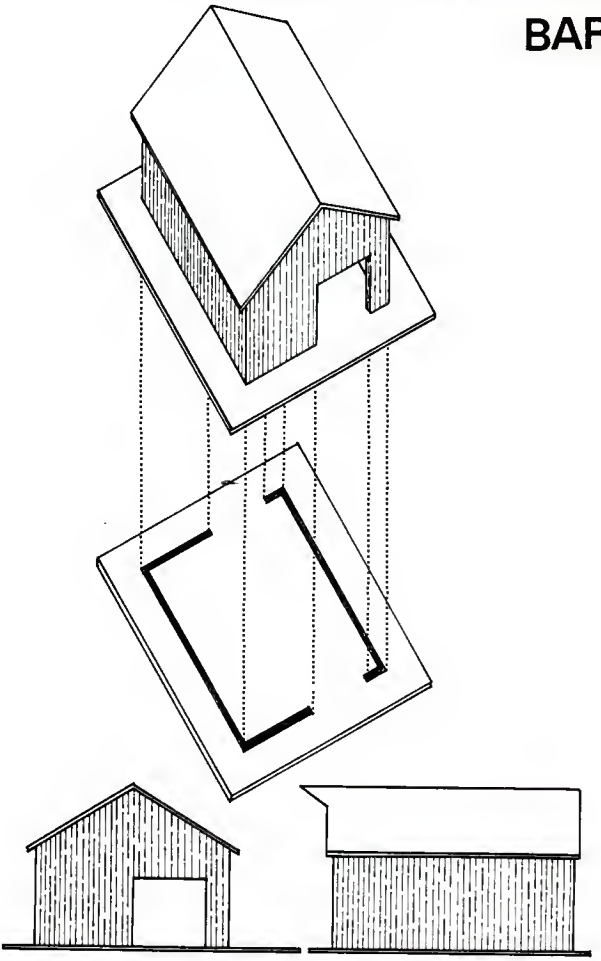


Fig. 5.47 Stable and Shed Barn: Expanded Isometric and Elevation

.figure 5.48

Fig. 5.48 Stable and Shed Barn: Hay Hood and Side Addition

ERIE SHORE BARN

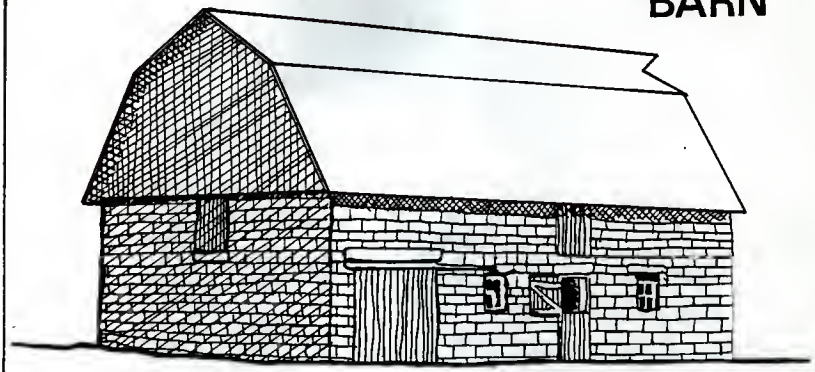


Fig. 5.49 General Distribution of the Erie Shore Barn

Fig. 5.50 Erie Shore Barn and Topography

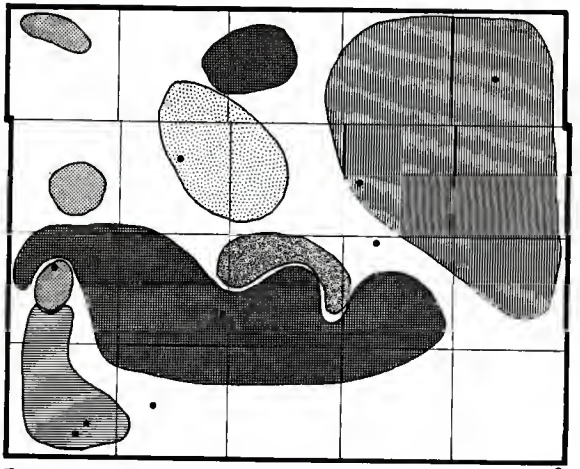


Fig. 5.51 Erie Shore Barn and Ethnic Settlement Patterns (* except Penns. Dutch)

Lincoln County. Although Ennals (1968) identified the Erie Shore barn as a form type in his study, the diffusion of this form type has not been greatly studied in other areas of North America. This could be true for two reasons. First, this barn type has not diffused into other areas of the country by either immigration or from information published by the Agricultural Extension Experiment Stations. Second, this barn may not appear, to any great extent, in other areas of the country and thus has not been considered a major barn type to analyze.

In Lincoln County, the Erie Shore barn shows few variations (Figure 5.52 and 5.53). The gambrel roof was ofen used, identifying its possible close relationship to the Wisconsin Dairy barn. This barn type could be a variation of the Dairy barn in that it provides a storage location for wagons on the end of the building yet contains the milking areas similiar to the Dairy barn. Other roof shapes that appear on the Erie Shore barn in Lincoln County besides the gambrel are the gable and pyramidal.

THE CONNECTED BARN IN LINCOLN COUNTY

The connnected barn was found in less than one percent (two) of the barns of Lincoln County (Figure 5.54 and 5.55). As discussed in chapter two, a connected barn is one in which the barn is connected to the farmhouse by either adjoining walls or common ceiling and floor. These two barns were

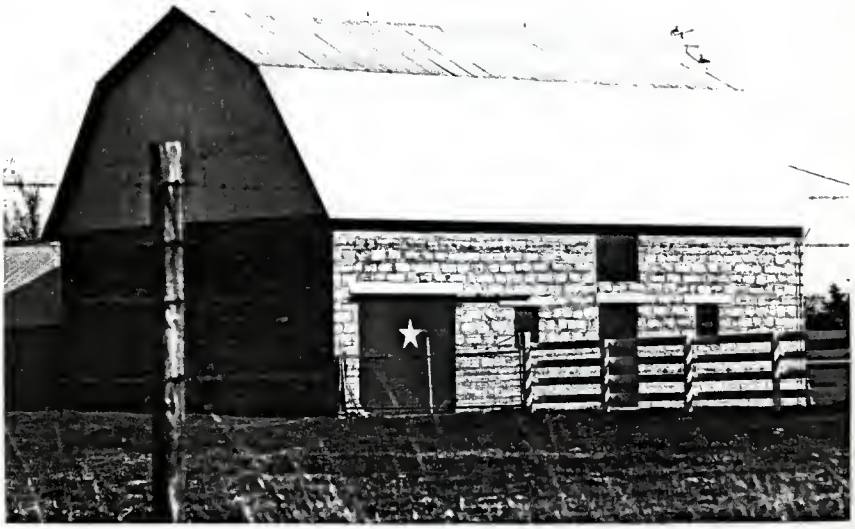
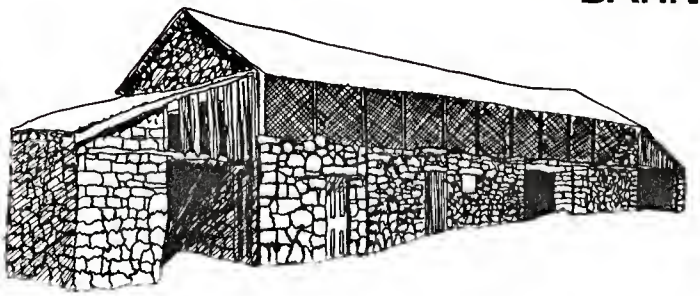


Fig. 5.52 Erie Shore Barn: Stone and Wood Construction and Gambrel Roof

Fig. 5.53 Erie Shore Barn: End Extension Left of Drive-through

CONNECTED BARN



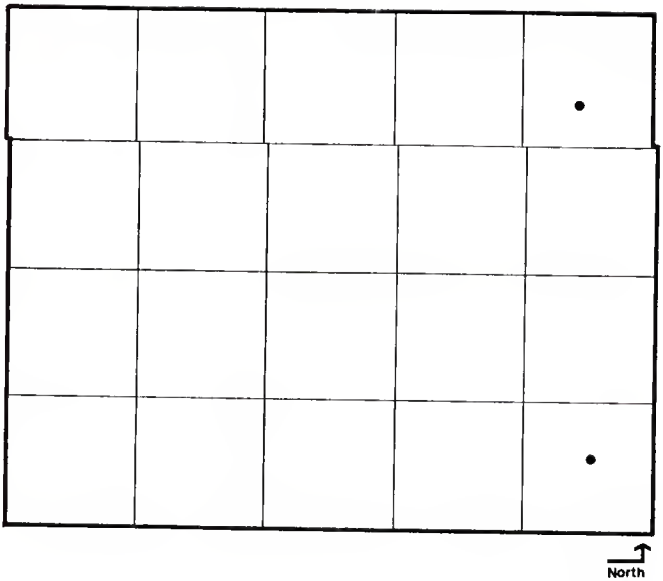


Fig. 5.54 General Distribution of the Connected Barns

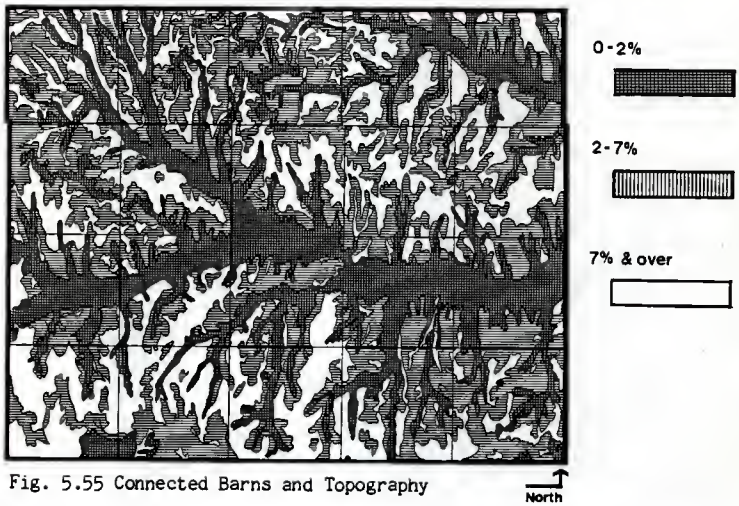


Fig. 5.55 Connected Barns and Topography

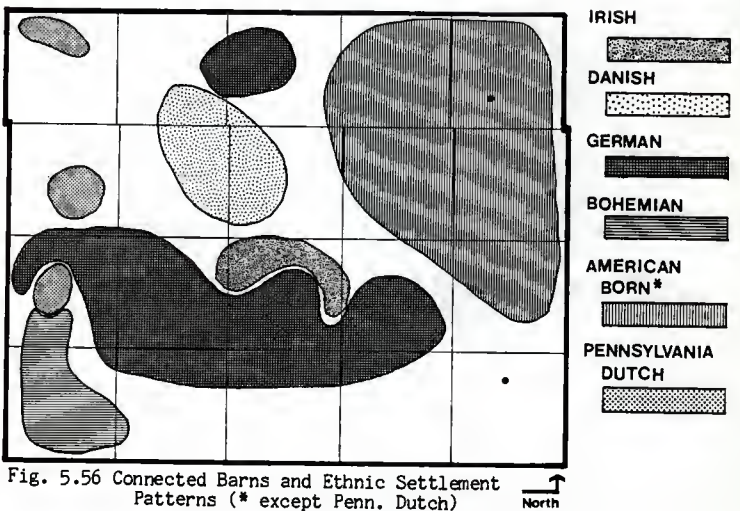


Fig. 5.56 Connected Barns and Ethnic Settlement Patterns (* except Penn. Dutch)

constructed by individuals who were foreign born, one German and the other Irish (Figure 5.56). Probably the form of connected barn in Lincoln County did not diffuse from the New England Connected barn but was the result of German and Irish immigrants bringing a connected form familiar to to them in their old county (Brandhorst, 1976; Enslinger 1980/81). Alternatly, these two barns might be the result of settlers' adjusting to the vast landscape of north-central Kansas.

The first of these two structures has come to be known as the Shirley barn and is located in the Salt Creek township (Figure 5.57). The main building, comprising the house/barn, began as a small dugout.(10) Over the years, this small dugout was expanded into a place for horses and the upper portion which was made of wood was added for the family (Figure 5.58). Even today, the small area that was once the dugout can be seen because the stones in this location had been laid up dry while in other areas mortar was used. The long alley of the stable area could hold twelve horses and portions of the stone wall had stones removed to provide head space for the horses in their stalls (Figure 5.59). The Shirley house/barn may be reminiscent of the Scottish and Irish byre house since the owner was from Ireland and there is a strong indication that the byre houses were an

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(10) Personal interview with S. Meyers, Lincoln County resident, September, 1982.

.figure 5.57

Fig. 5.57 Connected Barn: Shirley Barn, East Entrance to Lower Level Barn

Fig. 5.58 Connected Barn: Shirley Barn, South Entrance to Residence

Fig. 5.59 Connected Barn: Shirley Barn, Interior View

influence for the building (Ensminger, 1980/81; Brandhorst, 1974; Hubka, 1977; Zelinzsky, 1958).

Little is know regarding the other connected barn in Lincoln County shown in Figure 5.60. This house/barn is connected by adjoining wall and a door leads from one room to the other. A date stone of 1882 appears on the south end of the building. It is possible that this portion of the building along with the house were built at the same time because both are made from larger pieces of sandstone.

One additional barn that, at first glance, appears to reflect the house/barn form of the connected barn is located in the Danish community in Grant township (Figure 5.61). Although portions of this building resemble a house, it was constructed only to be a barn and never a house/barn combination. One reason why this barn resembles the house/barn form is that the main portion of the building is similiar to several homes in the area built by the Danes. An early photograph of the farmsite shows the close relationship of the original house but the windows in the barn, however, are smaller than the house's.(11) Both the barn and house on this farm had a gable roof with a triangle dormer over the central door. Also the opening over the central door, located in the dormer, is the hay door to the loft in the barn. In the house, on the other hand, this gable opening

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(11) Personal interview of L. Lubhkul, daughter of builder E. Andreson, April, 1984, part of photo collection.

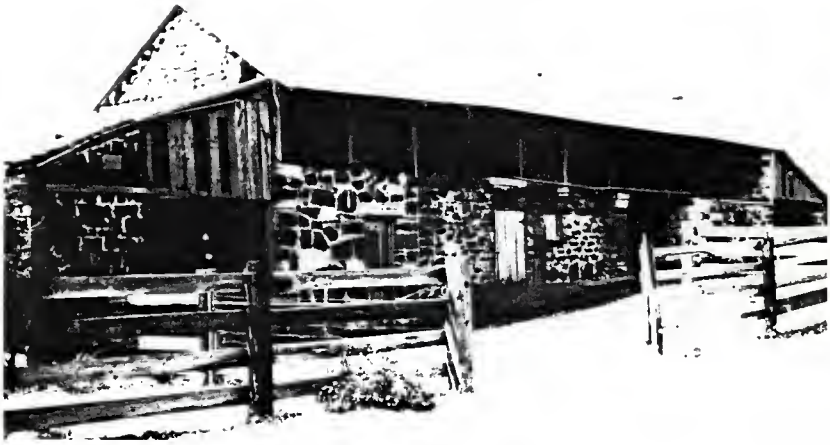

Fig. 5.60 Connected Barn: South Section before End Addition

Fig. 5.61 Linear Barn: Stone Construction

was a balcony door. A chicken house was attached to the main barn on the left and a cattle shed on the right. The upper story of the barn was the hay mow. Nothing, however, remains of the physical divisions of interior space except the location of the beams that supported the hay mow. This form represents the liner barns built in the northern Germaninc areas of Europe (Brandhorst, 1974). When the form was moved to the United States, however, the connectivness of the house/barn were abandanded (ibid.)

COMBINATION AND UNCLASSIFIED BARNS IN LINCOLN COUNTY

The last division of barn types found in Lincoln County represents eight percent (thirty-eight) of the barns (Figure 5.62). These barns are either a combination of two or more types or they could not be classified. These barns generally can be found in the southern and western portions of the county (Figure 5.63). There does not appear to be any relationship between topography and the distribution of these combination and unclassified barns. On the other hand, there is a relationship with ethnic settlement (Figure 5.64). The barns can be found predominantly in areas of high foreign-born population of the county. Specific barns types may not appear as often in the American-born settlements because, when these settlers moved to Kansas, they had a general idea of what barn type would work best in the Kansas climate and satisfy farming needs. Also, it could be

COMBINATION AND UNCLASSIFIED BARN

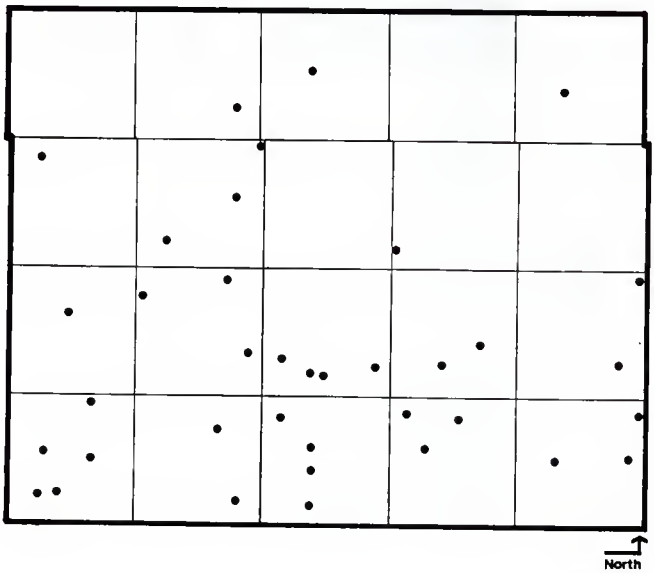

Fig. 5.62 General Distribution of the Combination and Unclassified Barns

COMBINATION AND UNCLASSIFIED BARN

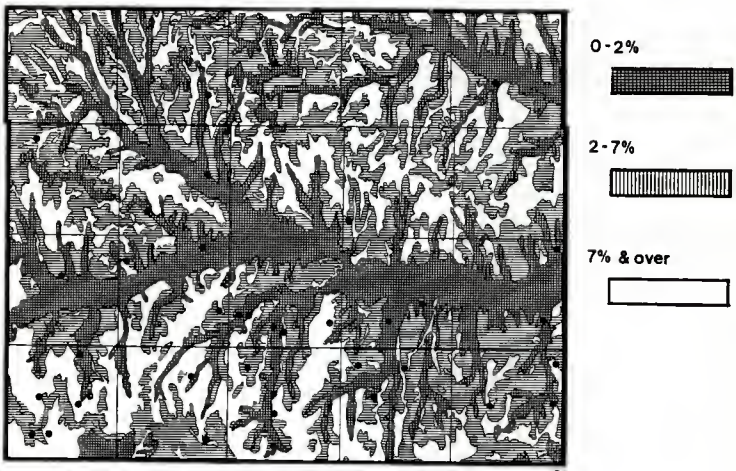

Fig. 5.63 Combination and Unclassified Barns and Topography

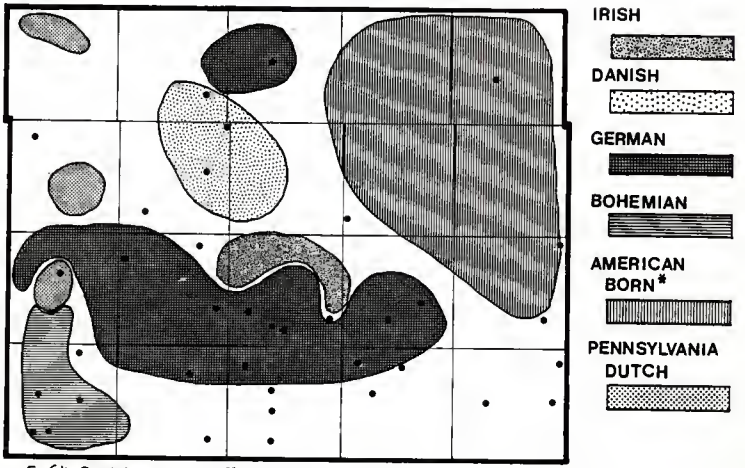

Fig. 5.64 Combination & Unclassified Barns & Ethnic Settlement Patterns (* except Penn. Dutch)

that a high fequency of combinations or unclassified barns occurring in the foreign-born areas indicates barn types that have not yet been identified in the scholarly literature. Yet again, it may be that the settlers altered their known European barns to the Kansas landscape to such a degree that the barns are extermely difficult to identify as one pure type. Whatever the case, these combination and unclassified barns offer a ready topic for future research.

Considering combination barns in Lincoln County, one can identify several types--e.g., the combination of an English and a Wisconsin Dairy barn (Figure 5.65). This type resembles the four-crib barns found in the South (Noble, 1974). Instead of having two drive-throughs perpendicular to each other, however, this barn in Lincoln County has a central walkway parallel to the ridge line and to the drive-through and the manger faces into the central walkway. This physical division of the sections by the passageways divides the barn into four stabling sections. The barn had no grain storage areas but the gambrel roof provides a large hay storage area and the hay loft has a door to drop hay down to the first floor.

Another combination barn can be seen in Figure 5.66. When viewed from the side, this structure represents a typical multi-story barn with a central passage perpendicular to the ridge line and with storage areas on either side of the

Fig. 5.65 Combination and Unclassified Barn: Stone and Wood Construction and Gambrel Roof

Fig. 5.66 Combination and Unclassified Barn: Stone and Wood Construction and Gable Roof

central drive. From the gable end of the building, however, this barn takes on the appearance of a Dutch barn plan with a central passage parallel to the ridge line and stabling and cribs on either side. Although this barn type was classified under the multilevel barns, it more precisely represents two distinct barn types.

A third combination barn was constructed in 1916, by A. White, a native Kansan who sought to construct a barn that best supplied his needs.(12) Toward this aim, he toured all of the major barns in the county, particularly those in the Danish area, to find a type that would be most useful (Figure 5.67). His final choice was a multilevel barn which has characteristics of both the Dutch and English plan in that it has a centrally located drive through. Because this combination barn is square with a pyramidal roof it cannot be classified as either barn type. The plan for this barn is a central drive down the center with stabling on one side with graineries and stabling on the other. Grain stored in the main level cribs could readily fall to the stabling areas on the lower level. In addition, the upper level hay mow has an interior hay sling to help move the hay from a wagon located in the drive-through to the hay loft above.

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(12) Personal interveiw by Mrs. H. Jensen, daughter of the builder A. White, April, 1984.

Fig. 5.67 Combination and Unclassified Barn: Stone Construction and Truncated Pyramid

Chapter VI

THE VALUE OF STUDYING BARNS: SUMMARY AND CONCLUSION

This thesis addressed the factors relating to the general distribution of barns in Lincoln County, Kansas, and the distribution of particular barn types. Some of the major forces behind barn distribution and their types are the practical settlement needs due to both environmental and cultural factors. A first general hypothesis addressed by the thesis was that the spatial distribution of barns in Lincoln County is a function of three factors: topography, building materials and ethnic settlements. A second hypothesis stated that these same three factors are major forces shaping the distribution of specific barn types in Lincoln County.

Of the three factors hypothesized to influence barn types, topography had the most significant impact on the overall distribution of barns and, in general terms helped determine barn locations. It is also true that topography established, in broad terms, the general locations as to what could be grown where--i.e., topography indicates the land fertile and flat enough to be tilled or those areas that would be too rugged to be farmed but could be used for

grazing. Humans make the final decision of the location of the barn but whether or not a farmer can subsist on the land depends greatly on a site's topography. This factor, therefore, establishes the likelihood of a barn being located on a particular site in the county.

Turning to the the clustering of specific barn types in Lincoln County, one notes they are only minimally affected by topography. This weak relationship can be understood in that immigrants chose certain locations in the county because of the topography which allowed for particular farming practices to coincide with areas that might require a specific barn type. This relationship can be seen in that one barn type, e.g., the English barn, can be found predominantly in areas of the county that have a a slope of less than two percent, yet it is also found in some areas of the county that have a greater slope, as in the southwest portion of the county.

Turning to building materials and general barn distribution, one finds that the locationtion of building materials was not as significant as topography as a primary factor in the overall pattern of barn distribution in Lincoln County. All Lincoln County barns, to some extent, seem to cluster in areas of the particular availability of building materials. Upon closer examination, one realizes that these clusters do not depend on the building materials but more on the rela-

tionship of materials to topography. The topography directly influences the availability and location of a building material. This can be seen in Elkhorn township where barns are generally constructed of wood which was availabile along the Saline River.

In regard to building materials and specific barn types, it was found that building materials did not have a major association. Most of the barn types found in Lincoln County were constructed in all material combinations. More specifically, none of the barns, except possibly the single-crib, were constructed predominantly of one building material over another. A possible reason why the single crib barns were found to be constructed only of stone is that they were the earliest barns constructed in the county and, possibly, many of those constructed out of wood have not survived. Another possibility is that there was a limited supply of lumber available for construction that few of these barns were constructed of wood.

Turning to ethnic settlement, one finds that overall no identifiable relationship occurs regarding ethnic settlements and the general distribution of the barns in Lincoln County. The only relationship noted is a consequence of the fact that some of the land was purchased site unseen by the landowner from an agent representing the ethnic group. Many immigrants depended on these agents to help them find suit-

able farming land that was also close to people of the same ethnic background. As a result, barns appear in areas that probably would not have been chosen as farm land if the immigrants had searched for farm land themselves. This pattern can be seen in the Bohemian and Danish settlement areas.

When one exaimines the distribution of specific barn types in the county, one finds that particular ethnic groups brought to Kansas their cultural background of a specific farming type and supported it by constructing the particular barn form that best suited their needs. Each barn type chosen expressed the dreams and aspirations of its builder who sought to establish the future growth of his farms by constructing a barn which would support his agricultural goals. Some ethnic groups catered to grain crops while others raised livestock. The result, as this study has shown, is a great variety of barn types. For example the Danes, who were dairy farming in their own country, usually constructed Wisconsin dairy barns here in America, including in Lincoln County.

Figures 6.1 and 6.2 illustrate the conclusions of this thesis in graphic form. In both diagrams, the major factor influencing spatial distribution of barns is shown conceptually as the boldest arrow. Figure 6.1 illustrates the relationships among topography, building materials and ethnic

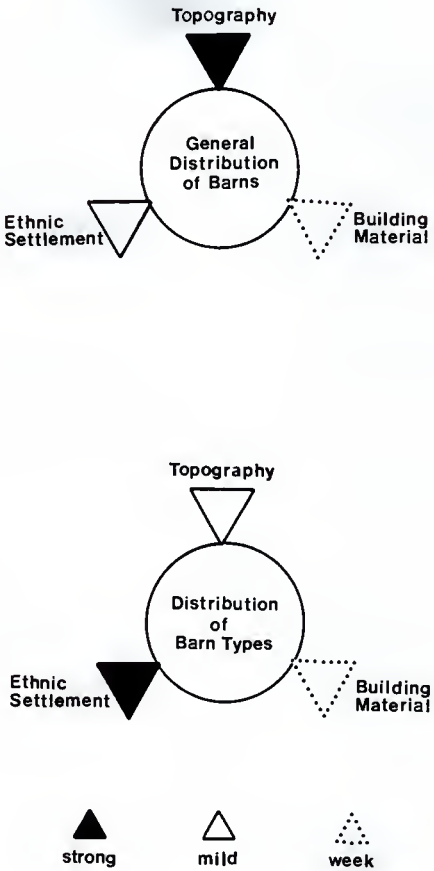

Fig. 6.1 & 6.2 Major factors influencing the general spatial distribution of the barns in the county and the distribution of specific barn types found in Lincoln County.

clusters in regard to general spatial distribution of barns in Lincoln County. Figure 6.2 identifies the relationship of these three factors in regard to the distribution of specific barn types. Each factor--topography, building materials and ethnicity--has contributed in varying degrees to the barn types and their distribution and variation.

Although the barn types found in Lincoln County have been identified in previous studies, the forms often were variations. For example, in the adapation of available building materials and the use of roof shapes in Lincoln County not always common to the same barn types in other parts of North America. In other studies (e.g., Marshall, 1981; Glassie, 1974), several barn types were identified as having specific building materials used in their construction but, in Lincoln County, the constancy of such characteristics did not always hold true. This is evident in the description of the English barn, which generally is said to be of board and batten construction (Coffey, 1976). In Lincoln County, however, it was found that the English barns were constructed of a variety of building materials--stone, wood, or a combination. Another example is that in previous studies the Wisconsin dairy barn is consistently constructed with a gambrel roof (Coffey, 1978). In Lincoln County, however, gambrel roofs were the minority and as the gable roof was much more frequent.

This thesis has provided a basis for better understanding one component of the cultural landscape of Lincoln County--the barn. The findings here, however, are only a beginning. Additional research on Lincoln County barns is needed. One weakness of this thesis is that the author was unable to examine extensivly where the barn types found in Lincoln County originated. Did they arise from cultural traditions, or were they produced by what settlers saw on their way west or in the Kansas environment itself? Clearly, in some cases, the great difference in the types as compared with the conclusions of other literature on North American barns indicated that barns in Lincoln County were often affected by the elements and forces in the external environment, such as the types of barns neighbors constructed or what builder saw in farm magazines. On the other hand, many of the barn forms of Lincoln County demonstrate that building methods and forms possibly arose from the farmer's native region, for example, the strong presence of the Pennsylvania Dutch barns, whose form is very much like that of barns in eastern Pennsylvania.

The above discussion indicates that there are many factors that may have contributed to the barn types constructed in Lincoln County and this author was able to examine only a few. Additional research, valuable in better understanding the North American barn, should include the study of the influence of written materials available on barn types and

construction. Such sources as the Agricultural Experiment Stations' publications, national magazines such as the Cultivator and the newspapers distributed among ethnic groups, might provide useful indicators of the kinds of external information on barns available to farmers in Lincoln County. Also, in this study it was impossible to identify influences that may have had impact when farmers settled in an interim location on their way to Kansas. This information generally is not available in public records but perhaps could be gathered from surviving family histories and diaries.

In summary, each of the following studies would add valuable information and understanding of both Lincoln County and North American barns:

- studies of physical variations within each barn type;
- closer examination of those barns that could not be classified;
- studies of constuction methods associated with the different building materials in the county.
- development of a method for obtaining the dates of barn construction, which would assist in a better understanding of the development of the barns in Lincoln County.
- studies of the relationship between the barns in Kansas and other parts of the Great Plains;
- studies of ethnic influences and antecedents in both Europe and North America, which may have had a bearing on barn types.

IMPLICATIONS FOR THE STUDY OF BARNS

An academic study of barns in Lincoln County is well and good, but one must also ask the practical value of such research. This worth can be understood by considering the basic purpose behind historic preservation.

> ...structures and landmarks are history in tangible, three-dimensional form, preserving the record of man's life and activity, his values and achievements; in more vivid and meaningful terms than any written or pictorial record can possibly offer (Connecticut Historical Commission, 1970, p. 3).

Too often historic rural features, including barns, go unrecognized and unappreceiated as a part of architecture and the historic significance of an area. If one looks more closely, however, one realizes that agricultural architecture, including barns, is significant and should be studied for three reasons: (1) rapid disappearance of the barn from the landscape, (2) the barn as a significant indicator of cultural relationships, and (3) the barn as evidence of environmental compatibility.

First, it is important to record the barns before we lose entirely information about the barn and the early settlers who built them. Overall, there has been little documented and written regarding the early pioneers in Lincoln County and their settlements. Urgency is needed in recording the barns because they are relatively fragile structures; several of the barns that were recorded in the intial survey in

1982 are rapidly deteriorating. Many of the barns are lost because of collapsed roofs from heavy snowfalls while other barns have been destroyed by fire and only the exterior stone shell remainds. All of these barns are significant to the agricultural character of the county and it would be unfortunate in terms of cultural and historical heritage if the barns are lost, because of natural causes, before a thorough documentation is completed. It is possible that the cultural impression of today in reality does not reflect the true aspects of the landscape but, because of the lack of documentation over the years, it is the only information available and therefore should be recorded and studied as thoroughly as possible.

It is difficult to imagine what the rural landscape would be like if the barns were entirely lost, yet these barns are disappearing at an alarming rate. If each of the 1,611 farms that existed in Lincoln County in 1880 had a barn, then today only 492 (thirty-one percent) still exist. Granted, it may be true that many barns may have been constructed after 1880, resulting in more than 1,611 barns built between the 1870's and 1940. Yet, what would our perspective be of the county if they all existed today? Possibly a better understanding could be gained of what it took to establish a farm during the past century and who the settlers were.

Although it is understood that the barn in the American landscape is disappearing at a high rate every year, what is the specific practical value of studying and preserving these buildings? Grant (1971) states that:

> justification for such an effort follows the reasoning of if we don't know what historic structures and land features we have, we don't know what we may be losing. And to lose these elements of our historical heritage...means that we may lose forever evidence of architectural relics and life styles which are unique distinctive, or rare. (page 32).

In the past many vernacular buildings have disappeared; as a result, a vast reservoir of information has been lost which would indicate how life existed in historic times. These ordinary buildings generally "provide a stabilizing influence on peoples lives"; they provide a "confidence in the future." (Lowenthal and Binney, 1981, pg. 69).

The efforts at historic preservation in urban areas provides some general guidance for rural landscapes but, overall, the preservation needed in rural environments is so different from the urban situation that another set of guidelines and practices must be established. In large metropolitan areas and towns, adaptive use can be promoted as a means of saving a building in disrepair or in danger of demolition. In rural areas, however, buildings often deteriorate because of lack of use. The building is no longer efficent and may be used for general storage or be allowed to gradually deteriorate. A building in an urban setting is

often lost because another use is desired for the land--e.g., as a parking lot or as a site for another building. In contrast, a rural building is often lost because of deterioration and lack of maintenance; the site is generally not used again for a building. Therefore, principles used in urban areas are not generally applicable to the rural site.

In a study conducted by the Kansas State Historical Society, it was found that many rural buildings were disappearing because of (1) farming methods, (2) development of farmland for other uses (3) lack of historical persceptive and (4) financial problems (KSHS, 1984). In relation to barns, only one of these factors can easily be changed--the lack of historical prespective. This fact indicates that there is a strong need to change attitudes of present owners and people living in rural areas. The preservation movement has outgrown its early intentions of preserving only those buildings that were historically significant because of a dramatic personage or event (Fitch, 1982). Preservation work today also looks at how the average person of different historical periods lived day by day. Not only is 'high style' architecture worthy of preserving but also vernacular architecture. Today, preservation is just as concerned with the contributions made to the built environment by ordinary people--not just the elite. As a consequence, the preservation movement has opened "our eyes and ears to what lies around us, enhancing our own surroundings by encouraging concern about them" (Lowenthal and Binney, 1981, pg 14.).

The preservation movement has also changed in the last decade in that it is no longer desirable to set aside every significant building into a house museum or self contained historic village--as for example, is the case for Williamsburg and Old Sturbridge Village. Such an approach too often gives an imbalanced perspective of the past. These buildings lose their setting when they are moved from their original location. A first reason to examine barns, therefore, is to prevent the loss of important, irreplacable information regarding our past.

A second reason for preserving barns is to help clarify and preserve ethnic heritage and relationships. As already seen, ethnicity often has an important impact on barn types. The importance that can be gained by examining the cultural aspects of the barns as well as other rural architecture, is a better understanding of who the people were that built these structures. Both the diffusion theory of Kniffen (1968) and acculturation theories (e.g., Chappell, 1980) are based upon how a culture adjusts to a new location and its environmental and cultural factors. Although what is seen today of the agricultural landscape is only a partial impression of the early lifestyles, the examination of the architecture of the settlers is one way to better understand them.

Third, the barn of frontier America fit into the environment in an age where energy conservation as well as a careful use of agricultural resources was a way of life. Many farming methods of that time were quite inventive because farmers had to be able to adjust to the sometime harsh weather of North-central Kansas. Such environmental adaptation can be seen in the orientation of barns to the sun, particularly barns that are built into a bank. The exposed side is directed to the southeast or south and the stone portions in the bank provide a constant temperature for the livestock. Other barns--particularly those with thrashing floors--were oriented to the prevailing winds. When the thrashing machine came into common use such orientation was no longer necessary. Also it can be seen that the early farmers used the type of building materials available and adapted these materials to their plan types. Even with such recognition it is easy the take for granted the steadfastness with which the early settlers established their farms and maintained their productivity. Many of the design techniques developed by builders of barns, with creative modification and adapation, might be used in energy-conscious design today. This can be seen in the use of site orientation as it relates to the sun and the wind. Also the concept of earth-sheltered construction relates to the design of the bank barn and its ability to maintain a more constant temperature in the lower stables.

PROMOTING AWARENESS AND PRESERVATION OF BARNS

As discussed with regard to the study conducted by the Kansas State Historical Society, several factors are related to the disappearance of rural architecture in Kansas as well as other parts of North America. But what can be constructively done to facilite involvement in preserving the remaining barns of Lincoln County? There are three steps that might be taken to encourage preservation: (1) providing detailed documentation; (2) promoting greater awareness of traditional agricultural landscapes, especially among farmers who have traditional barns on their property; and (3) establishing practical incentives for preservation, especially financial incentives.

First, a more detailed documentation of the barns of Lincoln County is needed. It is important to document the barns because they can never be replaced. They represent a time in our cultural history when architecture, whether it be high style or vernacular, was constructed to be part of the landscape for a long period of time since it was costly and time-consuming to build. Today, however, little thought is given in constructing a farm building as a permanent building on the site. The cost of materials as well as the amount of time necessary to construct a barn is much less. Furthermore, the needs of the farm in the past few decades are not dependent on the barn as they once were and interchangeable buildings often are used to meet the farmer's needs.

This thesis has taken a first step in documenting the barns of Lincoln County, but additional information needs to be gathered. Measured drawings and detailed photographs need to be collected. Also, information should be collected regarding the building's history which is rapidly becoming lost because the people who had first- or-secondhand knowledge of the barns will soon be dead. Moreover, many of the present residents and landowners do not realize the significance of the barns in their county. Often, this lack of understanding exists because more information is generally available regarding the house which is usually the most prominent building on the farmsite and thus more often discussed. In many cases, a farmer's property is sold for non-agricultural uses and often the buildings become vacant. As a result, the new landowners may not take an interest in the history of the barn or other buildings on the site.

These difficulties lead to a second step needed in preserving the North American barn--i,e,. promoting among both farm owners and the general public a greater awareness of the cultural and historical significance of the barn. It is important that information about barns be made available to the farmers and residents in both Lincoln County specifically and Kansas as a whole. Such information could be provided in agricultural or historical publications as well as in local and area newspapers. Along with this material, information on barn maintenance and repair should be developed

and distributed. Frequently, well intended attempts to save a building are futile because of the method of preservation. Instead of protecting the building, wrong preservation efforts lead to the barn decaying faster (Mc Kee, 1976). The State Historical Society, the National Trust for Historic Preservation and the National Park Service need to provide as much help as possible in promoting understanding of rural preservation.

Another method of gaining public involvement is the possibility of a self-guided tour of the most significant barns in Lincoln County. The possibility would not only generate greater rural pride, especially in regard to barns, but also bring tourist monies into Lincoln County. Table 6.1 and Figure 6.3 illustrate several of the barns that contribute greatly to the character of the rural, cultural landscape in Lincoln County. Those structures marked by a circle can be seen easily from the public right-of-way while those marked by a square require permission to enter the property. It is important to note that all of the barns that are discussed in this study and those included on the suggested tour are privately owned and it is important to respect the property owners individual rights. Each of these barns has unusual characteristics that distinguish it from other barns in the county, for example, an unusul combination of building materials or a particularly good example of a specific barn type. The listing of these barns in

TABLE 6.1
SELF-GUIDED TOUR OF THE BARNS OF LINCOLN COUNTY

ID #	Figure #	Description
1.	4.4	Wisconsin Dairy Barn: Constructed out of Post rock and sandstone. Built for a man from Switzerland by a Norwegian.
2.	5.65	Combination plan: Built by a German.
3.	5.15	Dutch Barn: Gambrel Roof
4.	5.36	English Barn: Two barns at right angles, one constructed of stone the other a combination of stone and wood.
5.	5.57 5.58 5.59	Connected Barn: original dugout and horse barn are located on the lower level while the residence is located above. Built by an Irishmen.
6.	5.48	Stable and Shed: Stone and Wood Combination with and addition.
7.	5.48	Stable Barn: Wood and Stone Combination.
8.	5.24 5.31	Pennsylvania Dutch Barn: with a wood high-drive and a pent roof. Built by a man from Pennsylvania
9.	5.61	Linear Barn and Outbuildings. Built by a Dane in 1916.
10.	5.41	Single-Crib Barn: Stone Construction.
11.	5.28 5.29 5.30	Pennsylvania Dutch Barn: with a forebay and double crib in the front, and a double drive floor, also large unmilled wood is used in the lower level. Built by a man from Pennsylvania.
12.	5.52	Erie Shore Barn: Gambrel Roof, stone and wood combination.

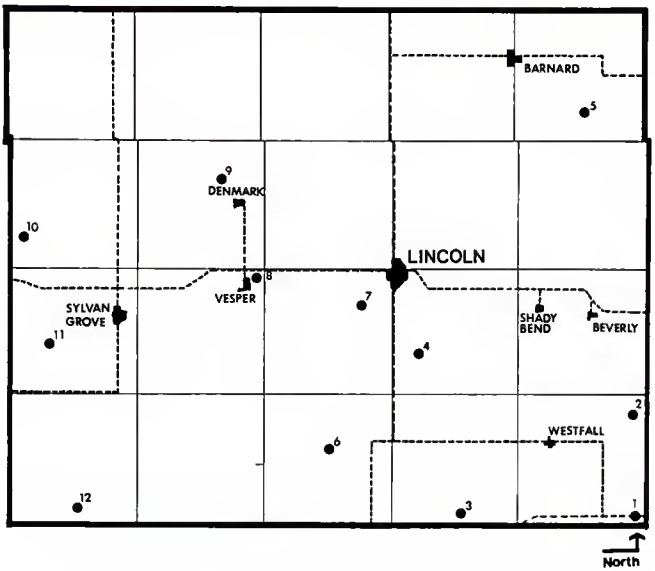

Fig. 6.3 Self-Guided Tour Map of Lincoln County

particular in regards to the tour, however, does not deminishes the value and importance of the other barns in the county.

Two examples of significant structures which could be incorporated in such tour are the (11) Newcomer barn and the (5) Shirley barn (Figures 5.28, 5.29, 5.30; 5.57, 5.58, 5.59). The Newcomer barn reflects and illustrates traditional Pennsylvania Dutch architecture. It is a fine example of the typical characteristics found in the Pennsylvania Dutch barn, particularly forebay and ramped central drive. The Shirley barn is a building that has had a metamorphic change over time: begun as an early dugout dwelling, it was gradually extended to include the barn on the lower level and human dwelling space in the upper story. It is still possible to identify the location of the early dugout in the stabling area; one can see the stones walls were laid without the use of mortar. Both of these barns are different yet they reflect underlying cultural and historical traditions.

A third step in saving barns is to help provide creative financial assistance for repair or adaptive use. One possible financial support is tax incentives to preserve those barns that are unique in their characteristics or are typical of the majority of barns in Lincoln County. As a result, it could reduce the tax burden on the landowner who may be interested in restoring their barn. But at the pres-

ent time this program will continue for any length of time so other means must be considered. Another possiblity is the provision of "seed" money that could provide incentives to some of the more financially secure farmers to promote the preservation of their own barns. It might possible that this funding could come from such sources as agri-buisness companies or organizations.

In conclusion, the key to saving traditional barns including those in Lincoln County, Kansas, is education and involvement. They should provide public and private awareness along with financial incentives and assistance to those groups and organizations that are interested in preserving the North American barn. Why preserve the barn? It is a reflection of successful past and future harvests. The farmer built his barn on the promise of tomorrow and hope in the land's production. Although at this time Lincoln County may not be established as an offical historic landscape, the identification of those rural buildings of importance may someday lead to a deeper awarness of the stricking cultural and historic heritage to the county, state and nation.

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APPENDIX A

KANSAS HISTORIC STRUCTURES INVENTORY

PART I

1. Property Name:_____

2. Inventory No._____
(HPD) use only)

3. Address:_____

_____

_____

4. Legal Description:

5. Owner:_____

Owner's address:_____

_____

Tenant:_____

6. Property Identification:

Site	Nonsheltering structure
Building	Complex

7. Functional Type:

Commercial	Institutional
Industrial	Rural Outbuilding
Residential	Commemorative
Ecclesiastic	Storage
Government	Civil Engineering

8. Current Usage:

9. Condition:

Excellent_____ Good_____ Fair_____ Deteriorated_____

Ruins_____ No visible remains_____

10. Environment:

Rural	Industrial
Urban/dense	Government
Urban/scattered	Institutional
Residential	Other
Commercial	

11. Accessible:

Yes: Restricted_____ Yes: Unrestricted_____ No:_____

12. Style:

13. Construction Date:

14. Architect/Builder:

15. SKETCH SITE PLAN/BUILDING PLAN

Date of Inventory_____

Inventoried By_____

PART II

Inventory No._____ _____
Property Name: _____

Property Description

1. Dimensions and Shape:

Height	Stories
Length	Bays
Width	Wings

2. Foundation:

Materials
Basement

3. Wall Structure:

Wood Frame
Masonry

4. Wall Covering:

Materials
Color

5. Roof:
Shape
Materials
Cornice
Dormers
Chimney location(s)

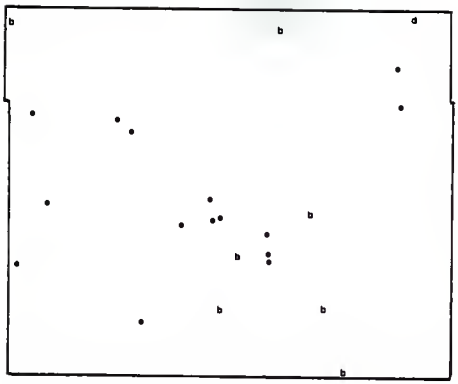
6. Windows:
Spacing
Type
Trim
Shutters

7. Door:
Spacing
Type
Trim

8. Porches:
Location(s)
Materials
Supports
Trim

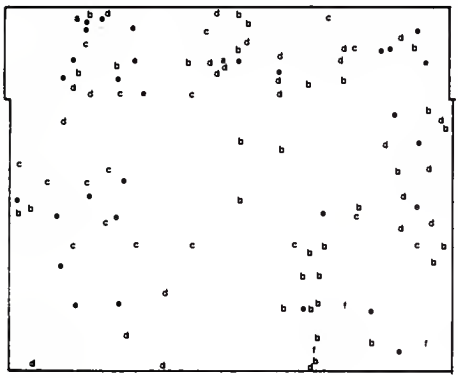
9. Interior Details:

APPENDIX B

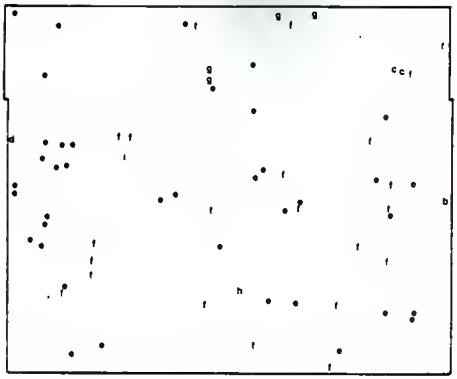


a IRELAND
b ENGLAND
c SCOTTLAND
d CANADA

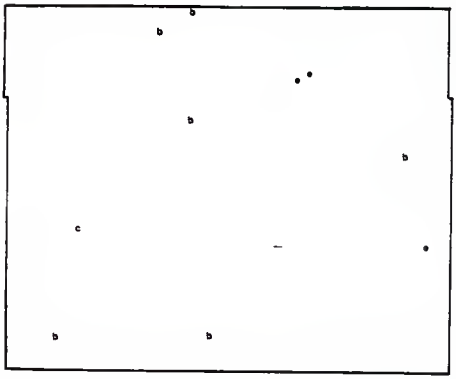
a DENMARK
b SWEDEN
c SWITZERLAND
d NORWAY
e GERMANY
f AUSTRIA
g BOHEMIA



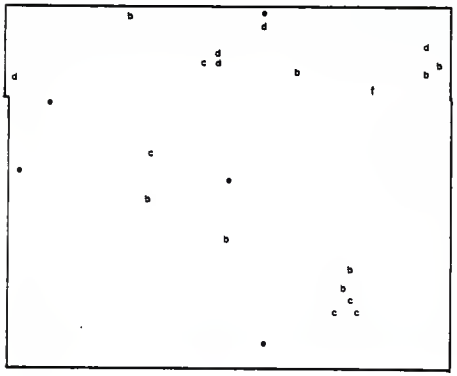
a OHIO
b INDIANA
c ILLINOIS
d IOWA
e MISSOURI
f KANSAS



a KENTUCKY
b VIRGINIA
c WEST VIRGINIA
d NORTH CAROLINA
e MARYLAND
f TENNESSEE



a MICHIGAN
b WISCONSIN
c MINNESOTA



a NEW JERSEY
b MAINE
c CONNECTICUT
d VERMONT
e PENNSYLVANIA
f NEW YORK
g NEW HAMPSHIRE
h MASSACHUSUTTS

ID# _____ Township _____ Range _____ Section _____

Roof Shape

1	2	3	4	5	6	7	8
 Gable	 Gambrel	 Hipped Gable	 Hip	 Gablet	 Pyramid	 Barrel	Other

Dormer

1	2	3	4	5	6	7	8
Gable	Triangle	Hipped Gable	Shed	Hip	Other		Other

Stories

1	2	3	4	5	6	7	8
1	1½	2	2½	3			Other

Building Materials

1	2	3	4	5	6	7	8
Stone & Wood	ALL Wood	ALL Stone	Stone & Tin	Tin Sided			Other

Wood I

1	2	3	4	5	6	7	8
 Boards & Batt	 Shiplap	 Clap	 horizontal	 Shingle			Other

Wood II

1	2	3	4	5	6	7	8
 Boards Batt	 Ship Lap	 Clap	 Horizontal	 Shingle			Other

Stone I

1	2	3	4	5	6	7	8
Post rock block	Post rock rubble	Post rock corners & Sandstone rubble	Sandstone Cut	Sandstone Cobble	P. Rock & Sandstone rubble		Other

Stone II

1	2	3	4	5	6	7	8
Post Rock block	Post rock rubble	Post rock corners & Sandstone rubble	Sandstone Cut	Sandstone rubble	P. rock Sandstone rubble		Other

Stone & Wood Combination

1	2	3	4	5	6	7	8
 Brick	 Base	 Eaves	 All stone	EH D			other

Additions

1	2	3	4	5	6	7	8
 3 Gable	 side	 2-Side	 1-End	 Side & End	 3-side	 2-side	No Addition

ID#

Site to Road

1	2	3	4	5	6	7	8	9	10	11
			3 Cnbk							other
road	Road	road								

Ridge Orientation

1	2	3	4	5	6	7	8	9	10	11
North/ South	East/ West	Pyramid	3 gable	Angle						other

Cupola

1	2	3	4	5	6	7	8	9	10	11
1	2	3	4							Not Available

Hay Hood

1	2	3	4	5	6	7	8	9	10	11
										Not Available
Triangle	Bar	BOX								

Drive Entrance

1	2	3	4	5	6	7	8	9	10	11
									Not Available	other
END	Side	Both	2-Side	2-END	2-level					

Fore Bay

1	2	3	4	5	6	7	8	9	10	11
North	South	East	West							Not Available

Plan Type

1	2	3	4	5	6	7	8	9	10	11
English	Dutch	Transom Crib	Wisc Dairy	Stable	Single Crib	Multi-level	Erie Shore	Connected	Shed Crib	Unknown

Site Orientation

1	2	3	4	5	6	7	8	9	10	11
										other
						Bank	Vo House	Lean-to		

Man Made Ramp

1	2	3	4	5	6	7	8	9	10	11
										other

Bay

1	2	3	4	5	6	7	8	9	10	11
1	2	3	4	5						

1 DENMARK	10 England	19 New Hampshire	28 Vermont	37 Michigan						
2 Scotland	11 Ireland	20 South	29 New Jersey	38 Wisconsin						
3 Canada	12 Bohemia	21 Mass.	30 New York	39 Missouri						
4 Switzerland	13 Russia	22 Conn	31 Colorado	40 Kansas						
5 France	14 Austria	23 West Virginia	32 Rhode Island	41 Tennessee						
6 Holland	15 Finland	24 Virginia	33 Maryland	42 Vermont						
7 Germany	16 Spain	25 Kentucky	34 North Carolina	43						
8 Sweden	17 Navarre	26 Pennsylvania	35 Wisconsin	44						
9 Norway	18 Illinois	27 MAINE	36 Minnesota	45						

Notes

APPENDIX C

BARN TYPES OF LINCOLN COUNTY, KANSAS: THEIR SPATIAL DISTRIBUTION AND VARIATION OF FORM

by

CYNTHIA SUE TOOKER

B.S., University of Nebraska, 1977

A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF ARCHITECTURE

College of Architecture and Design

Kansas State University
Manhattan, Kansas

May, 1985

ABSTRACT

This study examines the variation of barn types in Lincoln County, Kansas, and identifies the environmental and cultural influences that may have affected the development of barn types and their spatial distribution. Specifically, the focus involves three themes:

(1) spatial distribution of the barns within the county, which includes the location of the sites in relation to geographical and cultural factors.

(2) construction materials, which include wood and a unique stone material called post rock Limestone;

(3) form type, which relates to the physical shape of the building--i.e., the combination of plan, elevations and function.

The research involves two phases. First, an inventory was completed of the 492 existing barns in Lincoln County constructed prior to 1940. Second, the study catalogued and examined factors which may have led to variations in barn forms. The basic intent of the study was to examine the physical and human qualities which might help explain the barns' spatial distribution. This aim was accomplished by identifying the total population of barns and considering

their relationships to topography, building materials and ethnic settlement in the county. After examining the overall distribution of barns found in Lincoln County, the author investigated the spatial distribution of particular barn types: Wisconsin dairy, stable, Dutch, Pennsylvania Dutch and other multilevel barns, English, Single-crib, Stable and Shed, Erie Shore, and Connected barns. Again, a relationship was found between spatial distribution and topography, building materials and ethnic settlement patterns.