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Omaha Intrametropolitan Locational Changes in Manufacturing: 1969 to 1987.

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OMAHA INTRAMETROPOLITAN LOCATIONAL CHANGES IN MANUFACTURING: 1969 TO 1987

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by

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THESIS ACCEPTANCE

Accepted for the faculty of the Graduate College, University of Nebraska, in partial fullfillment of the requirements for the degree Master of Arts, University of Nebraska at Omaha.

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ABSTRACT

Studies of locational change in manufacturing at the metropolitan scale have attracted an increasing amount of research interest. The evolution and variety of theories of intrametropolitan location of American manufacturing has been documented in the literature. The primary objectives of this study are to; 1) examine locational changes in manufacturing within Omaha metropolitan area between 1969-1987, and; 2) assess Omaha's industrial change pattern as to how it fits into the theoretical pattern as established in the literature.

Through the technique of devising a three-zone spatial base across the metropolitan area, it was determined that manufacturing employment in the downtown or inner area has declined relatively to the suburban zone. Manufacturing in the suburban area has performed better by growing faster than manufacturing in the city center. Land zoned for industrial use in downtown Omaha, and industrial parks developed with accessibility to interstate systems were the major factors for present distribution of industrial firms.

The suburban zone in the Omaha SMSA appears to have greater potential for increased industrial development. Omaha may very well continue to develop in a way as predicted in the models of urban manufacturing change. However, at present, Omaha has just began the suburbanization phase of manufacturing, unlike most cities over the U. S. as studied in the literature.

ACKNOWLEDGEMENTS

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CHAPTER i : INTRODUCTION

1.1 Introduction

Locational patterns of manufacturing industries have long been recognized as having a dynamic character. A central task of contemporary industrial geography[1] is to describe and explain changes in the spatial pattern of industrial activity. The emphasis in industrial geography is on explaining where and why changes in the location of industrial activity have taken place and on trying to understand why some areas experience industrial growth and other areas experience industrial decline.

Changes in the spatial pattern of industrial activity can be seen at a variety of spatial scales: international, national, regional, inter-urban and intra-urban. Studies of locational change in manufacturing at the metropolitan scale have attracted an increasing amount of research interest. It is the intent of this study to examine locational changes in manufacturing within Omaha, Nebraska and surrounding metropolitan area between 1969-1987,

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1
The term "industry" in its widest sense refers to all economic activities. It is used in this way in referring to the fishing industry, the electronics industry or the retailing industry, but industrial geography is not the study of the location of all economic activities and its sphere of interest is usually restricted to what is called manufacturing industry. This also includes industries which 'process' mineral, agricultural and forest products.

and to determine how Omaha fits into the overall framework among U.S. metropolitan areas.

1.2 Literature Review

It is difficult to generalize about the changing location of manufacturing activity within urban areas since much research in urban industrial geography is confined to case studies of a single urban area. To the casual observer, the landscape of metropolitan areas appears to be haphazardly peppered with manufacturing activities of every description, with factories of every magnitude. However, beneath this superficial disorder and confusion, certain spatial regularities can be discerned (Pred, 1964). Pred divided the evolution of intrametropolitan location of American manufacturing into five stages: (1) before "industrial revolution", (2) the early "industrial revolution", (3) the initial consequences of transport innovations, (4) early evidence of decentralization, and (5) decentralization in the twentieth century.

Before "industrial revolution," the manufacturing of each town was carried out in a relatively small circumscribed area which closely corresponds with the center of today's metropolis. This dominance of the central area has at least in part been perpetuated to the present. During the late eighteenth and early nineteenth centuries (early "industrial revolution" stage), as there are concomitant increases in area and population, the urban industrial structure has a tendency to increase in its spatial complexity. The limited physical mobility of the working force and the modest scale

of urban agglomerations were still the keystones of intraurban industrial location. The extension and intensification of the national railroad network in the mid and late nineteenth century (the initial consequences of transport innovations stage) reinforced the industrial significance of the central areas in the largest urban concentrations. About 1900 (early evidence of decentralization stage), the absence of an intricate rapid transit network, and the necessity for manufacturers to build even the most slipshod of laborers quarters, often acted as powerful deterrents to the suburban diffusion of manufacturing.

Only after 1900 was the pattern of downtown industrial concentration emphatically broken by the advent of new industries with new locational patterns. With the wide-spread utilization of rapid transit and the coming of automotive transportation, the intrametropolitan distribution of manufacturing has decentralized considerably (Pred, 1964).

The dynamic character of intrametropolitan industrial location patterns in North America and Western Europe has been recognized since the turn of the century. However, dramatic change in intrametropolitan manufacturing location has been especially characteristic since the 1960's, according to the Kain studies of 1968 and McHone's (1986).

Kain scrutinized average annual changes in employment for the central cities and suburban rings of 40 large SMSAs in the United States from 1948 to 1963 (Table 1.1). Over this entire period, manufacturing employment in central areas has declined relatively to suburban ring areas. In addition, as listed in Table 1.1, central

city areas over the 1950s and 1960s lost, in absolute terms, large numbers of manufacturing employment, but in the same time, suburban rings gained significantly (Kain, 1968).

Table 1.1 : Estimated Average Annual Changes in Employment and Population for Central Cities and Suburban Rings of 40 Large US SMSAs

	Central City			Ring		
	1948-54	1954-58	1958-63	1948-54	1954-58	1958-63
Employment						
Manufacturing	218	-2,122	-3,462	2,396	1,262	4,180
Wholesaling	-85	55	-198	425	767	831
Retailing	-588	188	-985	896	2,263	1,931
Services	479	1,011	294	510	874	756
Population	464	25	-4,595	31,491	36,722	41,000

source : Kain (1968).

The dramatic change in intrametropolitan manufacturing location has been especially characteristic since the 1960's. The examination of recent data on the spatial distribution of manufacturing employment in the largest metropolitan areas of the U.S. indicates that the majority of the new industrial location is occurring in the suburbs. Evidence is provided by an examination of changes in the spatial distribution of manufacturing employment over the period 1963-1977 in the 84 largest SMSAs. In 1963, 29 percent of these SMSAs had more manufacturing employment in the suburbs than in the central cities. By 1972, this figure had grown to 38 percent and by 1977 it had topped 50 percent (McHone, 1986). In recent times, the striking feature is that manufacturing in the

suburban ring has performed better than the central city by declining more slowly, by growing when the center is declining or by growing faster than manufacturing in the center (Watts, 1987).

Studies of locational change in manufacturing at the metropolitan scale also suggest that manufacturing relocation may not be a single process of decentralization common to all large metropolitan areas. It seems that while many urban areas have experienced decentralization for some time, there is considerable likelihood that several large cities are only currently beginning to experience this process, primarily because of a "youthfulness" stage of development, in comparison to many more mature, industrially-based cities (Hamer, 1973).

In this thesis, literature on both the empirical implications of the models and the main theoretical attempts that have so far been made to explain industrial decentralization in the large metropolis shall be reviewed. Specifically, two methods and four types of theories will be surveyed.

Urban models have generally approached industrial location in three ways. Some recent studies, notably large-scale transportation land use models, have dealt with the dynamics of industrial location at a aggregate level (Goldberg, 1974; Struyk and James, 1975). Still other studies, have treated location as as an optimization exercise, skirting its dynamic and behavioral aspects (Goldstein and Moses, 1975). The last two types of data analysis techniques to examine industry location are either specifically a zonal approach or an individual firm approach (Schmenner, 1977).

(1) Zonal Approach

Most zonal studies of industrial location have data collected by location zones whose definitions have varied from broad city-SMSA splits to individual zip-codes. Such studies have generally compared measures of the density of industrial activity across zones, and the density measures used have applied either to all firms in a zone or to various subcategories of firms such as nonmovers, movers, births, or deaths. These categories characterize the pattern and change of industrial location within each zone. Locations in the model constructed vary in their relationship to the city center (e. g., unit transportation cost to the city center), in their prevailing levels of rent and in their tax rates. Thus, for any period of time t, the usual regression specification here takes the form:

Density of Located Industry in Period t or Changes in Density between Period t and Period t+1= f (unit transportation costs to city center t, rent t, tax rate t)

(2) Individual Firm Approach

Some researchers are not satisfied with the zonal approach because they think it is difficult to employ a proper level of zone data aggregation (Schmenner, 1977). The alternative for these researchers is to devote themselves to data on individual firms. The individual firm can choose to move or not. This simple choice suggests the use of a 0-1 dummy as a dependent variable in a regression specification. The regression specification takes the following form, defined for any period of time t:

Mover Dummy Variable t { 1 if firm moves in period t / 0 if firm does not move in period t

= f (size t-1, percentage change in size between t and t-1, transport costs per unit output t-1, rent per unit output t-1, taxes per unit output t-1, distance to city center)

Either a zonal approach or an individual firm approach has both advantages and disadvantages. Some think that the zonal studies stand more as suggestive than as conclusive. In fact, much of the very worthwhile work by industrial and urban geographers (Fisher and Park, 1980, Hamilton, 1974) adopted these methods. The approach reveals both a temporal and spatial component to manufacturing dynamics in metropolitan regions. It will make the zonal approach more comprehensive if the method combines with research on behavioral aspects of firms, such as a number of case studies and series of company interviews.

The individual firm studies, on the other hand, deal exclusively with the decision to move or not to move, and thus can not say anything about how mover firms distribute themselves across a metropolitan area. In order to treat this question, alternative techniques have to be employed, such as some simple cross-tabulations which are designed to point up the differences between mover and nonmover firms.

There exists in the literature a bewildering variety of attempts to construct a theory of intrametropolitan industrial location and to explain the phenomenon of industrial decentralization in a large metropolitan area. Perhaps the most

elaborate of all the currently prevailing attacks on the problem of intra-urban industrial location are the incubation, product cycle and hierarchical filtering theory; spatially-structured Heckscher-Ohlin effect; market approach by McHone; and ideal-typical conceptual framework by Wheeler and Park.

(1) The Incubation, Product Cycle and Hierarchical Filtering Theory

Incubation theory begins with the notion that small, new and innovative firms search out for themselves a maximally supportive economic environment (Vernon, 1957). The core of the city acts as an incubator for immature and marginal firms. The surviving, small, new firms become ever more self-sufficient as institutional entities, and eventually, they can even disperse entirely with the positive agglomerative effects supposedly found only at central city location. Therefore once firms have outgrown their original premises, or the agglomeration economies no longer exist, they tend to abandon the central city with its inordinately high land prices, and to take new locations in the suburbs (Hund, 1959; Goldberg, 1969, 1970).

In an attempt to broaden the base of incubation theory, the notion of a product cycle was grafted on to it. (Norton and Ree, 1979). In the early phases of the cycle when a new article has just appeared on the market, firms engaged in the manufacture of the article tend to be small, and are likely to seek out positive agglomeration economies at an inner city location. As the market for the article expands, the production process becomes more standardized and firms grow larger; thus firms now become increasingly independent of the central city and start to move out

to the suburbs. Finally, as the production process evolves into full maturity, firms begin to establish capital intensive branch plants in medium-sized and small towns far away from the major urban centers. This latter process constitutes the filtering component of the theory, and it signifies that as industrial processes develop and mature so they will be likely to be spun off from the large metropolitan regions and to filter down through the urban hierarchy.

This theory has to its credit a major concern for the long run dynamics of industrial location. It proceeds on the basis of, first, a conception of the locational needs of small new firms; second, an analysis of the evolutionary pattern of outputs as firms grow and mature, and third, a concomitant description of the diffusion of firms down through the urban hierarchy. The incubation, product cycle, and hierarchical filtering theory touches at several points on some of the essential ingredients of any definitive explanation of the locational patterns and dynamics of industry in the modern metropolis and its surrounding region. It still fails to address rigorously and coherently the crucial question of technical change and the substitution of capital for labor in the production process, and its strictly geographical components remain largely unresolved (Scott, 1982).

(2) The Composite Theory of Spatially-Structured Heckscher-Ohlin Effect

Norcliffe and Stevens found that the large contemporary metropolis exhibits a definite spatially-structured Heckscher-Ohlin effect. In recent decades, in large metropolitan regions, core areas have tended to have a comparative advantage for labor intensive

industrial activities, while peripheral areas have tended to have a comparative advantage for capital intensive industrial activities.

It has already been shown how industrial firms of all kinds (i.e. both materials intensive and labour intensive) in the nineteenth-century metropolis tended universally to gravitate towards the urban core. Here, the theory is based on a prior conception of the capitalist commodity producing process, that is, the geography of enterprise in the modern metropolis is rooted in the dynamics of capitalist commodity production; any growth of new production at the core of the city immediately establishes the foundations of its own eventual dissipation in the form of new rounds of the decentralization of economic activity. It will be shown that the locational trends of industry in metropolitan areas have nowadays become differentiated into two main components. The contemporary intra-urban locational process is represented by the tendency for labor intensive firms (such as clothing production, printing, food products, and furniture) to cluster together at the center of the metropolitan labor market and for capital intensive firms (such as billing, accounting, handling of sales orders) to seek out cheap land inputs at relatively inaccessible peripheral locations. Accordingly, as the historical process of the displacement of labor by capital in manufacturing industry has gone forward, so firms have steadily dispersed away from core areas within the metropolis.

This theory, however, deducts a problem of urban industrial geography from a political point of view. It may well be, in fact, that the case of Canadian metropolitan areas represents an ideal laboratory for the study of this process at the present time, since

the recent decay of their core areas appears to have been much less severe than in the case of large cities in Britain and the United States (Scott, 1982).

(3) Market Approach

Wasylenko (1980) and Fox (1981) studies found that local tax differentials are statistically significant determinants of the pattern of industrial land use in suburban communities. McHone (1986) took the first step toward a market perspective which includes both the supply-side influences of local government policymakers who rule on industrial land use (i. e., the zoning board) and the traditionally emphasized demand-side considerations. The supply side of the market was developed as an equilibrium model of the suburban community's supply of industrial development rights. The demand side of the market was developed in the context of a partial equilibrium model of the intraurban location decisions of cost-minimizing industrial firms. This supply-demand model provided the basis for specifying the aggregate demand for industrial development rights in a suburban community.

The market approach model added to the growing body of evidence that local tax differentials did influence the location of industrial activity within a metropolitan area and more importantly, the model suggested that industrial taxes provided a positive, but relatively weak motivation to local governments to supply rezonings to accommodate industry. Finally, the model suggested that state and federal decisions on the location of highway interchanges can have a dramatic effect on the distribution of a metropolitan area's industrial employment base and the distribution of the fiscal

benefits of this development across suburban communities (McHone, 1986).

(4) An Ideal-Typical Conceptual Framework

In a summary approach and, based on shifts in factor costs advantages, technological change, external economies and dis-economies, policy issues, and other aspects of firm behavior, Wheeler and Park suggested that intrametropolitan locational change in manufacturing may be viewed within the framework of a S-shaped regional manufacturing growth model. This six phase sequence is a kind of ideal-typical model seeking to describe the process of changing metropolitan manufacturing location (Figure 1.1). This model represents spatially dynamic aspects of manufacturing within the context of metropolitan economic change. Inner city and suburban area will experience the growth stages at different time periods. Centralization of manufacturing begins in the initial stage in the inner city with innovation and inner-city accessibility advantages. In the second, or growth stage, agglomeration economies in the inner city may further accentuate the growth of manufacturing. However, accelerated growth cannot continue beyond some limit because the role of external economies and as the incubator function in the inner city becomes diminished. Social costs, such as environmental pollution, will also become critical in limiting agglomeration economies. Firms may be forced indirectly to decentralize through implementation of political spatial efficiencies. Moreover, firms with large scale operations and product standardization will more likely to locate in suburban areas instead of congested inner cities. As a result, the beginning of the

mature stage in the inner city is coincident with the initial stage of the suburban area, resulting in continuous growth in both areas.

Thus, with increased diseconomies in the inner city and with standardization of products, the construction of the freeway network in the metropolitan areas, suburbanization of manufacturing will be encouraged. The decline of manufacturing in the inner city will continue in the suburban dominance phase. In the same period, the suburban area will accrue greater external economies. The suburban area in this stage will not only attract manufacturers from the inner city but also display significant self-generated growth. There will, however, be some limit to the growth of manufacturing in the suburban area because the advantages of cheap labor and good transportation push industry from the metropolitan to the nonmetropolitan area. Finally, nonmetropolitan industrialization will appear after the suburban dominance phase (Wheeler, 1981).

According to Wheeler and Park's study, the suburbanization trend in the United States is probably especially characteristic of large metropolitan areas in the manufacturing belt, which experienced industrial suburbanization earlier than urban areas in south and west, where most industrial parks have been developed. Similar trends can also be found in metropolitan areas outside the manufacturing belt, though the industrial decentralization in these instances may represent a more recent trend. In summary, there are a set of stages of metropolitan manufacturing locational change; different metropolitan areas, perhaps depending on the region of the nation or on the industrial structure of the metropolis, will

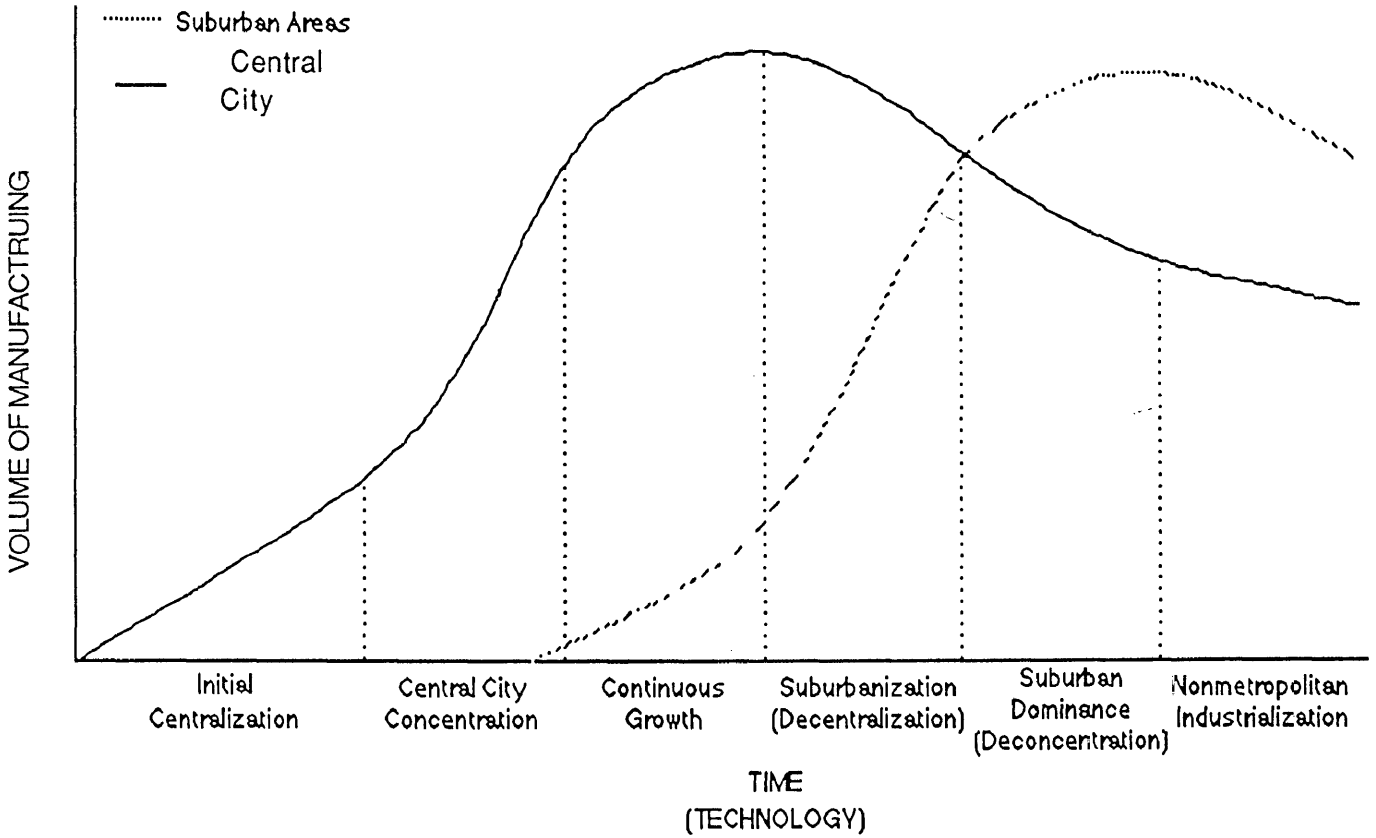

Figure 1.1 Six Phases of Metropolitan Manufacturing Locatonal Change

source: Wheeler & Park (1981).

experience these stages at different times and with varying durations and scales.

This thesis has reviewed the appropriate literature on the dynamics of industrial locational patterns in large metropolitan areas. It must be reiterated that the locational regularities, as well as the consistently random elements, of manufacturing in the great American metropolises represent tendencies, not precisely mirrored images. Spatial tendencies are then the product of the complex process of urban expansion; they reflect the tremendous inertia of preceding forms, functions, and locations; they reflect the stage of growth in transportation; they are the result of the external economies which only the city can provide; and they result from the multiplication of external diseconomies in the city with the passage of time. Some new suggestions for the logical patterning of locational trends have been set down as generalizations which, in themselves, need further critical examination. These generalizations are tentatively expressed, with the realization that this single study has not solved all of the problems involved in the intrametropolitan location of American manufacturing.

1.3 Purpose and Problem

Mr. Donald William Lea completed a thesis on "industrial Distribution in the Omaha Standard Metropolitan Statistical Area" in 1968. His conclusion was that the industrial structure and pattern of the Omaha SMSA focuses on the Omaha-Council Bluffs urbanized area, which contained over ninety-nine per cent of the industrial establishments in the SMSA. Within the urban area concentrations of industry were apparent. He also found that the greatest concentration of industry was in and around the downtown area of Omaha. Secondary industrial core areas were evident in the downtown area of Council Bluffs, Ralston, and, most noteworthy, the stockyards zone of South Omaha (Lea, 1968).

Lea found that establishments, typically intrametropolitan market oriented light industries, were mainly in the downtown Omaha core area, whereas heavy industry, represented largely by old established firms, was often found near the periphery of the downtown area. However, Mr. Lea noted that "the much written and talked about mass migration of industry to suburban areas is not as evident in the Omaha SMSA. Industry remains largely a central city function." (Lea, 1968)

Over the past 30 years, the manufacturing composition has shown dramatic changes. In the early 1960s, Omaha's manufacturing base was dominated by the food products industry, but since Mr. Lea's thesis, meat processors began to turn away from their old multistory facilities in favor of single-story plants, and they began moving closer to a more specialized meat supply. Consequently,

Omaha lost some meat plants primarily to the outlying Nebraska and Iowa region. Lost meat packing jobs were absorbed through existing plant expansions and new industry, thus Omaha gained a broader manufacturing base (Metropolitan, 1981).

The hypothesis proposed here is that the industrial pattern of metropolitan Omaha in 1987 will be different from the locational case at the time of Mr. Lea's thesis. Where were the industrial establishments located in 1987? How does the manufacturing location pattern differ from the one mapped and discussed in 1968? The purpose of this thesis is to analyze the nature and extent of locational change in manufacturing within the Omaha, Nebraska-Council Bluffs, Iowa, metropolitan area and also to assess the degree to which the Omaha empirical findings correspond to the ideal typical conceptual model presented by James O. Wheeler and Sam Ock Pack as well as others suggested in the literature of locational change in metropolitan manufacture.

Chapter II follows with a discussion of study area, data sources and method of analysis on the spatial development of manufacturing firms. Chapter III displays and analyzes the direction and degree of spatial shifts of manufacturing activity by major industrial group and identification of manufacturing location adjustments among three zones in Omaha metropolitan area in the last two decades. At the end of the chapter, an assessment between the theoretical and Omaha empirical pattern of intrametropolitan manufacturing location is made. Chapter IV formulates the summary and conclusions on the characteristics of structural and spatial changes in manufacturing within the Omaha area.

CHAPTER II : RESEARCH SETTING AND METHODOLOGY

2.1 Study Area

The Omaha-Council Bluffs Standard Metropolitan Statistical Area is composed of Douglas and Sarpy Counties, Nebraska, and Pottawattamie County, Iowa[1]. It is a major midwestern metropolitan area located in the central region of the United States. The major cities in the area are Omaha and Bellevue in Nebraska, and Council Bluffs in Iowa (Figure 2.1).. From the time it was selected as the eastern terminus of the first transcontinental railroad in the 1860's, Omaha has been a major agricultural and transportation center.

According to the U.S. Census Bureau, the population of metro Omaha was 569,614 in 1980. The population increased by 55 percent during the period 1950 to 1980. As the urbanization process within the Omaha metro area accelerated, the employment distribution in Omaha has changed from a heavily agricultural to a more balanced distribution. Manufacturing growth has fluctuated, however, rather than being steady. Manufacturing employment in Omaha reached 36,600 in 1967, but had declined to 34,100 in 1982. The services, trade, and government sectors have strengthened their positions in the economy as the employment demands to serve the growing

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1
Omaha SMSA now includes Washington County and Mills County, but inclusion was omitted for purposed of time comparison as it was not deemed important for industrila comparison changes.

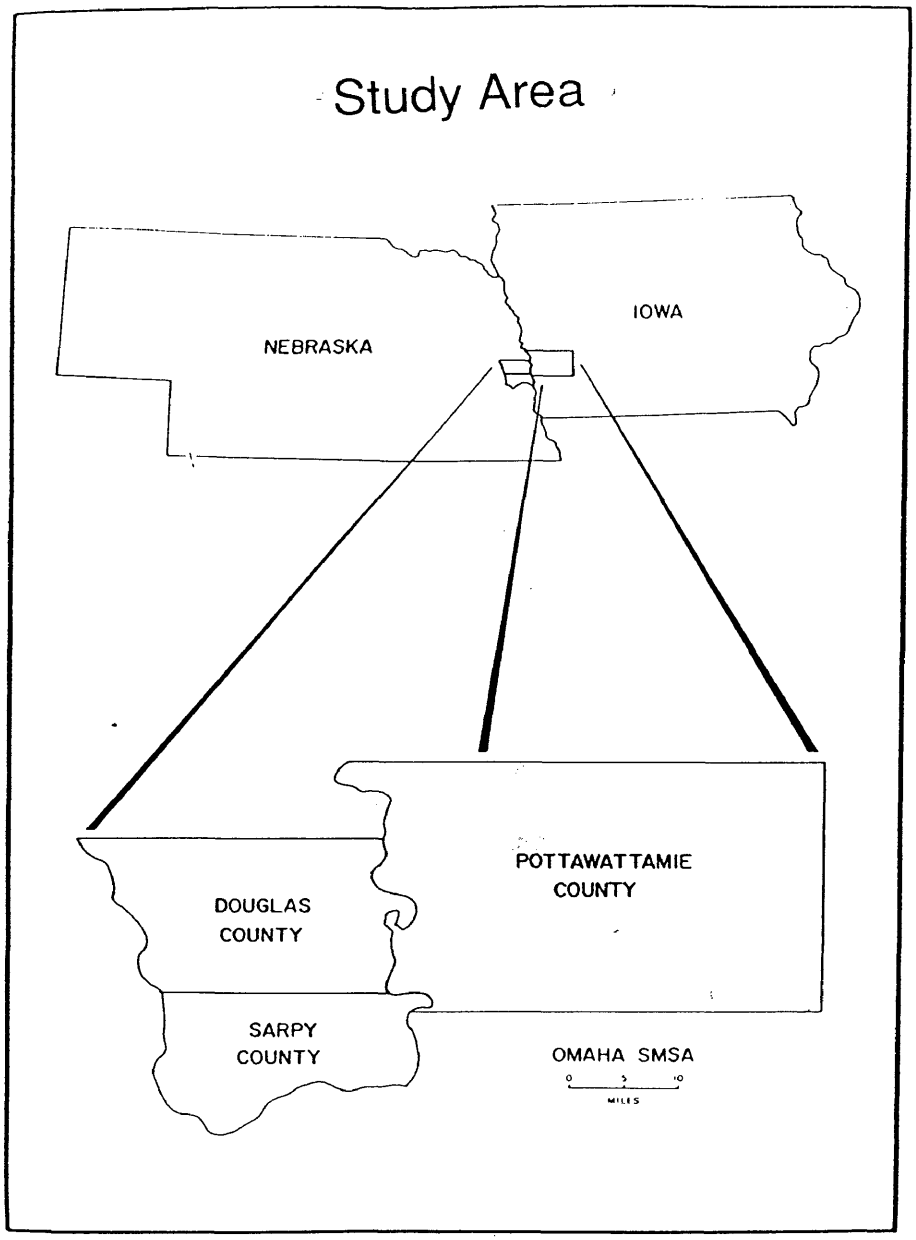
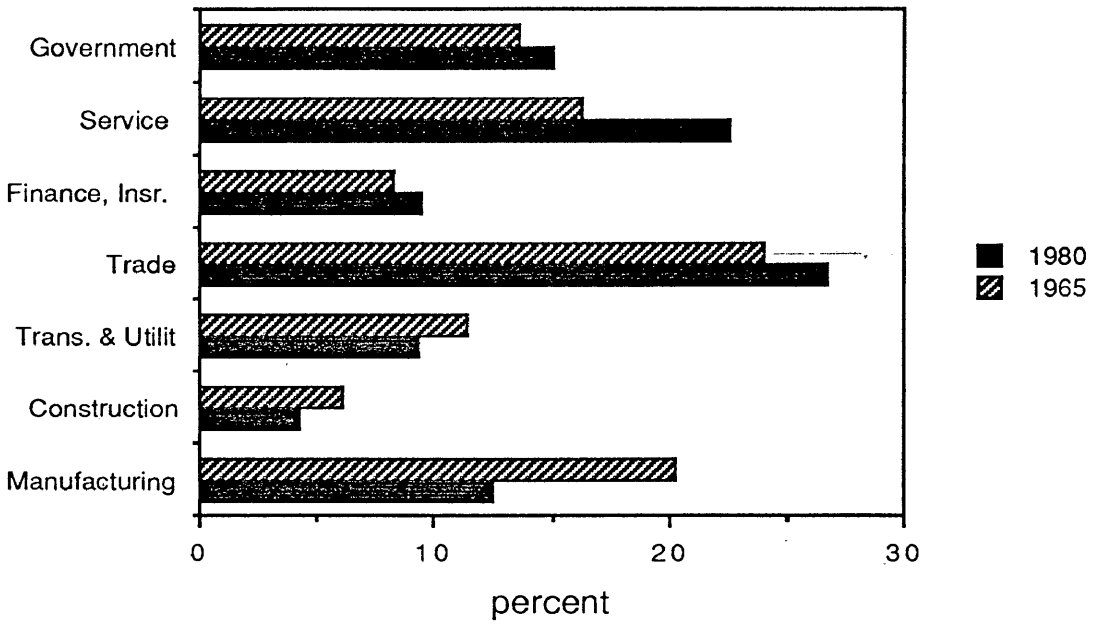


Figure 2.1 Study Area

population increased. The changing nature of the Omaha employment base is shown by the following comparative bar graph (Figure 2.2).

Figure 2.2 Nonagricultural wage & salary employment 1965-1980



Source: Nebraska Department of Labor, Research & Statistics.

Omaha has four major employment sectors: trade, service, government and manufacturing. Since the economy is not reliant upon any one sector as the primary source of employment, Omaha has been able to avoid many of the national economic fluctuations.

2.2 Data Sources

The primary data utilized for this study were compiled from the Directory of Major Employers for the Omaha area in 1969 and

Guide to Manufacturers in Omaha, although the United States Census of Manufacturing and Nebraska Department of Labor Statistics were used as supplementary data sources.

The 1969 directory provided an alphabetical listing of employers (those firms which employ 25 or more persons). For each employer, its address, telephone number, head of the firm, Industry Division code [2], Standard Industrial Classification (SIC) Number (Table 2.1) and Employment Code [3] were given. The Guide in 1987 gave more detailed; and systematic information on manufacturers in Omaha. It organized the data by two lists:

(1) an alphabetical list of manufacturers for each city in the metropolitan area;

(2) a list of manufacturers by Standard Industrial Classification (SIC).

2

Industrial Divisions (1969): 1 wholesale; 2 retailer; 3 manufacturer; 4 service establishments; 5 transportation, communications and public utilities; 6 finance; 7 others; 8 insurance.

3

Employment Code (data in 1969): B - 25-49; C - 50-99; D - 100-199; E - 200-299; F - 300-399; G - 400-499; H - 500-999; I - 1000-1499; J - 1500-1999; K - 2000-2500; L - 2500-3500; M - 3500-and over.

Table 2.1 Standard Industrial Classification for Manufacturing Division

Major Industrial Groups	Description
20	Food & Kindred Products
21	Tobacco Manufactures [4]
22	Textile Mill Products
23	Apparel and Other Finished Products Made From Fabrics and Similar Materials
24	Lumber & Wood Products, Except Furniture
25	Furniture & Fixtures
26	Paper & Allied Products
27	Printing, Publishing, and Allied Industries
28	Chemicals & Allied Products
29	Petroleum Refining & Related Industries
30	Rubber & Miscellaneous Plastic Products
31	Leather & Leather Products
32	Stone, Clay, Glass & Concrete Products
33	Primary Metal Industries
34	Fabricated Metal Products, Except Machinery & Transportation Equipment
35	Machinery, Except Electrical
36	Electrical & Electronic Machinery, Equipment, & Supplies
37	Transportation Equipment
38	Measuring, Analyzing, & Controlling Instruments; Photographic, Medical, & Optical Goods; Watches & Clocks
39	Miscellaneous Manufacturing Industries

[4] none in the Omaha SMSA.

All data were provided on an individual firm basis, which include employment code [5], address, the location of the home office if appropriate and SIC digits. Despite occasionally out-of-date or inaccurate information, they nevertheless represent the most comprehensive areal coverage and the most detailed locational data available.

2.3 Overview of Procedure

The mapping was done by using an acetate sheet for each industrial group and placing it over the base map, which was the "Omaha and Vicinity" map published by the Omaha City Planning Department. The base map and all the point data of addresses were digitized using a x, y coordinate digitizer. The origin of the x, y coordinates was arbitrarily placed in the lower left corner of the map, so as to render positive values for each point. In order to plot different point symbols for different time period on the same map, the x, y coordinates for the location of establishments in 1969 and 1987 were stored into separate files by SIC group. Data manipulation were processed in order to make two sets of data (1969's and 1987's data) basically compatible, (1) the establishments in 1969 data were sorted according to the Standard Industrial Classification (SIC) digits; (2) those firms which employ

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5
Employment Code (1987): A - under 10; B - 10-19; C - 20-49; D - 50-99; E - 100-249; F - 250-499; G - 500-999; H - 1000-2499; I - 2500 or more.

20 or more persons in 1987's data were selected to be mapped because of different employment codes were used between the data in 1969 and 1987 (see footnote 3 & 5).

Industry location in zonal studies was emphasized in this study. In 1987, about 93 percent of the manufacturing firms were located in the Douglas County and Sarpy County portions of the SMSA. This study will mainly concentrate on analysis of the manufacturing locational changes in the Nebraska portion of the metropolitan area. A three-zone intrametropolitan framework was devised for the analysis of the development of manufacturing pattern (Nielsen, 1983) (Figure 2.3). The northern boundary of Douglas County and Highway 370 will be chosen as northern and southern boundaries of defined zone areas. The "downtown" is delimited from 24th street to the Missouri River. The area so defined includes, but is larger than, the current Central Business District (CBD). The midtown zone or middle zone is between 24th to 60th street. The suburban zone is the area west of the 60th street. Identification of gain and loss due to plant birth, death, and relocation among the three zones developed within the metro area were accounted; measures of the density of industrial activity across zones will be compared. These categories characterize the pattern and change of industry location within each zone. The detailed method of how to identify the locational adjustment of individual firms will be discussed in the chapter which follows.

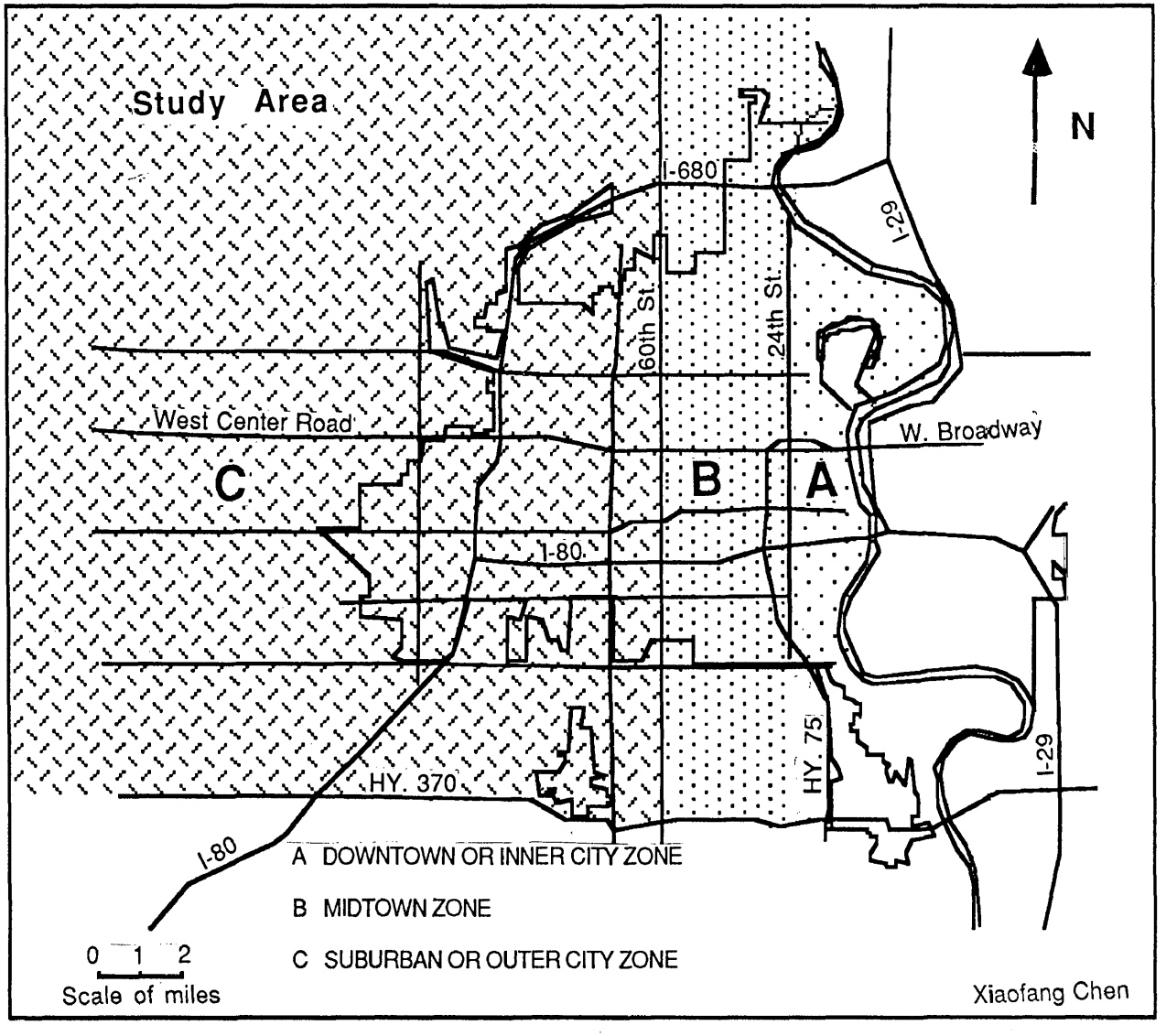

Figure 2.3 Omaha-Council Bluffs and Vicinity with Defined Three-Zone Area

Mr. Lea's study focused on the location and distribution pattern of industrial establishments and land zoned for industrial purposes. Based on Lea's thesis, locations of manufacturing firm by major industrial group both in the year of 1969 and 1987 were mapped for comparison purposes. The spatial shifts of manufacturing activities between 1969 and 1987 were measured and analyzed. The assessment between the James and Wheeler's theoretical model and empirical patterns of intrametropolitan manufacturing location in the Omaha SMSA will follow after the analysis of zonal and industry patterns of change in the city.

CHAPTER III : MANUFACTURING LOCATIONAL CHANGE

This Chapter will analyze locational change within three zones and spatial shift of industrial establishments by major industrial group. An assessment of the Omaha industrial change pattern will be made relative to theoretical patterns as established in the literature.

3.1 General Pattern of Locational Change

Figure 3.1 illustrates the 1987 distribution of manufacturing firms in and around Omaha. Figure 3.2 shows the 1969 locational pattern. One can see heavy clustering of manufacturing firms in 1987 in and around downtown area of Omaha and South Omaha, and also a linear concentration in the corridor between I-80 and "L" street and along Industrial Road in the southwest corner of Omaha. A group of manufacturing firms are also found in the Council Bluffs, Iowa, portion of the SMSA, mainly along either side of the Broadway.

In his 1968 thesis, Mr. Lea noted that the downtown area of Omaha and adjacent sections had the greatest concentration of industrial establishments in the Omaha SMSA; a secondary concentration was located in South Omaha, centered on the stockyards complex. A minor industrial concentration was centered on the central area of Council Bluffs as well (Lea, 1968). It appears, then, that in the intervening years the distribution of manufacturing firms has spread towards the west of Omaha, along the major

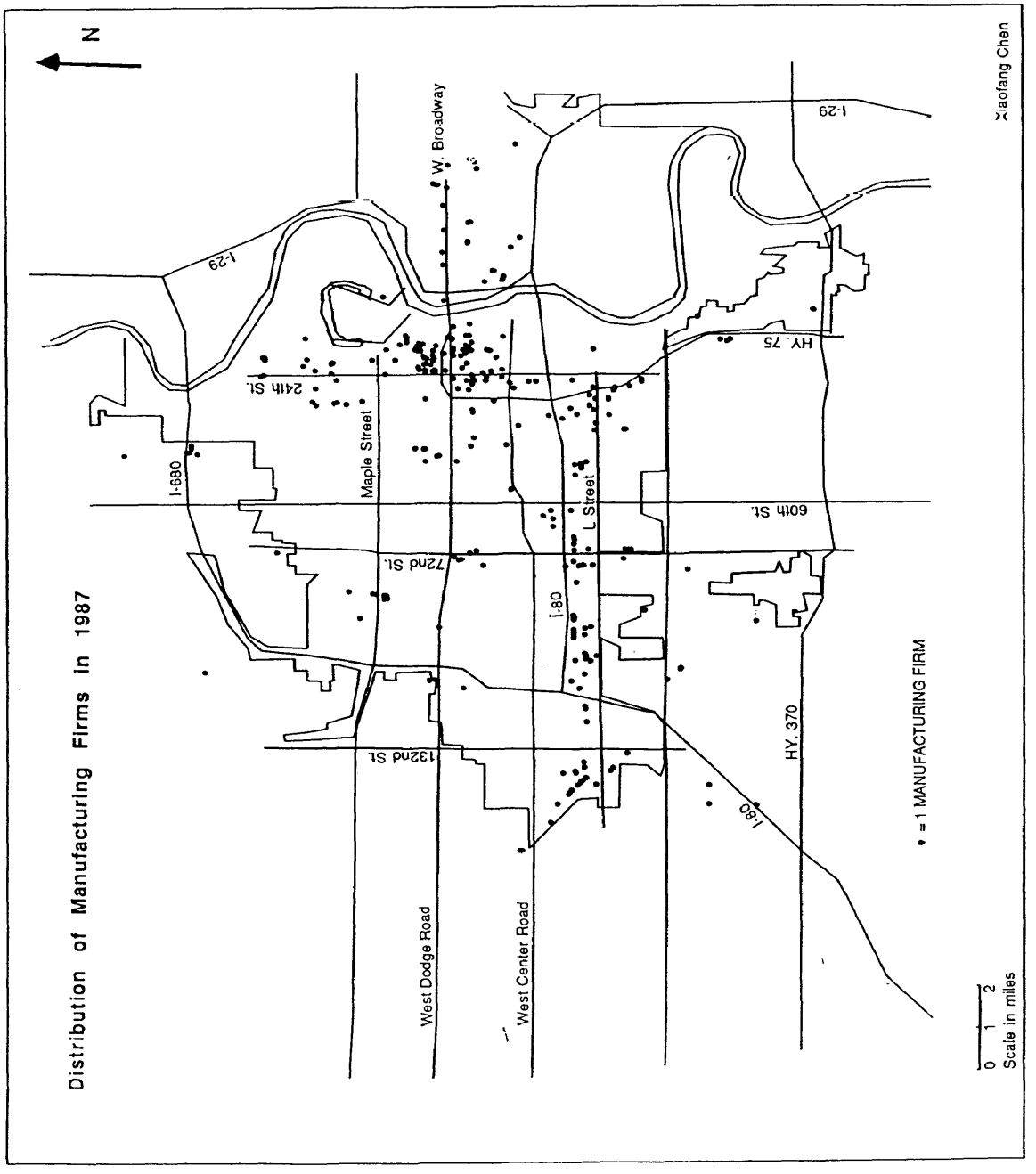

Figure 3.1 Distribution of Manufacturing Firms in 1987

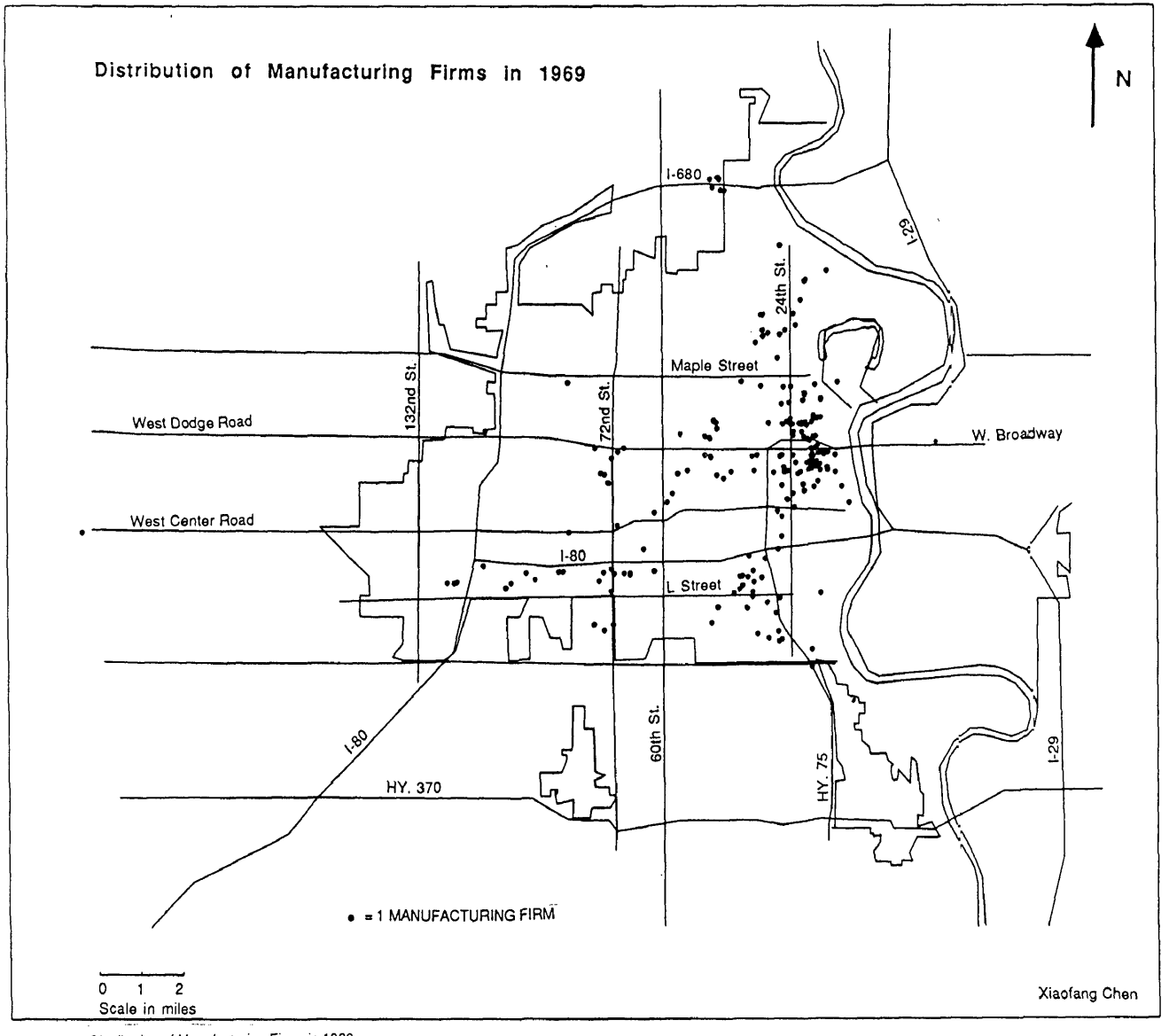

Figure 3.2 Distribution of Manufacturing Firms in 1969

highway of I-80, towards southwest Omaha, and more evenly throughout into Papillion, LaVista, and also into Bellevue.

Table 3.1 provides a profile of the Omaha manufacturing firms within this spatial pattern of development by examining the evolving locational distribution among the three zones. The compilation of change in percent contribution and percentage change figures for each of the three subregions reveals significant intrametropolitan differences.

Table 3.1 Industrial Establishments and Comparative Change within Three Zones: 1969-1987.

zone	establishments (> 25 employees) and percent of total: 1969	establishments (> 20 employees) and percent of total: 1987	change in percent contribution each zone	percent change each zone
Downtown	107 (51.9)	91 (34.6)	-17.5	-14.9
Midtown	67 (32.0)	76 (28.9)	-3.1	13.4
Suburban	32 (15.5)	96 (36.5)	21.1	200.0
Total	206 (100.0)	263 (100.0)	0.0	27.6

Over the period from 1969 to 1987 manufacturing employment in downtown has declined relatively to suburban area. The number of firms with over 20 employees in the downtown subregion only accounted for 34.6 percent of three subregions in 1987, compared with over 51.9 percent of firms with over 25 employees in the Downtown Zone in 1969. The Midtown experienced only a modest

decrease in manufacturing employment during this period; with 32.5 percent and 29.0 percent in 1969 and 1987 respectively. Over 36 percent of manufacturing firms were located in the Suburban Zone in 1987 (200 percent increase), which comprises the largest share among the three subregions. In contrast, only 15.5 percent of the firms were sited in suburban zone in 1969, which was the smallest share of the three zones. The great difference in the shares of firms within the three zones suggests that decentralization of manufacturing activities has occurred within the Omaha metropolitan area.

A further analysis of the locational adjustment of individual firms will reveal the process of change more clearly. In an attempt to identify the nature of manufacturing location adjustments the births, deaths, and relocation of plants are examined for each of the SMSA subregions. The following four firm status classifications were used in accounting for plant location (Fisher; Park, 1980) (Figure 3.3).

(1) non-mover. Refer to firms whose location and product classification remained the same in 1969 and 1987.

(2) plant death. A firm loss resulting from a plant closing without succession or replacement at the intrametropolitan level during the study period. Though not likely, it is possible that in some instances plant mortalities were actually relocations to places outside the metropolitan area. The limitations of the data source did not allow identification of such cases and therefore plant death as defined here is somewhat more encompassing than it should be.

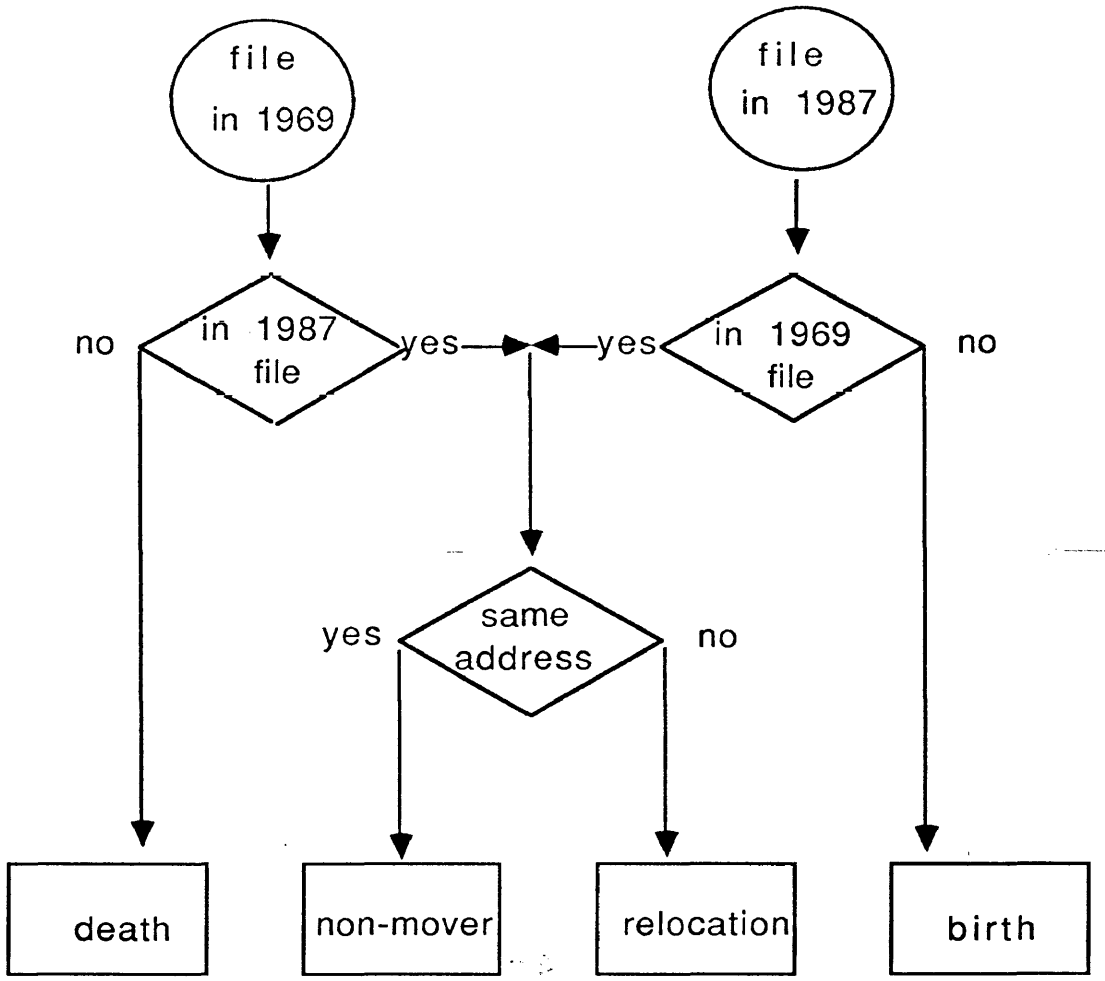

Figure 3.3. Identification the locational status of each plant existent at each end of each of the two study periods.

(3) plant birth. The addition of a new plant resulting from firm establishment.

(4) Plant relocation. The movement or migration of a plant on an intrametropolitan basis.

Identification of gain and loss due to plant birth, death, and relocation was accomplished by accounting for the locational status of each plant existent in 1969 and 1987. If existent in its original

location with no product changes, no change in status was recorded. If a plant "disappeared" in 1987, the disappearance represented death or relocation within the three subregions and such was examined. In those instances involving relocation the firm was assigned a status with regard to place of loss (origin) and place of gain (destination). Those firms which could not be accounted for by intra-subregion location were then considered plant deaths. It was also possible to identify "gains" or new firms for each intrametropolitan subregion and classify these firms as births (actuary births or relocations from outside the SMSA), or intra-subregions relocations, or relocations from elsewhere within SMSA.

The status for most of the firms could be identified by the above methods. In some special cases, however, misidentification could occur. For example, the Western Electric Co., Inc. located at 120th & "I" st in 1969 file, could not be found in 1987's data, a plant death should be determined. However, AT&T Network System (Omaha Works) at the same location (120th & "I" street) was on the list in 1987's file. A telephone call was made to confirm if AT&T Network System was the previous firm at the same location with a changed name or it was a new plant. After a detailed investigation, the non-mover status for the AT&T Network System instead of plant birth was determined, so was the non-mover status for the Western Electric instead of a plant death. The telephone calls were also applied to several other firms to make certain that the identifications of their status are correct.

The total loss of the firms from Downtown is greater than the number either in the Midtown zone or in the Suburban zone (Table

3.2). The gains were about the same as the losses within the Downtown Zone. The increase in the number of the firms is moderate compared to the other two subregions, lower than the Suburban Zone, but higher than the Midtown Zone.

The majority of plant loss from Downtown was classified as plant death. Fifty-three plants with over 20 employees ceased operation during the study period. Only thirteen firms were lost because of relocation. the destination in cases of relocation was identified as Suburban Zone in six cases, Midtown Zone in three instances and one case elsewhere in the Omaha SMSA, but outside of the designated three zones. Three firms were actually relocated within the Downtown Zone.

Table 3.2 Manufacturing "Loss" by Death or Relocation

	1969 to 1987
	firms (>20 employees)
Total Firm Loss	
Downtown	66
Midtown	49
Suburban	20
Loss by Relocation	
Downtown	13
Midtown	6
Suburban	8
Loss by Death	
Downtown	53
Midtown	43
Suburban	12
Destination of Relocation	
From Downtown	
To: Downtown	3
Midtown	3
Suburban	6
Outside of the city of Omaha	1
From Middown	
To: Downtown	1
Midtown	4
Suburban	1
From Suburban	
To: Suburban	7
Outside of the City of Omaha	1

Source: Compiled and computed by author.

Losses experienced by the Midtown Zone exceeded the gains, but were not substantially greater in an absolute sense than in Downtown Zone. The loss of Midtown industry because of firm death again is disproportionate and striking as in the case of Downtown. Among the six relocations, four were actually relocations within Midtown, excepting one case to the Suburban Zone, and one case to the Downtown Zone. Such relocation are considered a local adaptation and contribute to a major locational flux like that noted by Fisher and Park in Atlanta (1981).

The losses experienced in the Suburban Zone are the least and the gains are the greatest. Over half of the losses are attributable to plant death. Among eight relocation plants, the relocation was identified as within the Suburban Zone in all but one instance. No firms relocated within either the Downtown or the Midtown Zone.

The majority of "gained" plants are by birth (Table 3.3). The Downtown Zone also functioned as a minor source area for relocating firms, but the Suburban Zone itself contributes a major share, suggesting considerable locational adaptation at a very localized level within the suburban environment.

Table 3.3 Manufacturing "Gain" by Birth or Relocation

	1969 to 1987
	firms (>20 employees)
Total Firm Gain	
Downtown	64
Midtown	50
Suburban	75
Gain by Birth	
Downtown	60
Midtown	45
Suburban	62
Gain by Relocation	
Downtown	4
Midtown	5
Suburban	13
Origin of Relocation	
To: Downtown	
From: Downtown	3
Midtown	1
To: Midtown	
From: Downtown	2
Midtown	3
To: Suburban	
From: Downtown	3
Midtown	1
Suburban	8

Source: Compiled and computed by author.

The examination of locational shift and adjustment by individual firms reveals that there has been a decentralization process of manufacturing within the city-suburban framework of the metropolitan area. From 1969 to 1987, the striking feature in Omaha metropolitan area is that manufacturing in the Suburban Zone has performed better than the Downtown and its adjacent area. Over this study period manufacturing firms in the downtown area have declined relatively to suburban area. Over half of the new industrial location activity that is occurring in Omaha is in its suburbs.

However, the losses of firms in the Downtown Zone were not devastating in absolute terms, while the Suburban Zone gained greatly. In 1987, there were still more manufacturing firms of over 20 employees in Downtown and Midtown zones than in Suburban Zone alone. Compared to the research results of the largest metropolitan areas in the U.S. by Kain and McHone (Kain, 1968; McHone 1986), manufacturing in the Omaha SMSA remains less suburbanized than in a majority of SMSA's in the United States. In the 1960's, dramatic changes of intrametropolitan location were experienced by many large American cities, but there had not been a major migration to the suburbs by industrial firms in Omaha according to Lea's 1968 thesis. The delay of the process of decentralization in Omaha could explain why it experienced the suburbanization of manufacturing to a lesser degree than the national average in 1980's.

The mechanism for the losses of firms in Omaha were predominantly plant death, and secondly plant relocation. The gains are attributed mainly to new plant openings, relocation seems to

account for only a small percentage of overall relative locational shifts.

An important factor in industrial location is transportation facilities. By the mid 1960's, the concentration of railroad facilities in the downtown industrial core area appeared to be a major factor for the heavy grouping of industrial establishments in this area. Since the interstate highway system had not been completed in the Omaha-Council Bluffs area, the 140 trucking firms serving the Omaha-Council Bluffs urban area relies to a great extent upon five, two-lane U.S. highways that converge on the Omaha area. There was a very marked decrease in the number of industrial establishments per section outward from the downtown industrial core area. The manufacturing firms tended to follow the major arterial streets and railroads, however, there was not a major migration to the suburbs by industrial firms at that time. Mr. Lea suggested that the general lack of suitably zoned land in the suburban areas may be temporary major factors in the below average industrial migration to the suburban area. Other factors, such as, geographical inertia and centripetal forces, no doubt also played an important part in keeping industry centered in and around the downtown area of Omaha.

Since the completion of interstate I-80/I-480 from the southwestern margin of the city's built-up area to the central business district in 1965, most industrial parks have been constructed west of 60th street, locational emphasis over the years has gradually turned to developing freeway sites instead of those solely with a railroad orientation. The location of industrial parks in the suburban area provides locations for the industry firms

demanding larger sites. Change in plant design from multistory mill-type buildings to single story plants permits horizontal line production methods.

The first planned industrial park, 320 acres near 72nd and "L" streets, became operational in mid-1954; in the mid-1970's, more than 50 firms employing nearly 4,000 people occupied this land. The Omaha Industrial Foundation has continued its program by developing five additional industrial parks encompassing 1,740 acres of prime industrial land, thus assuring an ample supply of reasonable priced land for future new and expanding industry (Industrial Zoning..., 1975). More than a dozen private enterprises, including Union Pacific, Burlington Northern and Campbell Soup, have also recognized this need for industrial parks and have responded by developing an additional 4,000 acres of land dispersed throughout the metropolitan area (Industrial zoning..., 1975)

Downtown locations have declined in relative accessibility with the development of the interstate highway system. But these areas still have advantages in terms of access to heavy utilities, rail lines and the superior services that the city offers. Thus, industrial firms in Omaha can find sites in the downtown, in a river or airport-oriented location, in midtown, a suburban area or in a rural setting, giving the city three zones of manufacturing location concentration. The distribution in Omaha continues to reflect the strengths of the older areas as well as the advantages offered by suburban areas for the distribution of manufacturing today.

3.2 Locational Change by Industry Groups

Sectoral change in Omaha SMSA manufacturing employees between 1967 and 1982 are shown in Table 3.4. Except for tobacco (SIC 20), textile (SIC 22), and lacking some of the data in primary metal (SIC 33) and electrical and electronic machinery (SIC 36), all the changes for other manufacturing groups at the two-digit level are listed. From 1967 through 1982, the number of persons employed by manufacturers in the Omaha SMSA declined by 6.8 percent, from total 36,600 to 34,100 workers (Table 3.4). However, the number of establishments increased by 8.6 percent, from total 593 to 644 firms (Table 3.5). The increase mainly occurred to firms of small sizes, by 7.9 percent in 1-19 employees category; 11.9 percent in 20-99 employees category and 22.2 percent in 100-249 employees category. In contrast, the firms with 250 or more employees decreased by 18.5 percent (Table 3.6, 3.7, 3.8 & 3.9). The losses of big firms are attributed to the decrease of manufacturing employees in the metropolitan area.

Food processing (SIC 20) maintained its leading role among industries in Omaha SMSA during this period, comprising 27.6 percent of total work force. Nevertheless, food processing's dominance also decreased while other sectors, particularly non-electrical machinery (SIC 35), and printing, publishing and allied industries (SIC 27) underwent substantial growth (Table 3.4). The food industry experienced a decrease by the rate of 27.7 percent largely because of the decline of meat packing. In the contrast, the second largest manufacturing group, non-electrical machinery,

comprising 14.1 percent of total manufacturing employees, increased by 54.8 percent. Printing, publishing, the third largest industrial group, grew by the fastest rate with a 56.0 percent increase (Table 3.4).

Further insight is provided by examining locational change for individual SIC groups. Nearly all parts of the Omaha urbanized area contain locations for industrial firms. As in Mr. Lea's 1968 thesis, all those with more than 20 employees within the Omaha urbanized area were mapped on the same map by using different symbols for both 1969 and 1987, while those in communities farther away were recorded for statistical purposes. The discussion that follows proceeds to an analysis of spatial changes according to each industry group (Tables 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10 & 3.11).

Table 3.4 Industrial Employees and Comparative Change by Industrial GroupS in the Omaha SMSA, 1967-1982

SIC	employees (in thousands) 1967 number	(percent)	1982 number	(percent)	change (1967 to 1982) number	(percent)
20 (Food)	13.0	(35.5)	9.4	(27.6)	-3.6	(-27.7)
23 (Apparel)	0.7	(1.9)	0.6	(1.8)	-0.1	(-14.3)
24 (Lumber)	0.3	(0.8)	0.3	(0.9)	0.0	(0.0)
25 (Furniture)	1.3	(3.6)	1.5	(4.4)	0.2	(15.4)
26 (Paper)	0.9	(2.5)	1.1	(3.2)	0.2	(22.2)
27 (Printing)	2.5	(6.8)	3.9	(11.4)	1.4	(56.0)
28 (Chemic)	1.5	(4.1)	1.2	(3.5)	-0.3	(-0.2)
30 (Rubber)	0.4	(1.1)	0.6	(1.8)	0.2	(50.0)
32 (Stone)	0.8	(2.2)	0.5	(1.5)	-0.3	(-37.5)
33 (Primary Metal)	2.4	(6.6)	—	—	—	—
34 (Fab Metal)	2.0	(5.5)	1.5	(4.4)	-0.5	(-25.0)
35 (Mach)	3.1	(8.5)	4.8	(14.1)	1.7	(54.8)
36 (Elect Mach)	—	—	2.8	(8.2)	—	—
37 (Trans Equip)	1.1	(3.0)	0.8	(2.3)	-0.3	(-27.3)
39 (Misc Manuf)	1.3	(3.6)	1.0	(2.9)	-0.3	(-23.1)
total	36.6	(100)	34.1	(100)	-2.5	(-6.8)

source: compiled and computed by author.

Table 3.5 Industrial Establishments and Comparative Change by Industry Groups in the Omaha SMSA: 1967-1982

SIC	establishments 1967 number	(percent)	1982 number	(percent)	change (1967-1982) number	(percent)
20 (Food)	116	(19.6)	92	(14.3)	-24	(-20.6)
23 (Apparel)	16	(2.7)	27	(4.2)	11	(68.8)
24 (Lumber)	27	(4.6)	23	(3.6)	-4	(-14.8)
25 (Furniture)	30	(5.1)	27	(4.2)	-3	(-10.0)
26 (Paper)	10	(1.7)	16	(2.5)	6	(60.0)
27 (Printing)	116	(19.6)	147	(22.8)	31	(26.7)
28 (Chemic)	31	(5.2)	33	(5.1)	2	(6.5)
29 (Petro Refining)	4	(0.7)	2	(0.3)	-2	(-50.0)
30 (Rubber)	7	(1.2)	24	(3.7)	17	(242.9)
31 (Leather)	3	(0.5)	4	(0.6)	1	(33.3)
32 (Stone)	38	(6.4)	41	(6.4)	3	(7.9)
33 (Primary Metal)	11	(1.9)	9	(1.4)	-2	(-18.2)
34 (Fab Metal)	51	(8.6)	48	(7.5)	-3	(-5.9)
35 (Mach)	69	(11.6)	73	(11.3)	4	(5.8)
36 (Elect Mach)	15	(2.5)	22	(3.4)	7	(46.7)
37 (Trans Equip)	12	(2.0)	19	(3.0)	7	(58.3)
38 (measuring Instr)	8	(1.3)	8	(1.2)	0	(0.0)
39 (Misc Manuf)	29	(4.9)	29	(4.5)	0	(0.0)
total	593	(100)	644	(100)	51	(8.6)

source: compiled and computed by author.

Table 3.6 Industrial Establishments with 1-19 Employees and Comparative Change by Industry Groups in the Omaha SMSA: 1967-1982

SIC	establishments 1967 number	(percent)	1982 number	(percent)	change (1967-1982) number	(percent)
20 (Food)	53	(14.0)	29	(7.1)	-24	(-45.3)
23 (Apparel)	12	(3.2)	24	(5.9)	12	(100.0)
24 (Lumber)	21	(5.5)	19	(4.6)	-2	(-9.5)
25 (Furniture)	19	(5.0)	16	(3.9)	-3	(-15.8)
26 (Paper)	1	(0.3)	5	(1.2)	4	(400.0)
27 (Printing)	96	(25.3)	107	(22.8)	11	(11.5)
28 (Chemic)	18	(4.7)	24	(5.9)	6	(33.3)
29 (Petro Refining)	2	(0.5)	1	(0.2)	-1	(-50.0)
30 (Rubber)	5	(1.3)	17	(4.2)	12	(240.0)
31 (Leather)	1	(0.3)	2	(0.5)	1	(100.0)
32 (Stone)	23	(6.1)	33	(8.1)	10	(43.5)
33 (Primary Metal)	4	(1.1)	4	(1.0)	0	(0.0)
34 (Fab Metal)	34	(9.0)	30	(7.3)	-4	(-11.8)
35 (Mach)	50	(13.2)	46	(11.2)	-4	(8.0)
36 (Elect Mach)	9	(2.4)	12	(2.9)	3	(33.0)
37 (Trans Equip)	7	(1.8)	13	(3.2)	6	(85.7)
38 (Measuring Instr)	6	(1.6)	5	(1.2)	-1	(-16.7)
39 (Misc Manuf)	18	(4.7)	22	(5.4)	4	(22.2)
total	379	(100)	409	(100)	30	(7.9)

source: compiled and computed by author.

Table 3.7 Industrial Establishments with 20-99 Employees and Comparative Change by Industry Groups in the Omaha SMSA: 1967-1982.

SIC	establishments 1967 number(percent)		1982 number (percent)		change (1967-1982) number	(percent)
20 (Food)	40	(26.5)	39	(23.1)	- 1	(-2.5)
23 (Apparel)	2	(1.3)	2	(1.2)	0	(0.0)
24 (Lumber)	6	(4.0)	4	(2.4)	- 2	(-33.3)
25 (Furniture)	8	(5.3)	8	(4.7)	0	(0.0)
26 (Paper)	6	(4.0)	6	(3.6)	0	(0.0)
27 (Printing)	16	(10.6)	33	(19.5)	17	(106.0)
28 (Chemic)	7	(4.6)	4	(2.4)	- 3	(-42.9)
29 (Petro)	2	(1.3)	0	(0.0)	- 2	(-100.0)
30 (Rubber)	0	(0.0)	6	(3.6)	6	(—)
31 (Leather)	2	(1.3)	2	(1.2)	0	(100.0)
32 (Stone)	14	(9.3)	8	(4.7)	- 6	(-42.9)
33 (Primary Metal)	3	(2.0)	2	(1.2)	- 1	(-33.3)
34 (Fab Metal)	11	(7.3)	15	(8.9)	4	(36.4)
35 (Mach)	15	(9.9)	21	(12.4)	6	(40.0)
36 (Elect Mach)	4	(2.6)	7	(4.1)	3	(75.0)
37 (Trans Equip)	4	(2.6)	5	(3.0)	1	(25.0)
38 (Measuring Instr)	2	(1.3)	5	(3.0)	0	(0.0)
39 (Misc Manuf)	9	(6.0)	5	(3.0)	- 4	(-44.4)
total	151	(100)	169	(100)	18	(11.9)

source: compiled and computed by author.

Table 3.8 Industrial Establishments with 100-249 Employees and Comparative Change by Industry Groups in the Omaha SMSA: 1967-1982.

SIC	establishments 1967 number	percent)	1982 number	(percent)	change (1967-1982) number	(percent)
20 (Food)	12	(33.3)	15	(34.1)	3	(25.0)
23 (Apparel)	1	(2.8)	0	(0.0)	-1	(-100.0)
24 (Lumber)	0	(0.0)	0	(0.0)	0	(0.0)
25 (Furniture)	2	(5.6)	2	(4.5)	0	(0.0)
26 (Paper)	2	(5.6)	4	(9.1)	2	(100.0)
27 (Printing)	3	(8.3)	5	(11.4)	2	(66.7)
28 (Chemic)	5	(13.9)	5	(11.4)	0	(0.0)
29 (Petro Refining)	0	(0.0)	1	(2.3)	1	(__)
30 (Rubber)	2	(5.6)	1	(2.3)	-1	(-50.0)
31 (Leather)	0	(0.0)	0	(0.0)	0	(__)
32 (Stone)	0	(0.0)	0	(0.0)	0	(__)
33 (Primary Metal)	2	(5.6)	1	(2.3)	-1	(-50.0)
34 (Fab Metal)	4	(11.1)	2	(4.5)	-2	(-50.0)
35 (Mach)	1	(2.8)	3	(6.8)	2	(200.0)
36 (Elect Mach)	1	(2.8)	2	(4.5)	1	(100.0)
37 (Trans Equip)	0	(0.0)	1	(2.3)	1	(__)
38 (Measuring Instr)	0	(0.0)	1	(2.3)	1	(__)
39 (Misc Manuf)	1	(2.8)	1	(2.3)	0	(0.0)
total	136	(100)	44	(100)	8	(22.2)

source: compiled and computed by author.

Table 3.9 Industrial Establishments with 250 or More Employees and Comparative Change by Industry Groups in the Omaha SMSA: 1967-1982

SIC	establishments 1967 number	(percent)	1982 number	(percent)	change (1967-1982) number	(percent)
20 (food)	11	(40.7)	92	(40.9)	-2	(-18.2)
23 (Apparel)	1	(3.7)	1	(4.5)	0	(0.0)
24 (Lumber)	0	(0.0)	0	(0.0)	0	(__)
25 (Furniture)	1	(3.7)	1	(4.5)	0	(0.0)
26 (Paper)	1	(3.7)	1	(4.5)	0	(0.0)
27 (Printing)	1	(3.7)	2	(9.1)	1	(100.0)
28 (Chemic)	1	(3.7)	0	(0.0)	-1	(-100.0)
29 (Petro Refining)	0	(0.0)	0	(0.0)	0	(__)
30 (Rubber)	0	(0.0)	0	(0.0)	0	(__)
31 (Leather)	0	(0.0)	0	(0.0)	0	(__)
32 (Stone)	1	(3.7)	0	(0.0)	-1	(-100.0)
33 (Primary Metal)	2	(7.4)	2	(9.1)	0	(0.0)
34 (Fab Metal)	2	(7.4)	1	(4.5)	-1	(-50.0)
35 (Mach)	3	(11.1)	3	(13.6)	0	(0.0)
36 (Elect Mach)	1	(3.7)	1	(4.5)	0	(0.0)
37 (Trans Equip)	1	(3.7)	0	(0.0)	-1	(-100.0)
38 (Measuring Instr)	0	(0.0)	0	(0.0)	0	(0.0)
39 (Misc Manuf)	1	(3.7)	1	(4.5)	0	(0.0)
total	27	(100)	22	(100)	5	(-18.5)

source: compiled and computed by author.

Table 3.10 Number of Industrial Establishment by SIC Group in Each Employment Category : 1967

SIC	1-19 number	(percent)	20-99 number	(percent)	100-249 number	(percent)	250 or more number	(percent)	total number
20 (Food)	53	(45.7)	40	(34.5)	12	(10.3)	11	(9.5)	116
23 (Apparel)	12	(75.0)	2	(12.5)	1	(6.3)	1	(6.3)	16
24 (Lumber)	21	(77.8)	6	(22.2)	0	(0.0)	0	(0.0)	27
25 (Furniture)	19	(63.3)	8	(26.7)	2	(6.7)	1	(3.3)	30
26 (Paper)	1	(10.0)	6	(60.0)	2	(20.0)	1	(10.0)	10
27 (Printing)	96	(82.8)	16	(13.8)	3	(2.6)	1	(0.9)	116
28 (Chemic)	18	(58.1)	7	(22.5)	5	(16.1)	1	(3.2)	31
29 (Petro Refining)	2	(50.0)	2	(50.0)	0	(0.0)	0	(0.0)	4
30 (Rubber)	5	(71.4)	0	(0.0)	2	(28.6)	0	(0.0)	7
31 (Leather)	1	(33.3)	2	(66.7)	0	(0.0)	0	(0.0)	3
32 (Stone)	23	(60.5)	14	(36.8)	0	(0.0)	1	(2.6)	38
33 (Primary Metal)	4	(36.4)	3	(27.3)	2	(18.2)	2	(18.2)	11
34 (Fab Metal)	34	(66.7)	11	(21.6)	4	(7.8)	2	(3.9)	51
35 (Mach)	50	(72.5)	15	(21.7)	1	(1.4)	3	(4.3)	69
36 (Elect Mach)	9	(60.0)	4	(26.7)	1	(6.7)	1	(6.7)	15
37 (Trans Equip)	7	(58.3)	4	(33.3)	0	(0.0)	1	(8.3)	12
38 (Measuring Instr)	6	(75.0)	2	(25.0)	0	(0.0)	0	(0.0)	8
39 (Misc Manuf)	18	(62.1)	9	(31.0)	1	(3.4)	1	(3.4)	29

source: compiled and computed by author.

Table 3.11 Number of Industrial Establishment by SIC Group in Each Employment Category : 1982

SIC	1-19 number	(percent)	20-99 number	(percent)	100-249 number	(percent)	250 or more number	(percent)	total number
20 (Food)	53	(45.7)	40	(34.5)	12	(10.3)	11	(9.5)	116
23 (Apparel)	24	(88.9)	2	(7.4)	0	(0.0)	1	(3.7)	27
24 (Lumber)	19	(82.6)	4	(17.4)	0	(0.0)	0	(0.0)	23
25 (Furniture)	16	(59.3)	8	(29.6)	2	(7.4)	1	(3.7)	27
26 (Paper)	5	(31.3)	6	(37.5)	4	(25.0)	1	(6.3)	16
27 (Printing)	107	(72.8)	33	(22.4)	5	(3.4)	2	(1.4)	147
28 (Chemic)	24	(72.7)	4	(12.1)	5	(15.2)	0	(0.0)	33
29 (Petro Refining)	1	(50.0)	0	(0.0)	1	(50.0)	0	(0.0)	2
30 (Rubber)	17	(70.8)	6	(25.0)	1	(4.2)	0	(0.0)	24
31 (Leather)	2	(50.0)	2	(50.0)	0	(0.0)	0	(0.0)	4
32 (Stone)	33	(80.5)	8	(19.5)	0	(0.0)	0	(0.0)	41
33 (Primary Metal)	4	(44.4)	2	(22.2)	1	(11.1)	2	(22.2)	9
34 (Fab Metal)	30	(62.5)	15	(31.3)	2	(4.2)	1	(2.1)	48
35 (Mach)	46	(63.0)	21	(28.8)	3	(4.1)	4	(4.1)	73
36 (Elect Mach)	12	(54.5)	7	(31.8)	2	(9.1)	1	(4.5)	22
37 (Trans Equip)	13	(68.4)	5	(26.3)	1	(5.3)	0	(0.0)	19
38 (Measuring Instr)	5	(62.5)	2	(25.0)	1	(12.5)	0	(0.0)	8
39 (Misc Manuf)	22	(75.9)	5	(17.2)	1	(3.4)	1	(3.4)	29

source: compiled and computed by author.

Food and Kindred Products (SIC 20)

The food and kindred products industrial group continued as still the leading industry compared to any other single group within the Omaha SMSA during the 1980's. Over the past two decades, however, this group of industrial activities experienced dramatic decline. Firms in the Omaha SMSA totaled 92 with 9,400 employees, constituting about 27.6 percent of the industrial work force in 1982 by comparisons with firms totaling 116 and 13,000 employees or 35.5 percent of the industrial work force in 1967 (Table 3.4 & 3.5). The number of employees decreased by 27.7 percent, which was far above the average metropolitan industrial decrease of 6.8 percent. By 1982 although the food industry remains as having the largest number of employees, the number of firms had lost its leading position to the printing, publishing, and allied industries group.

The Figure 3.4 shows the distribution of the firms of food processing both in 1969 and 1987 in Omaha SMSA. The area just south of Dodge portion of the downtown core area and the stockyards in South Omaha remained as the areas with a high concentration of firms in 1987, but the original concentrations in the north of Dodge portion of the downtown core area and the area south of the Stockyards did not exist. Compared to 1969's pattern, the individual establishments were much more scattered throughout the Omaha, Council Bluffs, and the Bellevue urban area. In addition, there were more new firms west of 60th street and some new firms are now located west of 132nd street. In turn, four new firms appeared in Council Bluffs and Bellevue urban areas during the period.

A major change occurred as nearly half of the firms with 1-19 employees in this group disappeared (Table 3.6). One firm loss happened to the 20-99 category (Table 3.7) and two losses are observed among firms with 250 or more employees. However, gains occurred to firms with 100-249 employees with an addition of three firms (Table 3.8).

As stated earlier in the study, during the later 1960's, meat processors began to turn away from inefficient multistory facilities in favor of single story spreading plants, and they started shifting closer to their meat supply. Consequently, Omaha lost some meat plants primarily to outlying Nebraska and Iowa regions. Escaping unions also contributed to the loss of food industry (Danton, 1967). The lost jobs were absorbed through existing plant extensions and new industry; thus Omaha gained a broader industrial base.

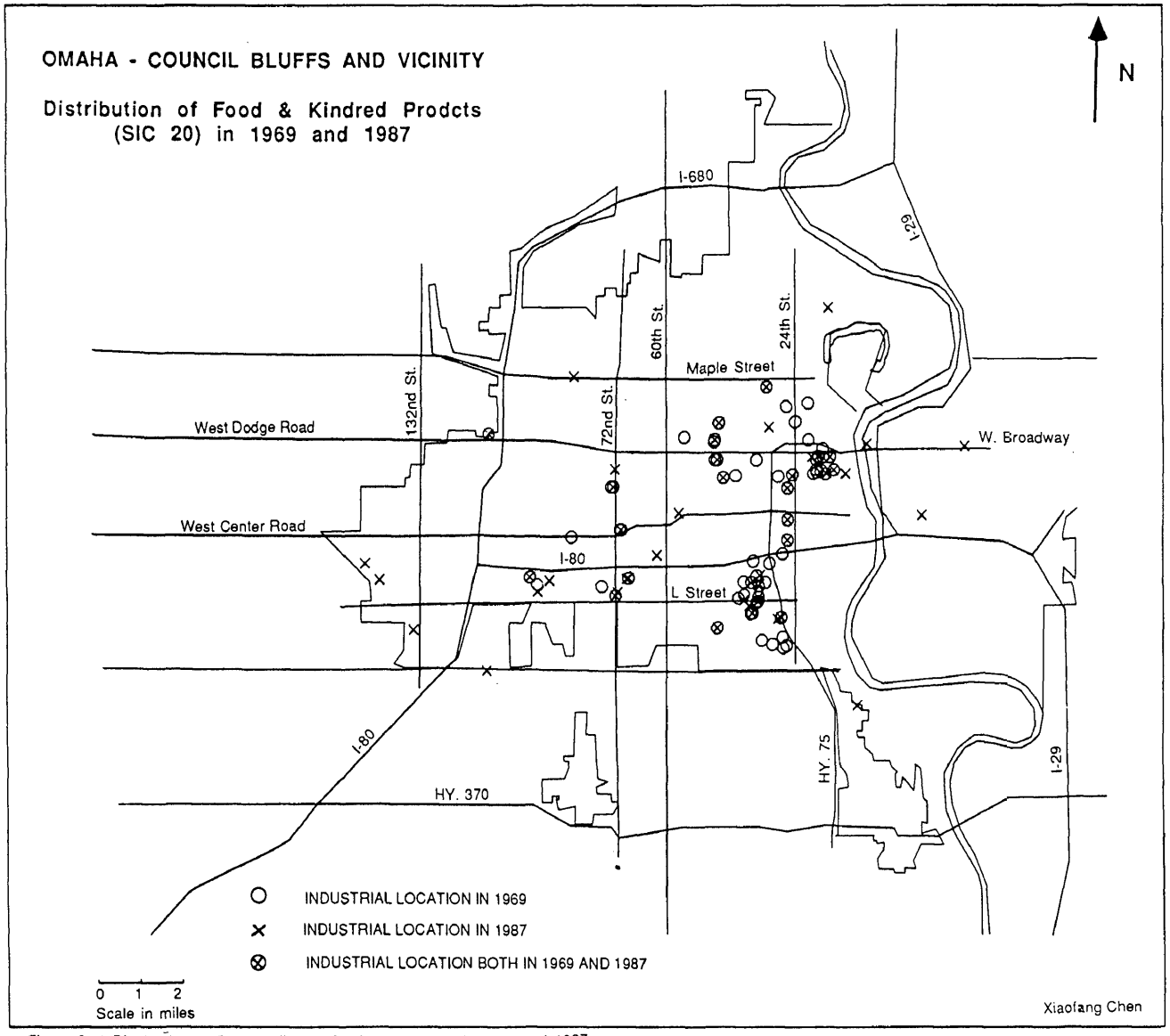

Figure 3. 4 Distribution of Food & Kindred Products (SIC 20) in 1969 and 1987.

Apparel and Other Finished Products Made from Fabrics and Similar Materials (SIC 23)

Group 23 comprised about 4.2 percent of the industrial establishments in 1982, but contributed 2.7 percent in 1967 (Table 3.5). These firms employed less than two percent of the industrial work force of the SMSA. However, most of the establishments were small with about eighty-nine percent having fewer than twenty employees in 1982, compared to seventy-five percent in 1967 (Table 3.10 & 3.11).

Figure 3.5 shows the distribution of the firms with twenty or more employees both in 1969 and 1987. Only a few industrial establishments are scattered in the Nebraska portion of SMSA in 1987. Two firms are found west of the 132nd street and one new firm was located in the Bellevue urban area. There was no clearly defined core area in 1987's pattern. However, in 1969 all the firms were sited to the east of 72nd street, with a concentration in Downtown and adjacent area, near rail transportation routes. In 1987 the location of the industrial establishments was more dispersed among the three subregions and elsewhere throughout the Omaha SMSA area.

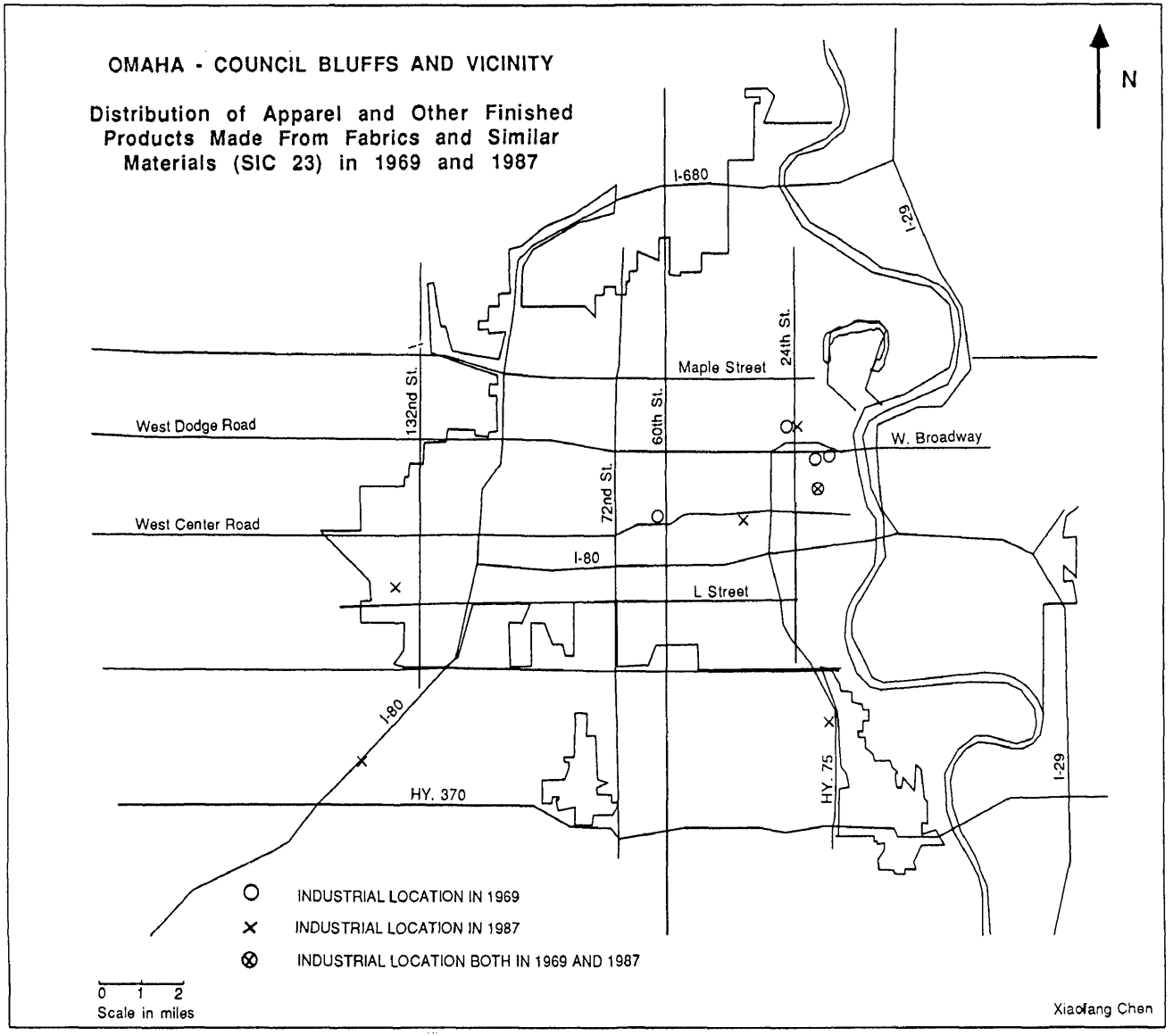

Figure 3.5 Distribution of Apparel and Other Finished Products Made from Fabrics and Similar Materials (SIC 23) in 1969 and 1987.

Lumber and Wood Products, Except Furniture (SIC 24)

The lumber and wood products group is one of the smallest in the Omaha SMSA. The 23 firms in 1982 and 27 firms in 1967 in this group employed less than one percent of the industrial work force (Table 3.4 & 3.5). All the firms had fewer than 100 employees, with eighty-three percent having fewer than twenty employees in 1982, compared to seventy- eight percent in 1967.

Figure 3.6 indicates the changing of locational pattern when considering firms of over 20 employees between 1969 to 1987. There were a few firms with no locational change and they remained in and around the railroad marshalling yards area near Downtown Omaha. In 1969's pattern, besides the downtown concentration, three other firms were located north of "Center" street within the Midtown Zone area. In 1987 three new plants appeared west of the 72nd street, between the I-80 and Harrison street, which showed an apparent spatial shift of firms to southwest Omaha.

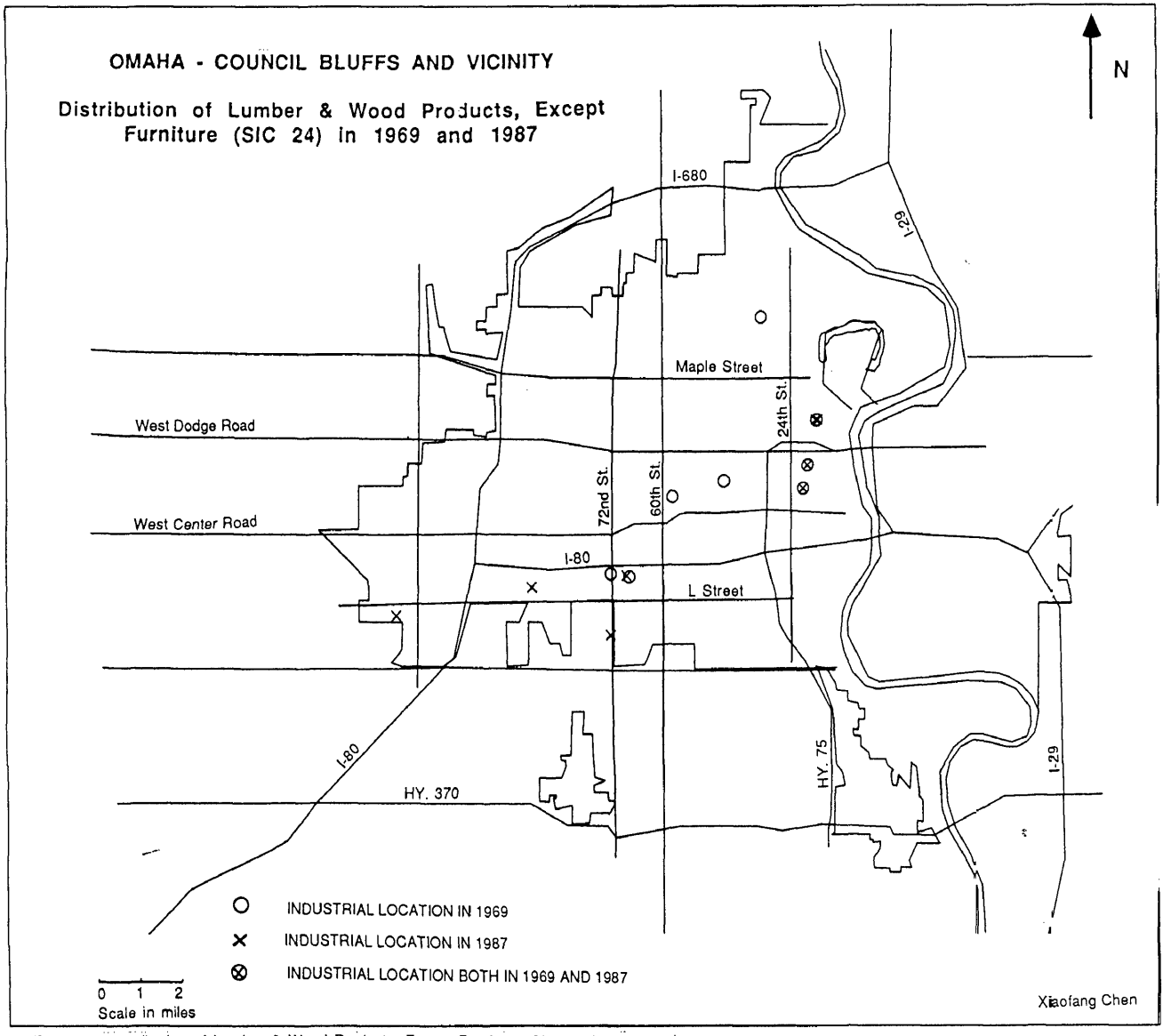

Figure 3.6 Distribution of Lumber & Wood Products, Except Furniture (SIC 24) in 1969 and 1987.

Furniture and Fixtures (SIC 25)

Group 25 accounted for 27 or about 4.2 percent of industrial establishments in 1982, compared with 30 or about 5.1 percent in 1967 and employed about 4.4 percent and 3.6 percent of the industrial workers in 1982 and 1967 respectively (Table 3.4 & 3.5). Firms employing fewer than twenty persons comprised nearly sixty-three percent in 1967, but fifty-nine percent in 1982, outnumbering all others firms over 20 employees. Those firms with 20-99 workers were a distant second with about twenty-seven percent in 1967, but had increased to about thirty percent in 1982. The remaining establishments, about ten percent, belonged to over 100 employee categories (Table 3.10 & 3.11).

Figure 3.7 shows that in 1969 the firms were exclusively clustered in downtown Omaha. In 1987 several firms were still there with no locational changes, however, two new firms were located in the Council Bluffs, Iowa; and one firm was established in the Suburban Zone of Omaha, near the intersection of I-80 and "L" street. In general, the firms were much more widely distributed throughout the entire SMSA by 1987.

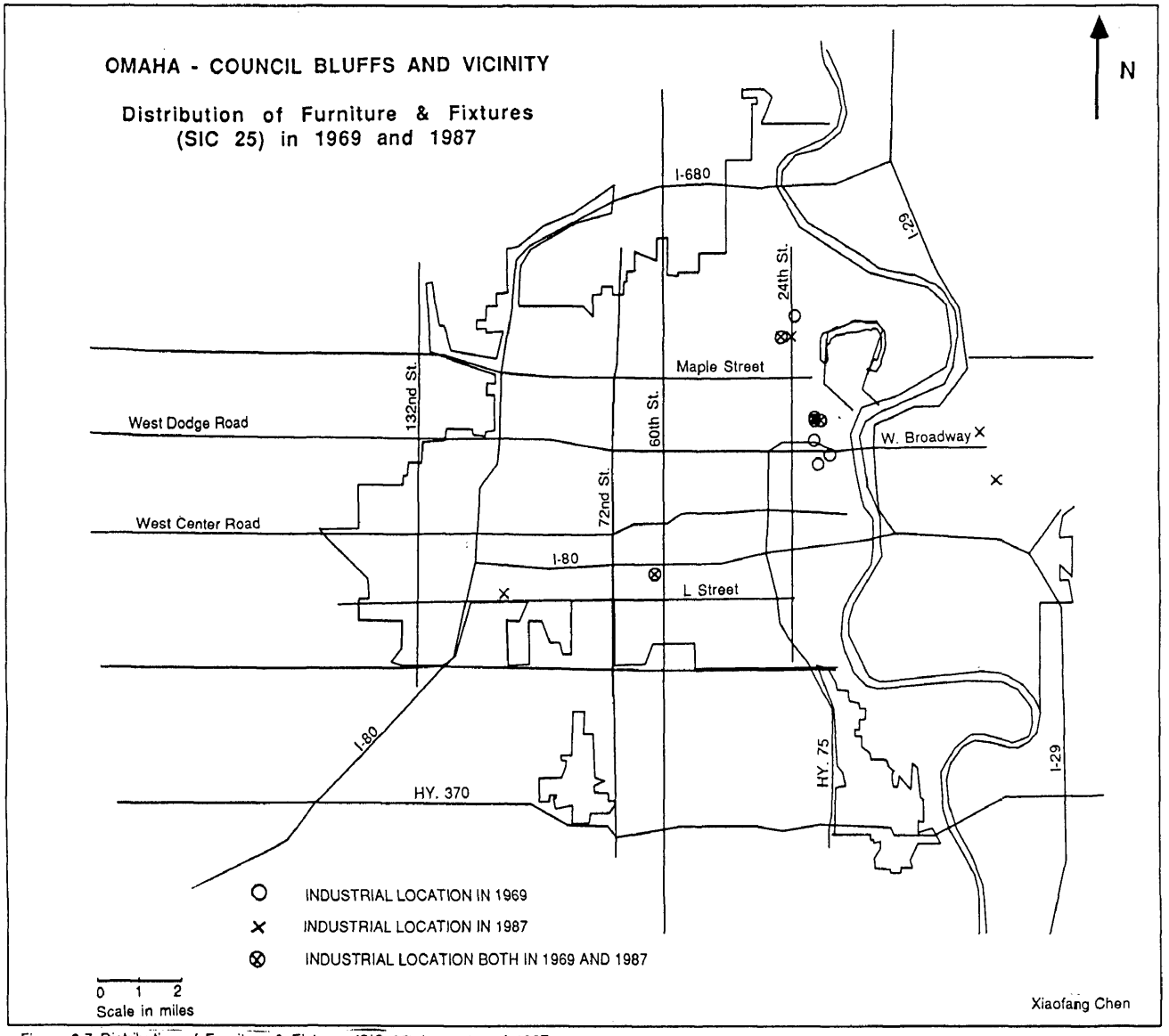

Figure 3.7 Distribution of Furniture & Fixtures (SIC 25) in 1969 and 1987.

Paper and Allied Products (SIC 26)

This group, with about 2.5 percent of the industrial firms in the SMSA, employed about 3.2 percent of the industrial workers in 1982, compared to about 1.7 percent of the industrial firms and employing about 2.5 percent of the industrial workers in 1967. The number of employees increased by 22.2 percent from totaled 900 in 1967 to 1,100 in 1982 (Table 3.4 & 3.5). Establishments with fewer than twenty employees accounting for only ten percent of total in 1967, while thirty-one percent in 1982. Sixty percent of the firms were in the 20-99 employee category 1967 and but thirty-eight percent in 1982. The remaining, about thirty percent, were employed in the firms over one hundred persons. (Table 3.10 & 3.11).

The 1987's locational pattern in this group resembled that of the 1967's (Figure 3.8). Firms are widely dispersed throughout the northeast, southeast, and southwest of Omaha. But more new firms are found in the Suburban Zone of Omaha in 1987. A cluster of firms is formed in the corridor between I-80 and "L" street. Some new firms also are found west of 132nd street in Omaha and in Papillion, Sarpy County. A tendency of southwestern movement of the firms in the industrial group was obvious.

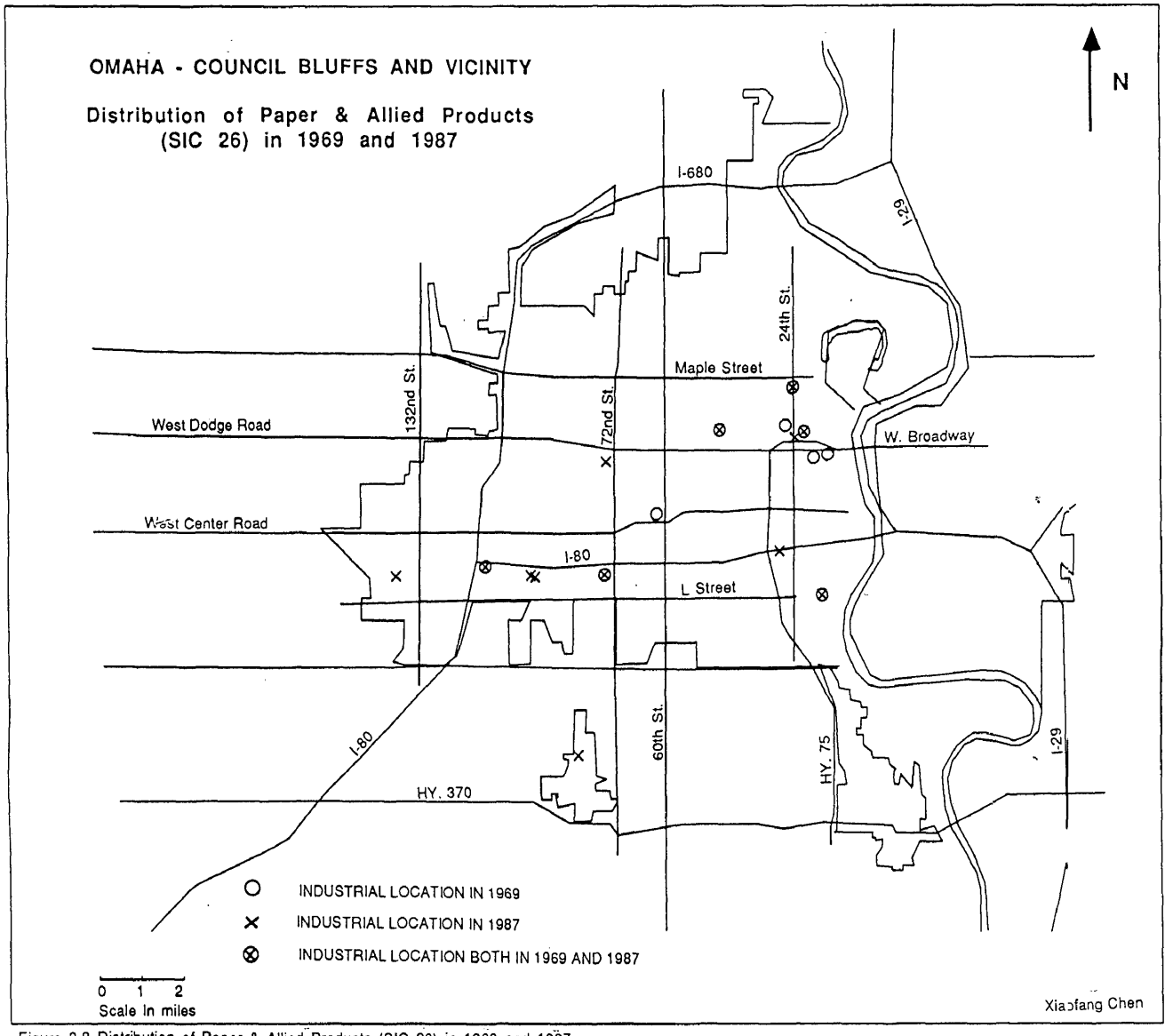

Figure 3.8 Distribution of Paper & Allied Products (SIC 26) in 1969 and 1987.

Printing, Publishing, and Allied Industries (SIC 27)

The printing, publishing and allied industries was the third largest industrial group, only next to food processing (SIC 20) and non-electrical machinery groups (SIC 35) in the SMSA by number of employees (Table 3.4). This industrial group, surpassing food processing, had the highest number of establishments of any group in the Omaha SMSA. The 147 firms in the group constituted over twenty-two percent of the industrial establishments in SMSA in 1982, compared to the 116 firms of near twenty percent in 1967. The number of employees in this group increased by 56 percent from 1967 to 1982 and incurred the highest rate of growth among all the industrial groups (Table 3.5). Small establishments with fewer than twenty employees made up nearly seventy-three percent of the total number in this group in 1982, but comprised nearly eighty-three percent in 1967. Firms registering 20-99 employees accounted for about twenty-two percent in 1982 and but fourteen percent in 1967. The remaining, less than five percent, belonged to firms with over 100 employees (Table 3.10 & 3.11).

According to Lea's 1968' thesis, firms in Group 27 were concentrated in the Downtown Omaha; minor concentrations were also evident in South Omaha within the Downtown Zone, Council bluffs, and in some neighborhood commercial areas. However, since Lea's thesis, dramatic locational change has occurred to this industrial group as well. At present (1987) most of the firms are found between Dodge and "L" street in the Suburban Zone. Seven new firms found their locations in the Midtown Zone, or in the Council

Bluffs and Bellevue urban area. Almost all of the firms are located near major transportation routes (Figure 3.9). Thus the firms within printing and publishing group are no longer solely clustered in the downtown, but have dispersed primarily to Suburban and Midtown Zones.

Chemicals and Allied Products (SIC 28)

Chemical establishments accounted for about five percent of the industrial firms, and employed about 3.5 percent of the industrial workers within the SMSA in 1982, while the number of employees decreased by 0.2 percent, the decline was far below the overall average national decrease rate of 6.8 percent (Table 3.4 & 3.5). Again the majority of establishments was small with nearly seventy-three percent having fewer than twenty employees in 1982, compared to fifty-eight percent in 1967. Firms in the 20-99 employee category made up twelve percent of the total in 1982, but nearly twenty-three percent in 1967. The remaining firms had over 100 employees and accounted for fifteen percent of all employment in Group 28 (Table 3.10 & 3.11).

In 1969, industrial firms in this group had a heavy concentration in the Downtown Zone, with a few firms found in the Midtown and Suburban Zones. Since the late 1960's, firms dispersed in the Midtown and Suburban Zones and in Council Bluffs urban area, with a continued tendency to cluster in the downtown core area of Omaha (Figure 3.10).

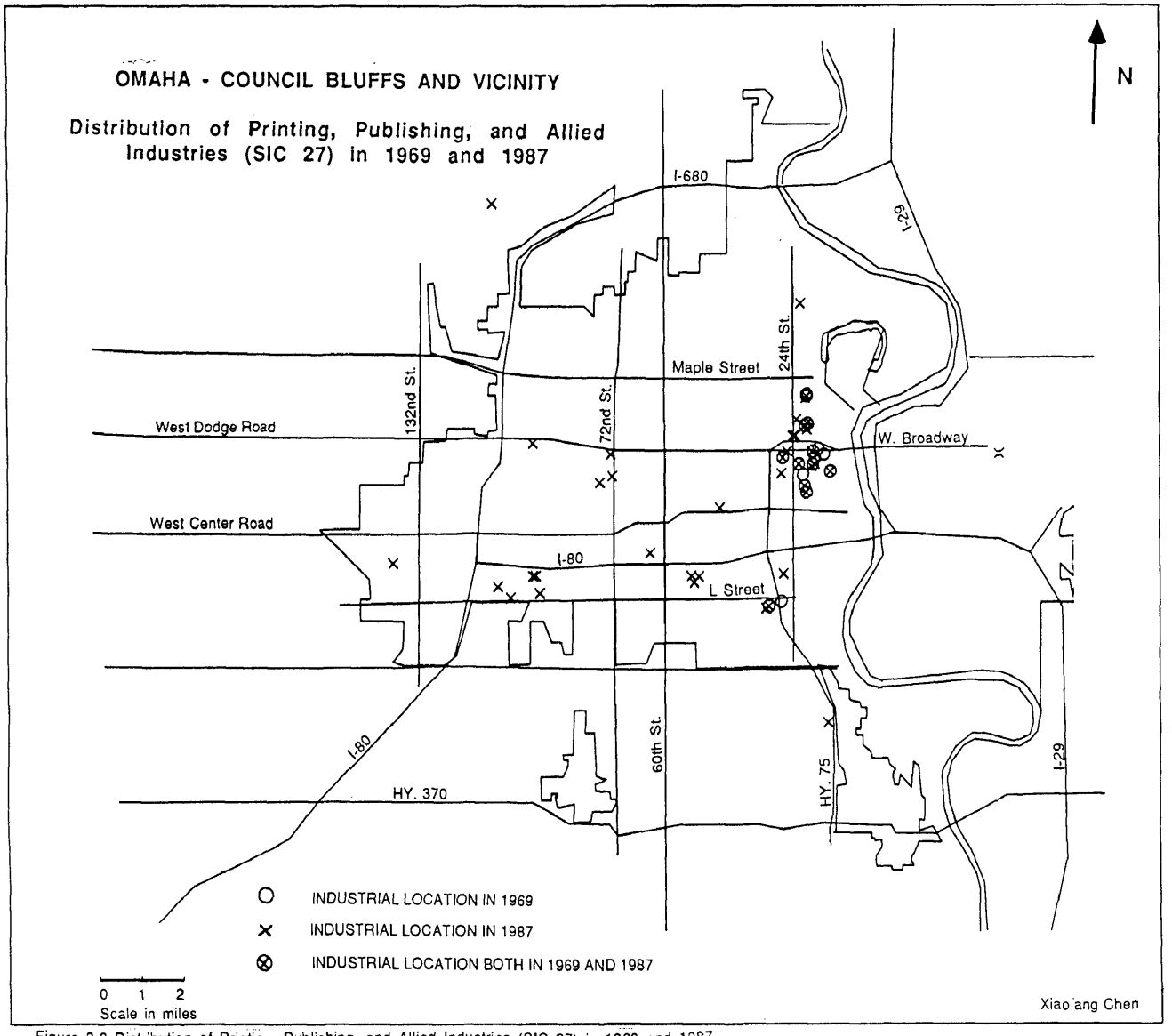

Figure 3.9 Distribution of Printing, Publishing, and Allied Industries (SIC 27) in 1969 and 1987.

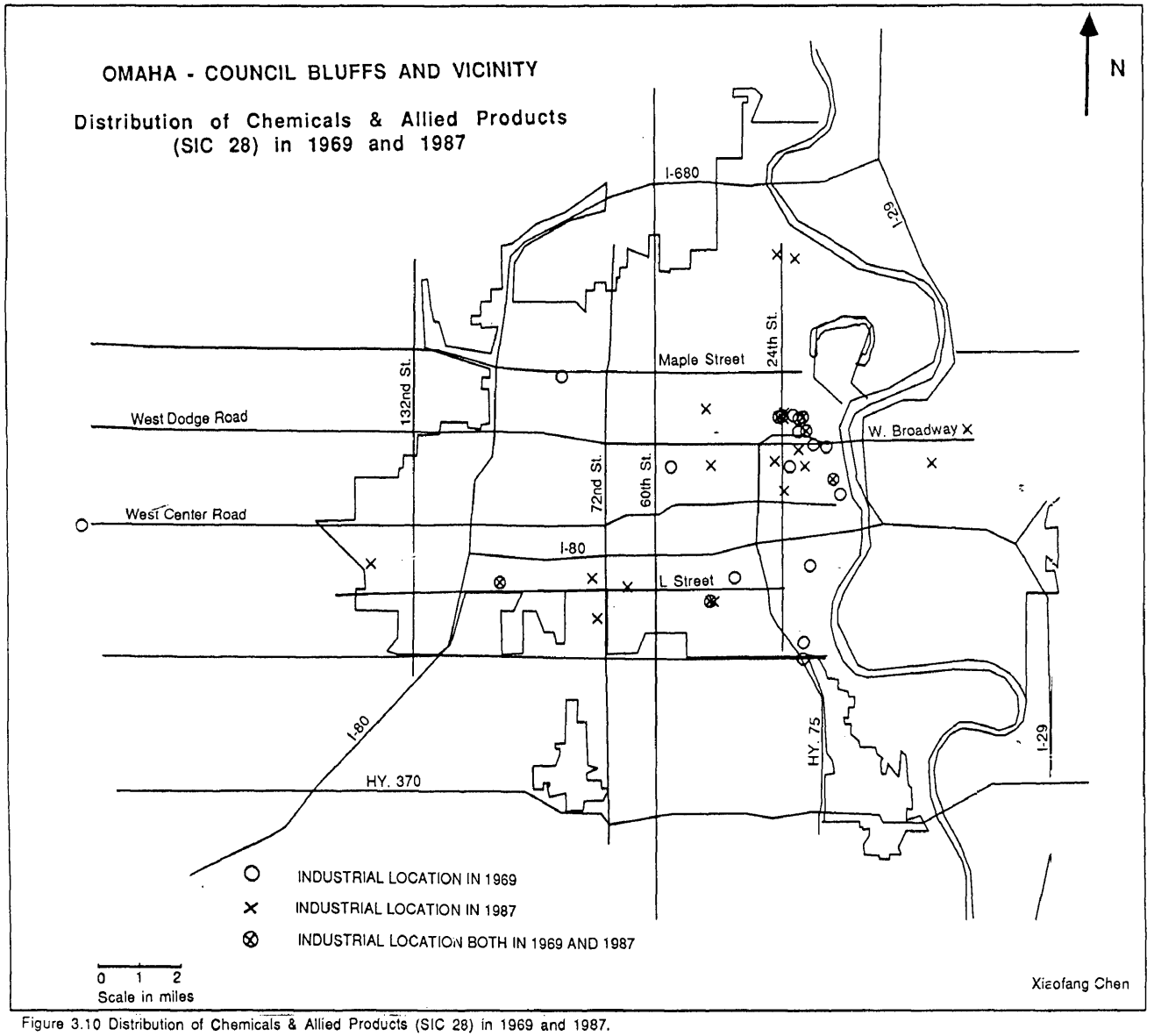

Figure 3.10 Distribution of Chemicals & Allied Products (SIC 28) in 1969 and 1987.

Petroleum Refining & Related Industries (SIC 29)

The firms in this Group 29 comprised 4 firms in 1967 and 2 firms in 1982, constituting less than one percent of the firms in the SMSA both in 1967 and 1982 (Table 3.5). In 1967 the four firms were all within fewer than 100 employees categories. The two firms in 1982 either employed fewer than twenty workers or belonged to 100-249 employees category (Table 3.10 & 3.11).

Figure 3.11 shows the comparison of plant location between 1969 and 1987. There were three new firms in 1987, one in downtown Omaha, one in suburban zone of Omaha and another one in the Council Bluffs urban area. There was only one firm in downtown Omaha in 1969. These firms in the group were strongly oriented toward railroad transportation facilities.

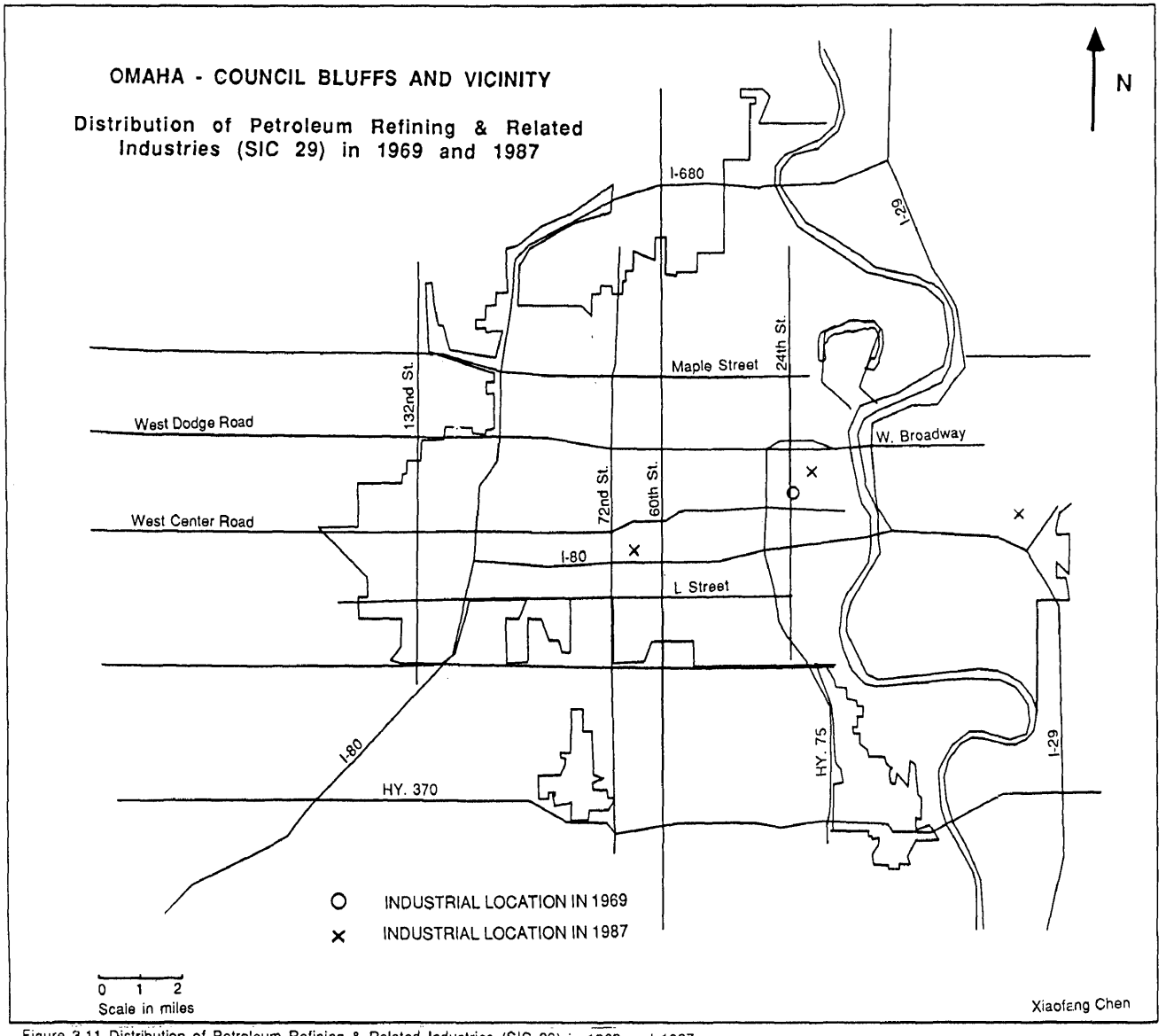

Figure 3.11 Distribution of Petroleum Refining & Related Industries (SIC 29) in 1969 and 1987.

Rubber and Miscellaneous Plastic Products (SIC 30)

Rubber and plastics totalled twenty-four firms in 1982, which more than tripled the seven firms documented in 1967. The industrial establishments employed about 1.8 percent of all industrial workers in 1982, and about 1.1 percent in 1967 (Table 3.4 & 3.5). Most of the firms were small with nearly seventy-one percent employing fewer than twenty workers in both study periods. The rest of the firms employed over 20 employees (Table 3.10 & 3.11).

The 1987 distribution of rubber and miscellaneous plastic products plants, appeared remarkably similar to the 1967 pattern (Figure 3.12). The establishments had a dispersed location pattern. However, three new firms are found in suburban Zones and two new firms are located in the Council Bluffs urban area in 1987.

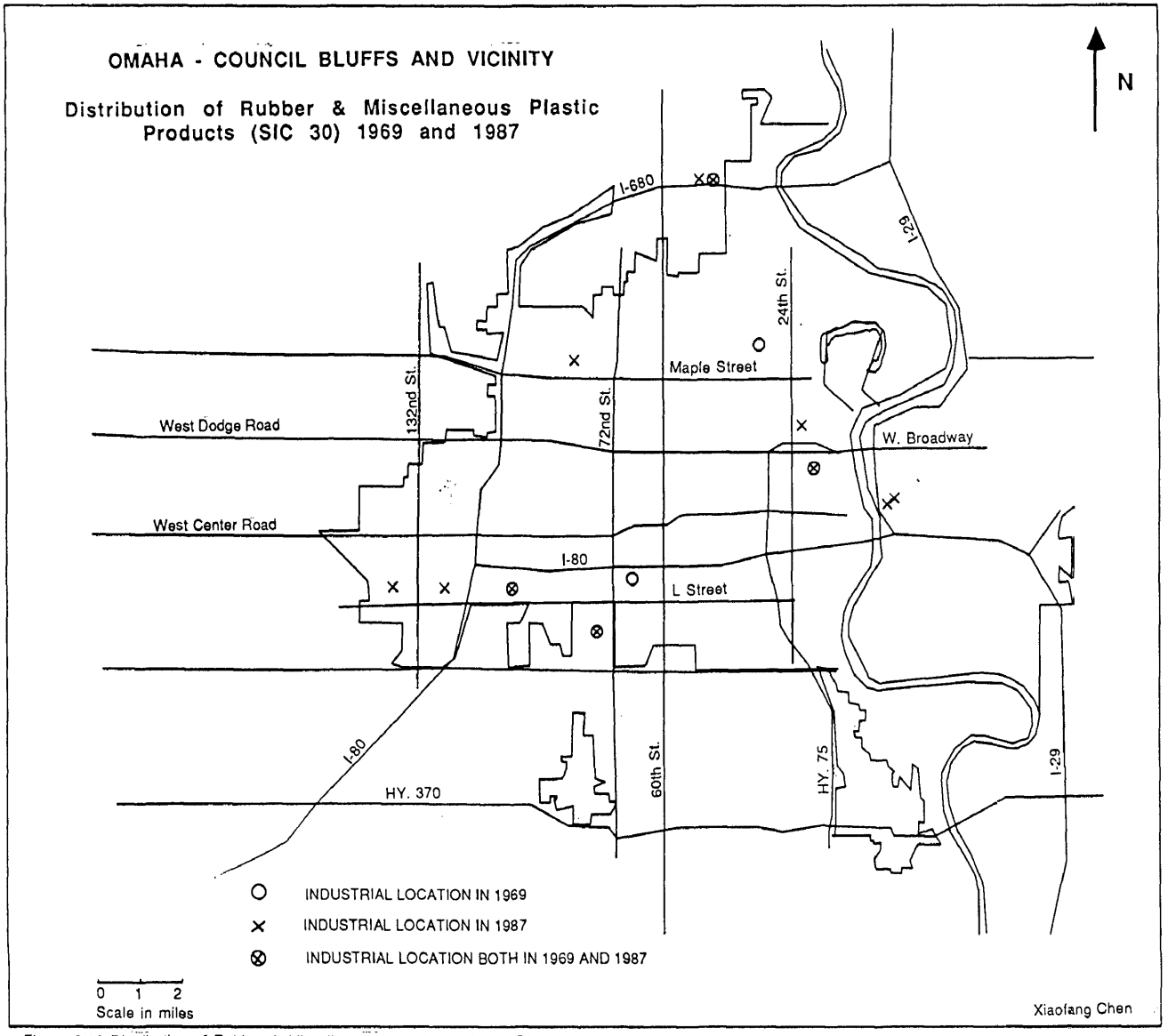

Figure 3.12 Distribution of Rubber & Miscellaneous Plastic Products (SIC 30) in 1969 and 1987.

Leather & Leather Products (SIC 31)

The four firms in 1982 and three firms in 1967 in this industrial group did not significantly contribute to the industrial base of the Omaha SMSA. They remained about one half of one percent of the industrial establishments from 1967 to 1982 (Table 3.5).

According to Lea's 1968 thesis, the small number of firms in industrial Group 31 were largely found in the Downtown Zone of Omaha and Council Bluffs. On the other hand, the 1987's pattern shows that they are located in the area of Midtown Zone which is immediately adjacent to the Downtown Omaha Zone. No apparent suburbanization of the firms has been found in this industrial group (Figure 3.13).

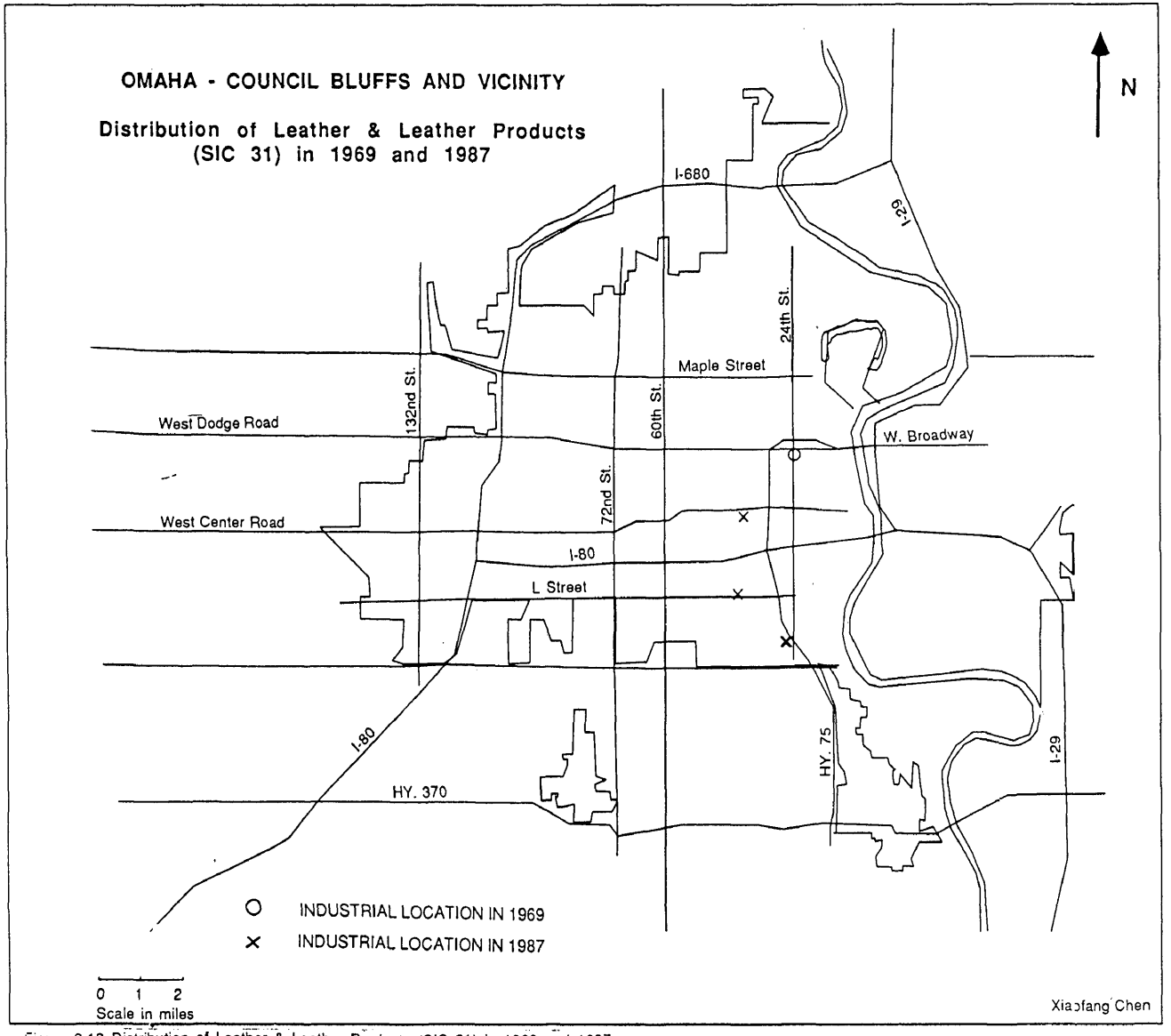

Figure 3.13 Distribution of Leather & Leather Products (SIC 31) in 1969 and 1987.

Stone, Clay, Glass & Concrete Products (SIC 32)

The firms in this industrial group remained at about 6.4 percent of all industrial firms in the SMSA between 1967 and 1982. However, the number of industrial workers decreased by 37.5 percent, making Group 32 as the greatest decrease by rate of all the industrial groups (Table 3.4 & 3.5). All firms had employees grouped in the fewer than one hundred people category in 1982. The majority of firms, eighty percent, had fewer than twenty employees, compared to about sixty percent in 1967 (Table 3.10 & 3.11).

The striking change in the locational pattern between 1969 and 1987 is illustrated by Figure 3.14. Previously, firms were centered in Downtown Omaha and peripheral locations. In the 1987's pattern, however, besides the downtown clustering, other firms were located along railroads or major highway in south and southwest Omaha. Three new firms can be found at the southwest corner of Omaha, near the intersection of I-80 and 132nd street in the Suburban Zone. Thus, apparent suburbanization in industrial group 32 is taking place.

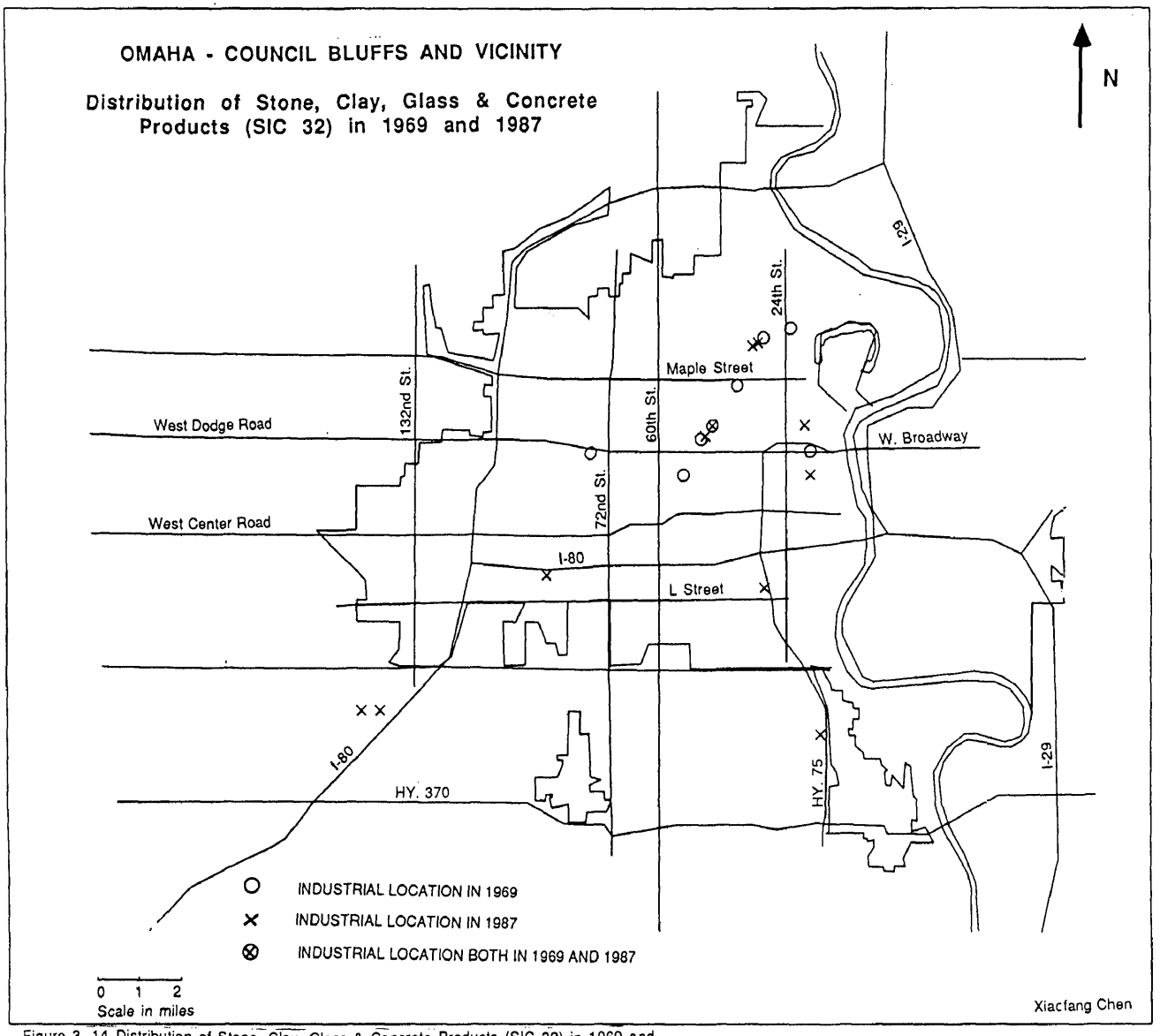

Figure 3. 14 Distribution of Stone, Clay, Glass & Concrete Products (SIC 32) in 1969 and 1987.

Primary Metal Industries (SIC 33)

Industries in Group 33, constituted less than two percent of all firms in the SMSA and about forty-four percent of the firms had fewer than twenty employees in 1982, compared with thirty-six percent in 1967. The remaining with over twenty employees categories accounted for fifty-six percent in 1982 and but thirty-six percent in 1967 (Table 3.5).

In 1987 primary metals industries were mainly concentrated around the periphery of the Downtown Zone as Lea's 1968 thesis described (Figure 3.15). Three new firms established their locations in Council Bluffs area. The nature of the materials used by industrial Group 33 necessitated a site location near large scale rail facilities.

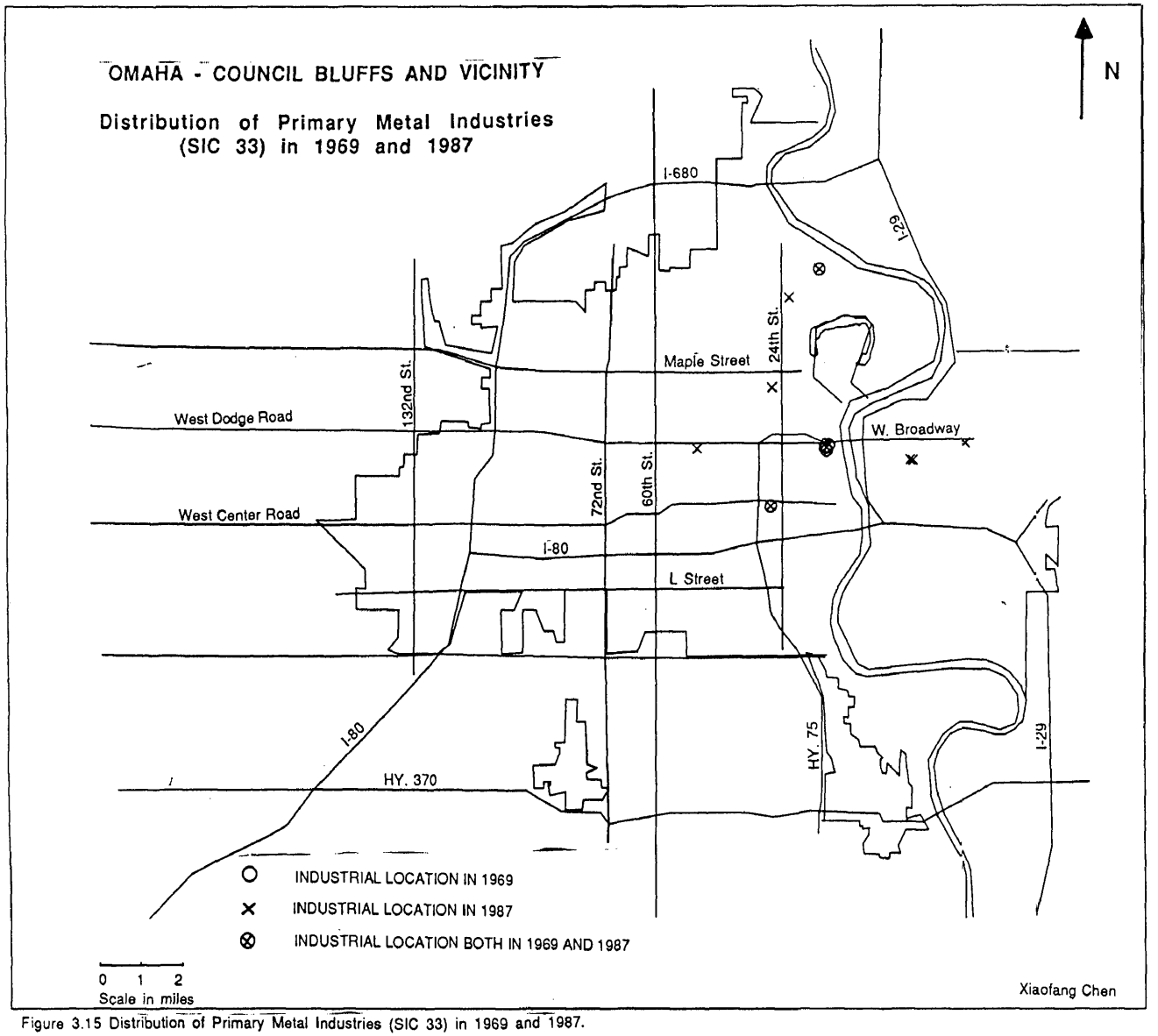

Figure 3.15 Distribution of Primary Metal Industries (SIC 33) in 1969 and 1987.

Fabricated Metal Products, Except Machinery & Transportation Equipment (SIC 34)

This group comprised 7.5 percent of the total number of establishments in 1982, compared to 8.6 percent in 1967 and the number of employees decreased by twenty-five percent from 2,000 to 1,500 (Table 3.4 & 3.5). Most firms were small with about sixty-two percent in 1982, while sixty-six percent employed fewer than twenty workers in 1967. Thirty-one percent firms had 20-99 employees in 1982, compared with twenty-two percent in 1967. The remaining percentage had over 100 employees (Table 3.10 & 3.11).

The locational pattern of fabricated metals in 1987 was similar to the pattern in 1969 (Figure 3.16). Firms were scattered throughout the Omaha urban area with a general concentration in and around the downtown core area; a minor concentration in the industrial park corridor between I-80 and "L" street, and in Ralston.

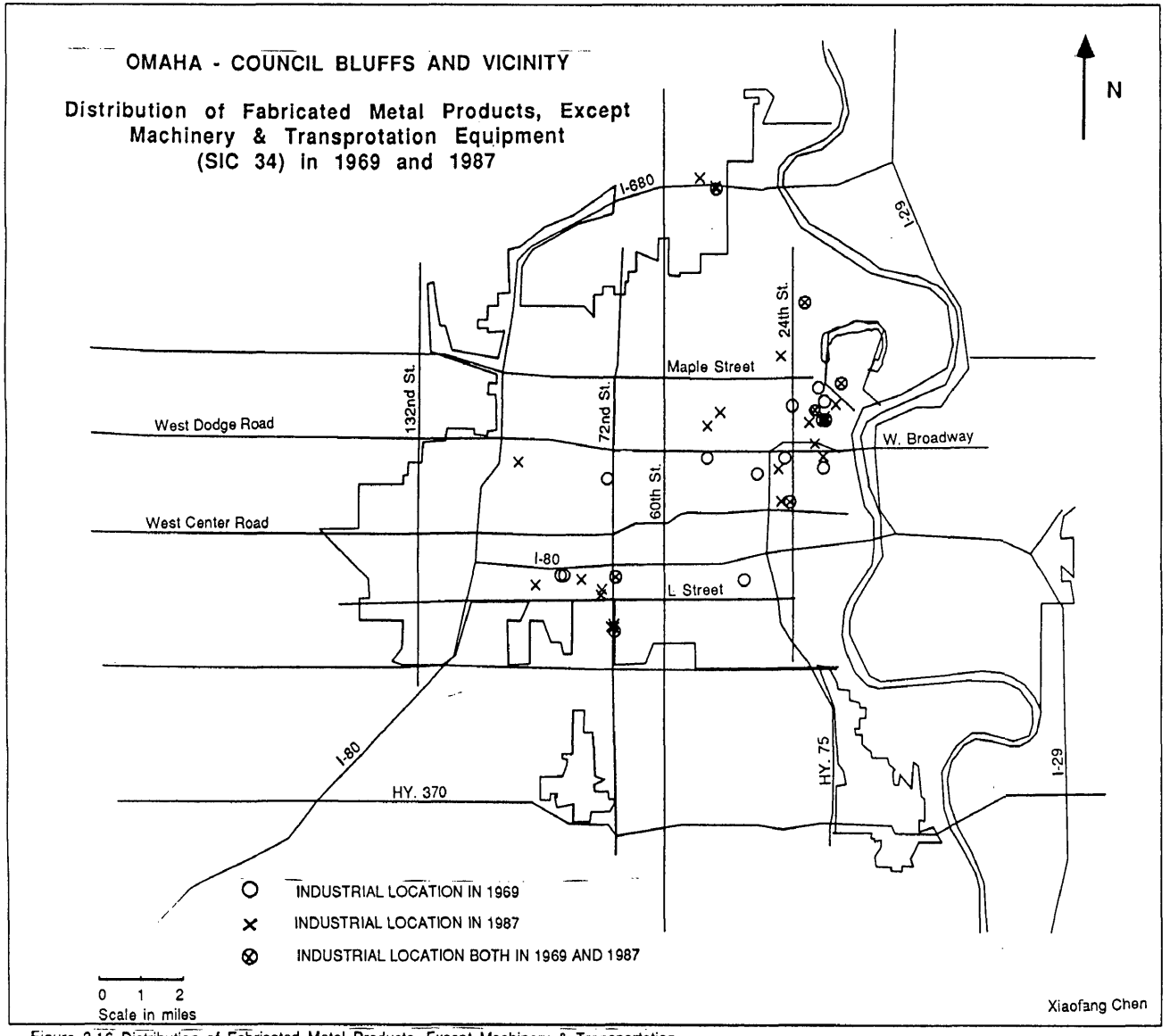

Figure 3.16 Distribution of Fabricated Metal Products, Except Machinery & Transportation Equipment (SIC 34) in 1969 and 1987.

Machinery, Except Electrical (SIC 35)

Non-electrical machinery now represents the second largest industrial group in the metropolitan area. About eleven percent of the firms in the SMSA employed 14.1 percent of all the industrial work force in 1982. The number of employees in Group 35 increased by 54.8 percent from 3,100 to 4,800 between 1967 and 1982, recording the second largest growth rate, next to the printing and publishing group (Table 3.4 & 3.5). Once again, many firms were small, with nearly sixty-three percent in the fewer than twenty employees category in 1982, but accounted for seventy-two percent in 1967. Such a change is a reversal from most groups discussed. An additional twenty-nine percent were to be found in the 20-99 employee category in 1982, only twenty-two percent in 1967. The remaining percentage was relatively large establishment with over 100 employees (Table 3.10 &3.11).

In 1969, machinery firms tended to locate along 24th street north of Dodge. There was also a clustering of firms along I-680 near the northern boundary of the Midtown Zone. Although the two areas remained as the central locations of the non-electrical machinery establishments, the striking changes of locational pattern took place in 1987 pattern. Seven new firms found their locations in the Suburban Zone. A strong tendency of southwestward shifting of firms is obvious (Figure 3.17).

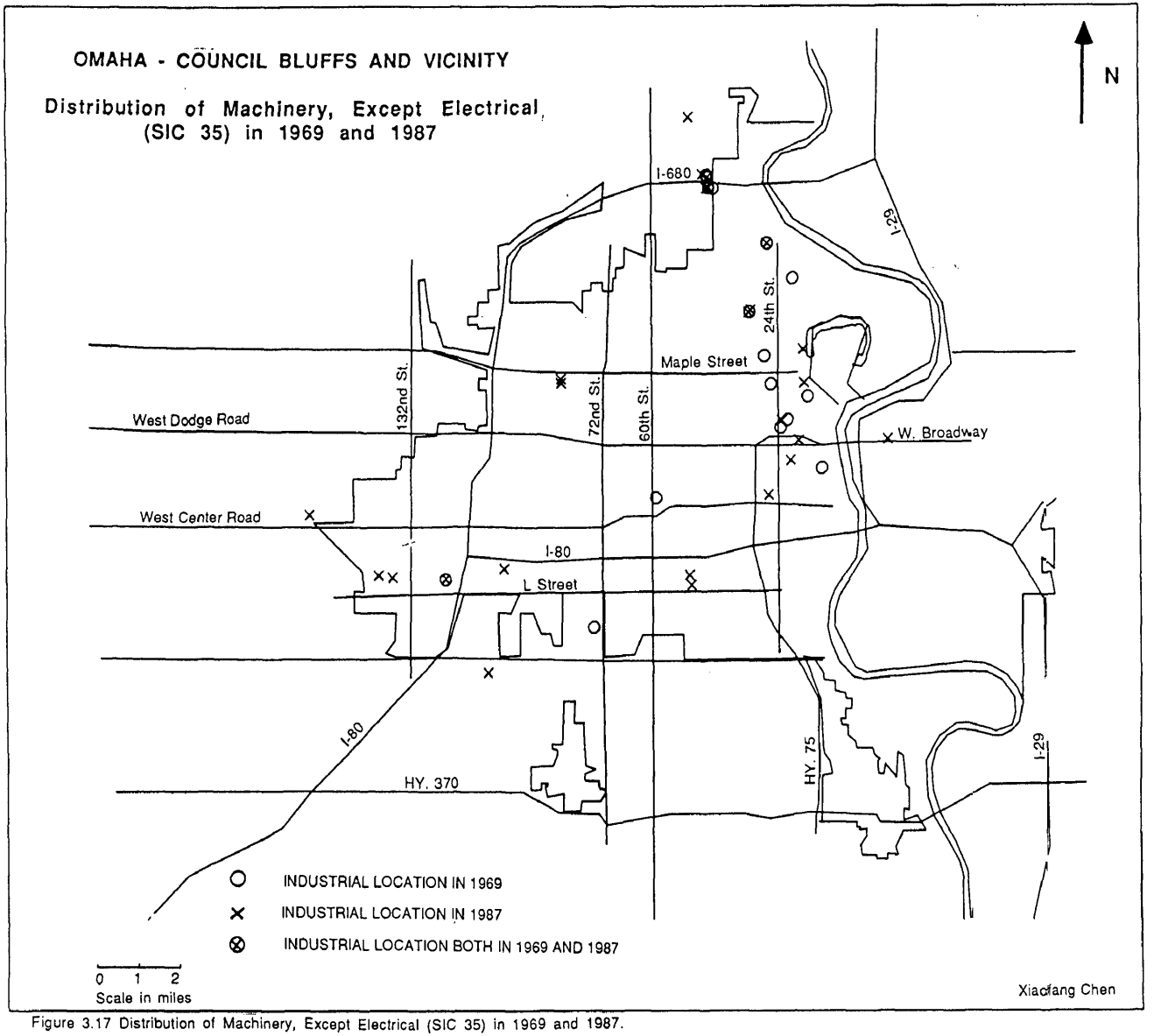

Figure 3.17 Distribution of Machinery, Except Electrical (SIC 35) in 1969 and 1987.

Electrical & Electronic Machinery, Equipment, & Supplies (SIC 36)

This group, with around three percent of the firms in the SMSA, employed about eight percent of the industrial work force in 1982. Both the number of firms and employees has increased, compared to two percent of the firms, employing about three percent of the industrial workers in Lea's 1968 study (Table 3.4 & 3.5). Many firms in this group were relatively small, fifty-five percent recorded fewer than twenty employees, and thirty-two percent had 20-99 employees in 1982 (Table 3.10 & 3.11).

The Downtown Omaha industrial core area still continues the greatest concentration of electrical machinery establishments. However, southwest Omaha is becoming an increasingly more important area for industrial Group 36. Besides as the site of the vast AT&T Network Systems (the former Western Electric Plant), four new firms have established their locations within southwest Omaha and Ralston in the Suburban Zone (Figure 3.18) .

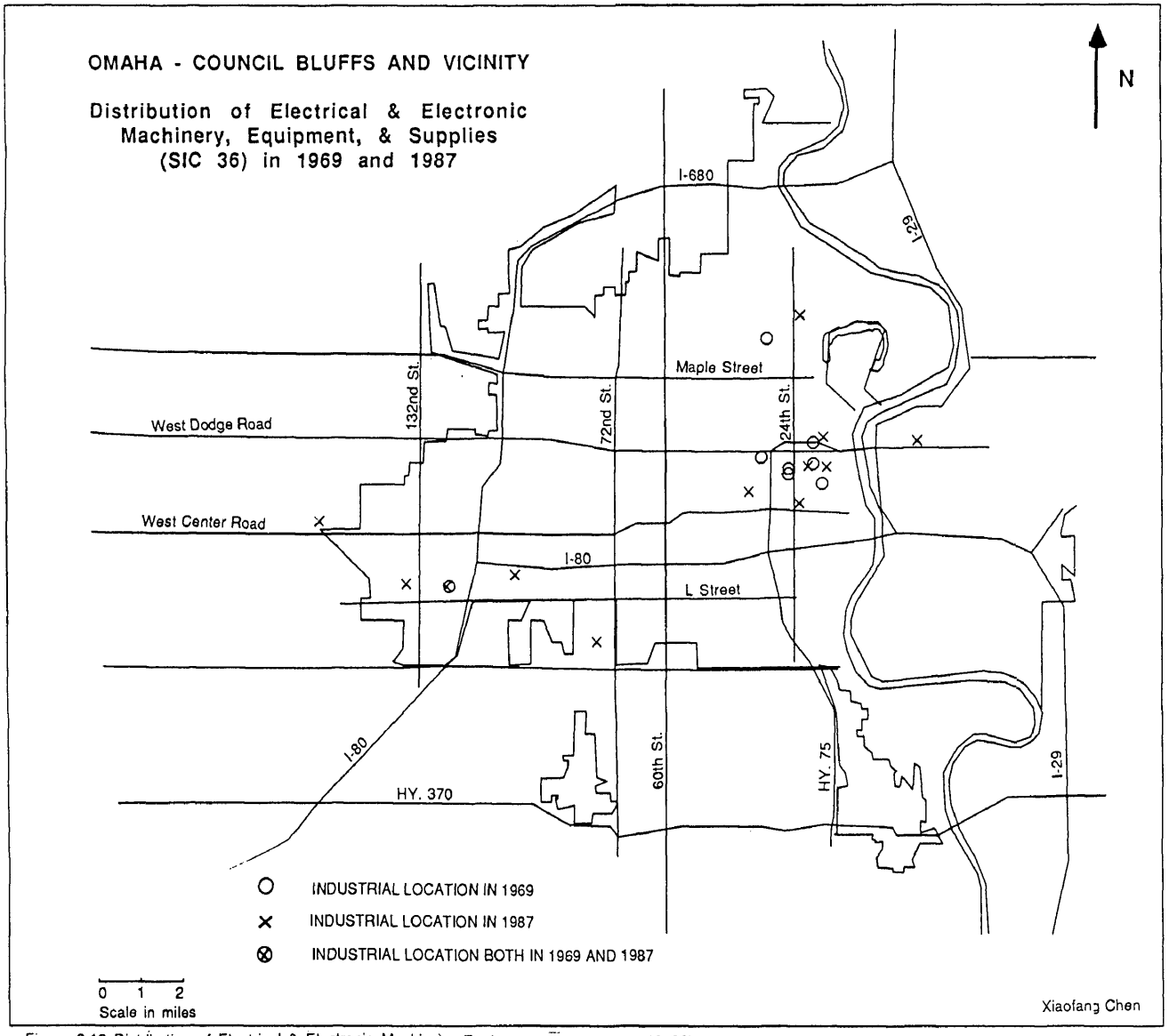

Figure 3.18 Distribution of Electrical & Electronic Machinery, Equipment, & Supplies (SIC 36) in 1969 and 1987.

Transportation Equipment (SIC 37)

The firms industrial Group 37 constituted three percent of all industrial firms in 1982, but only two percent in 1967. Even though firm numbers increased, the number of employees decreased by 27.3 percent during this period from 1,100 to 800 (Table 3.4 & 3.5). The firms were predominantly small, with sixty-eight percent having fewer than twenty employees in 1982, but recording a figure of fifty-eight percent in 1967. The remaining twenty-six percent of firms had 20-99 employees in 1982, compared to thirty three percent in 1967 (Table 3.10 & 3.11).

According to Lea's 1960s research, transportation equipment establishments had a random or dispersed location pattern throughout Omaha-Council Bluffs area. There was then no significant area of concentration. In 1987, however, five new firms found their locations along or near I-80 in southwest Omaha in the Suburban Zone and along I-680 in the Midtown Zone Omaha. Another new firm has established their locations near the Broadway in Council Bluffs. The firms in this group more tended to locate close to the major highways or major streets in the SMSA (Figure 3.19).

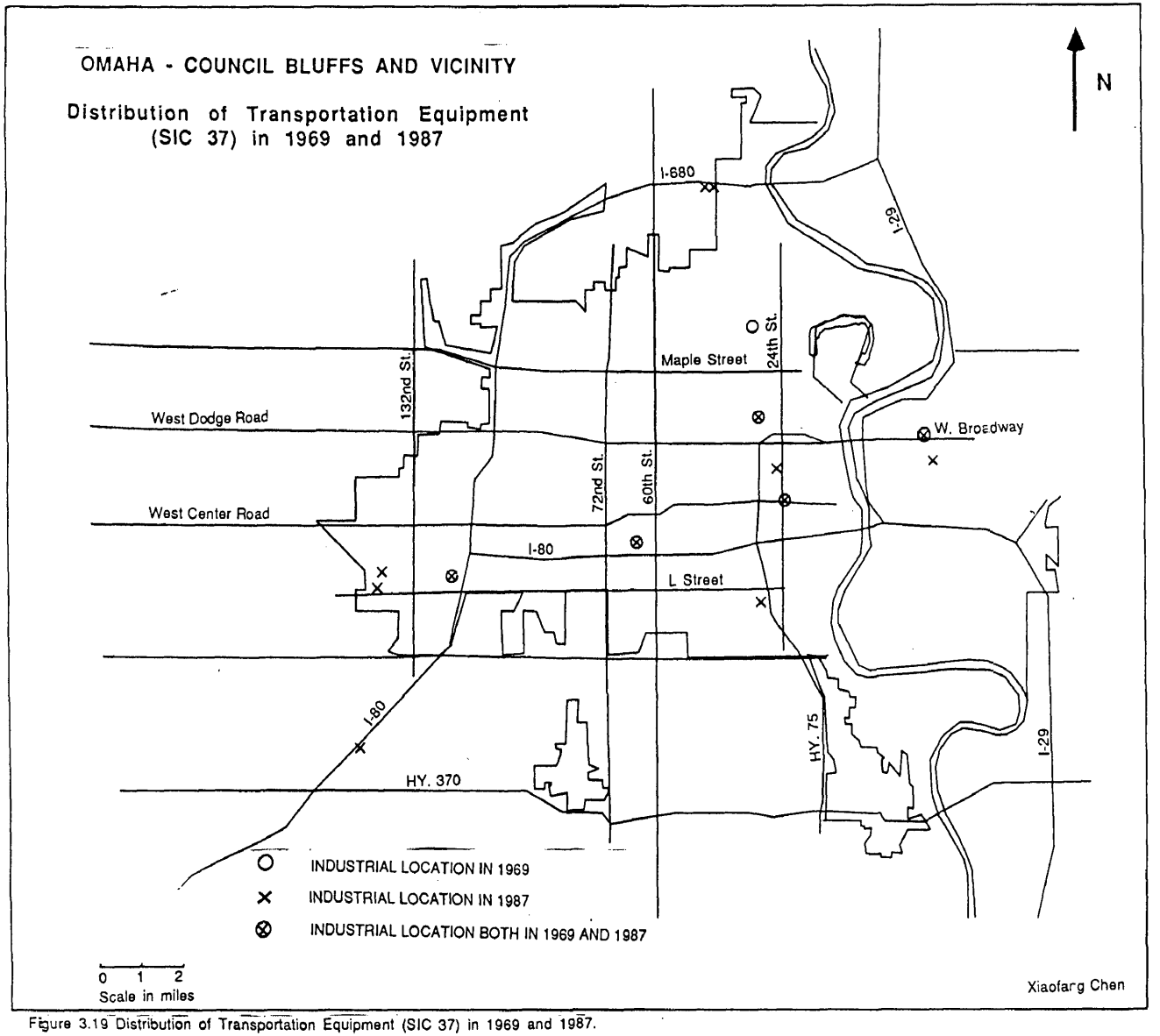

Figure 3.19 Distribution of Transportation Equipment (SIC 37) in 1969 and 1987.

Measuring, Analyzing, & Controlling Instruments (SIC 38)

The industrial establishments Group 38 accounted for about one percent of all industrial firms. Thus, this industrial group is insignificant to the industrial base in the Omaha SMSA (Table 3.5). Nearly all of the firms had fewer than 100 employees, with nearly sixty-three percent having fewer than twenty employees in 1982, but seventy-five percent in 1967 (Table 3.10 & 3.11).

Nine new-born fims with over 20 employees are found in 1987's pattern, compared to only one firm with above 25 employees in 1969. Four new firms are found in the Suburban Zone. Another four new firms are located in the Midtown Zone. Only one new firm is sited in the northern portion of Downtown Zone. The industrial Group 38 had a dispersed location pattern with a strong tendency toward suburbanization (Figure 3.20).

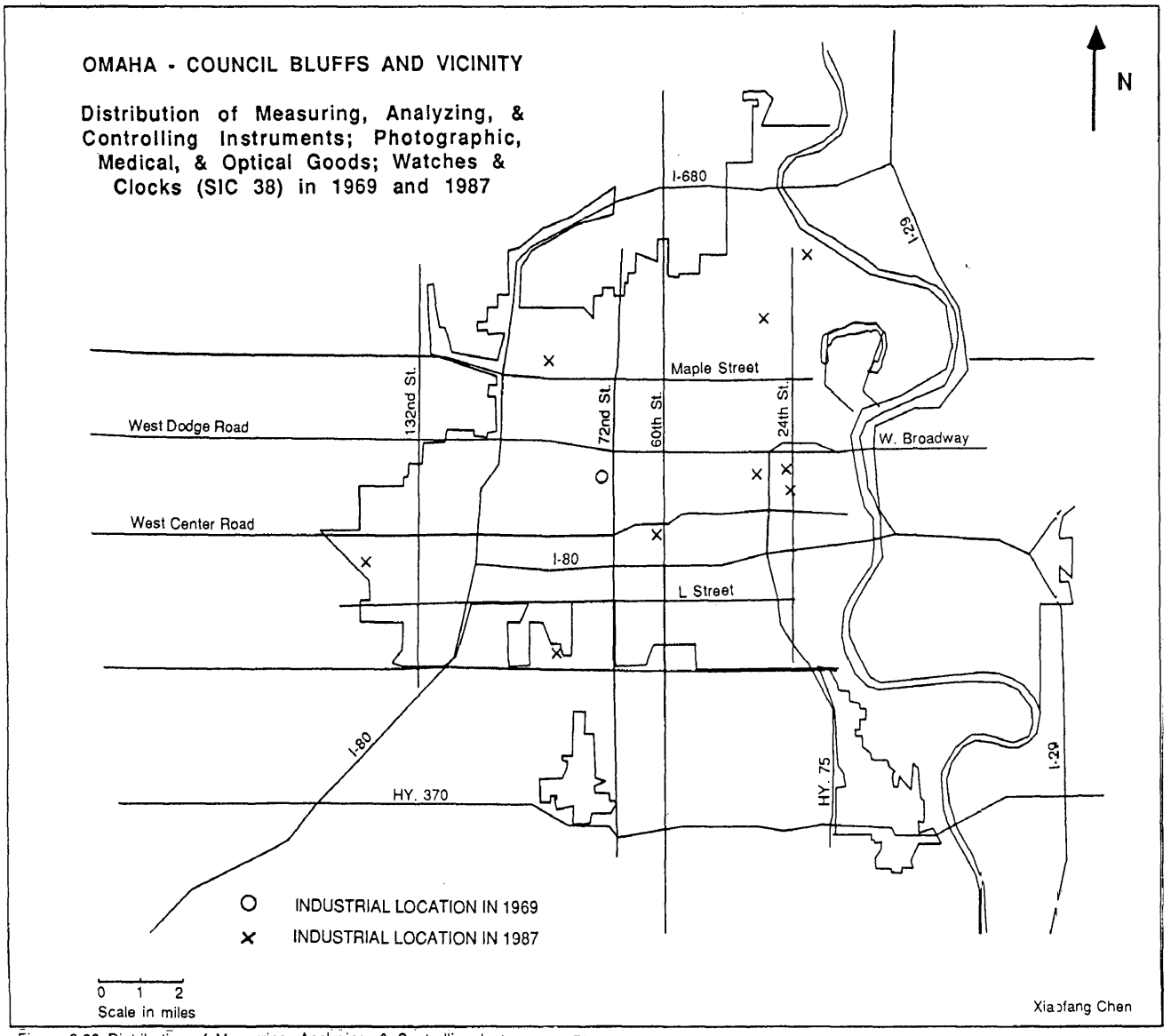

Figure 3.20 Distribution of Measuring, Analyzing, & Controlling Instruments; Photographic, Medical, & Optical Goods; Watches & Clocks (SIC 38) in 1969 and 1987.

Miscellaneous Manufacturing Industries (SIC 39)

Miscellaneous manufacturing accounted for approximately five percent of all firms in the SMSA, employing around three percent of industrial work force (Table 3.4 & 3.5). As with most Omaha manufacturing, these establishments had a relatively small number of employees. Nearly seventy-six percent employed fewer than twenty in 1982, the figure was sixty-two percent during the 1960s study period. Only seventeen percent were in the 20-99 employee category in 1982, in the contrast to thirty-one percent in 1967 (Table 3.10 & 3.11).

Seven of the nine firms are new in 1987. The locational patterns in 1987 and 1967 are similar.The core area for industrial establishments continued as a cluster in the Downtown Zone. However, new firms are also found in the Midtown Zone and Council Bluffs in 1987's pattern (Figure 3.21). There appeared to be no trends of movement towards the Suburban Zone as in a number of other cases previously discussed in this group.

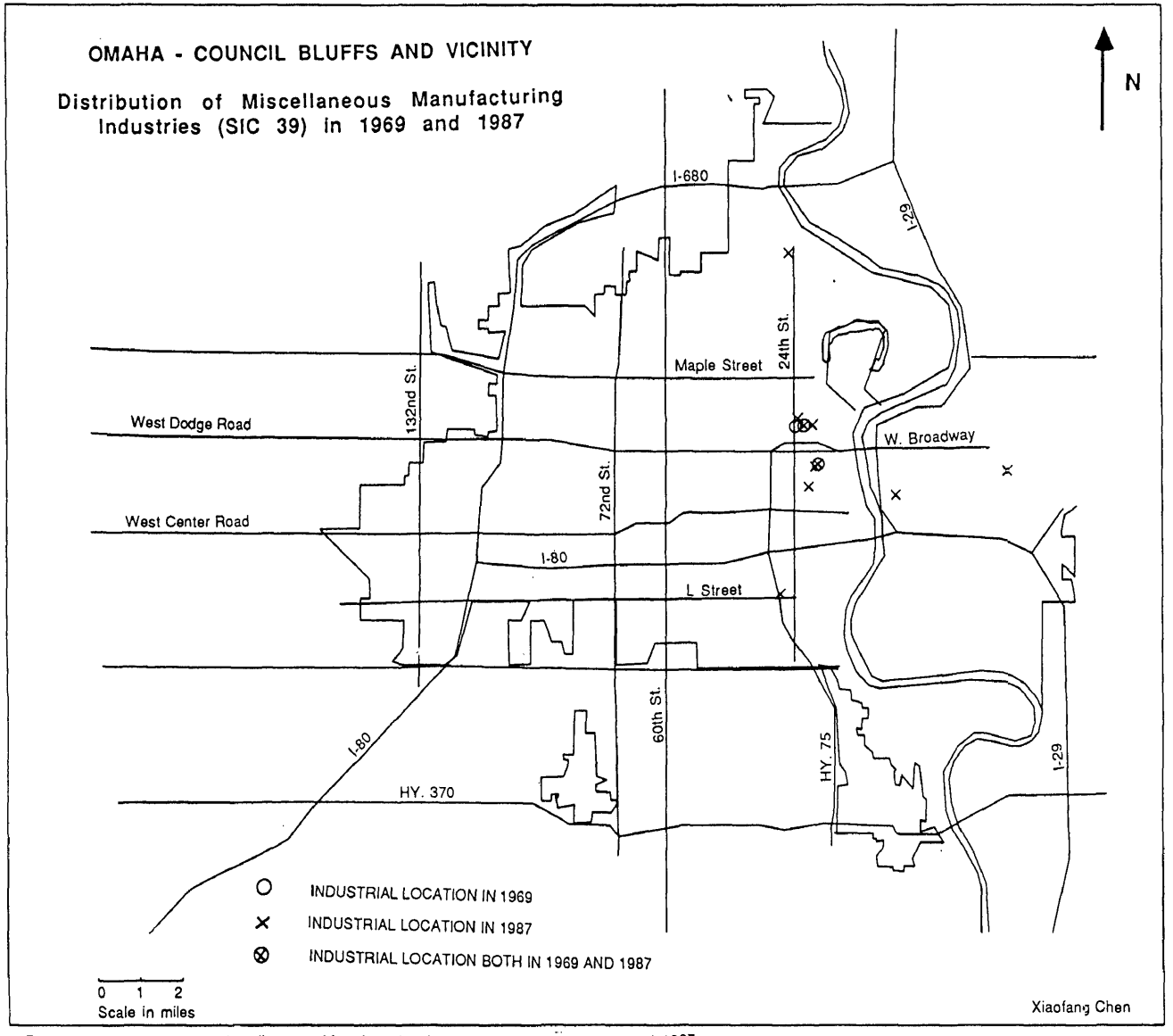

Figure 3.21 Distribution of Miscellaneous Manufacturing Industries (SIC 39) in 1969 and 1987.

3.3 Assessment : A Comparison of Time Periods and with Spatial Models

As discussed in Chapter One of this study, the six phase conceptual model developed by Wheeler and Park attempts to depict the spatial patterns of manufacturing change in metropolitan areas. Certain overall points of correspondence between the conceptual model and the Omaha empirical data stand out.

In assessing this correspondence, the Omaha inner city (downtown and midtown zones) and suburban area experienced different stages in the manufacturing growth sequence during the study period as suggested by the model (Figure 1.1). The initial centralization and the inner-city concentration phases occurred prior to the beginning of the study period in 1969 (Figure 3.2) as they were mostly discussed in Mr. Lea's 1960s thesis. The continuous growth phase in Omaha occurred in the 1970's and the city is well represented by theoretical the pattern of manufacturing location (Figure 3.1). The 1980's were characterized by the beginning of suburbanization phase. From 1969 to 1987 the distribution of manufacturing firms has spread towards the west of Omaha, along I-80, towards southwest Omaha, and more evenly throughout into Papillion, LaVista, and also into Bellevue. Manufacturing employment in the Downtown region has declined relatively to Midtown, and especially to the Suburban area. The number of firms of over 25 employees in the Suburban Zone, only accounting for about seventeen percent in 1969, increased greatly to thirty-seven percent of firms of over twenty employees in 1987 (Table 3.1). The total loss of the

firms from Downtown is greater than the number either in the Midtown Zone or in the Suburban Zone while the losses experienced in the Suburban area are the least and the gains are the greatest. In 1987, however, there were still more manufacturing firms of over 20 employees in Downtown and Midtown zones than in Suburban Zone alone (Table 3.2 & 3.3). Thus, the study period represents a turning point in Omaha manufacturing locational change as two of the six phases of the model were experienced from 1969 to the present. It is difficult to evaluate the fifth and sixth phase, suburban dominance and nonmetropolitan industrialization, because the Omaha SMSA does not appear as yet to have entered the suburban dominance stage.

Likewise, the model assumes a sectoral growth rather than a concentric growth wave. Rail sectors were particularly important in the past, and highway sectors, especially those associated with the interstates, seem to be of considerable current significance. Certain rail and highway sectors clearly have continued to attract manufacturing while other sectors have remained stagnant. Thus, growth waves may proceed at different rates in different sectors through time.

CHAPTER IV : SUMMARY AND CONCLUSION

As a comparative study, this thesis has examined the overall spatial shift of industrial establishments within the Omaha SMSA and compared the industrial pattern and structure by industrial SIC group between 1967 to 1987. Chapter One reviewed pertinent literature on the evolution history of manufacturing in American metropolitan areas as well as models and theories developed on locational patterns and dynamics of industrial production. Chapter Two primarily dealt with the data sources and procedures for presenting Omaha SMSA manufacturing change. Chapter Three was devoted to a comparative analysis of locational change within three zones, spatial shift of industrial establishments by major industrial group, and an assessment of the Omaha industrial change pattern relative to theoretical patterns as established in the literature. In this chapter the findings are summarized and general conclusions formulated.

As stated in the hypothesis in Chapter I, the industrial pattern of metropolitan Omaha in 1987 was different from that in 1969. Historically, manufacturing firms were concentrated in the Downtown Zone (east of 24th street to the Missouri River) and the adjacent Midtown Zone (24th to 60th streets). However, since the completion of Interstate I-80/I-480/I-680, from the southwestern margin of the city's built-up area to the Central Business District in 1965, the accessibility for manufacturing firms has been improved so that larger, more economical land packages in the suburbs became attractive as new locations. These route corridors as well as non-

interstate radial streets, anchored to the Central Business District ,also added to the opportunities for new locations. It appears, from 1969 to 1987, that the distribution of manufacturing firms has dispersed towards the west and southwest Omaha, where numerous but isolated clusterings of industrial establishments had formed during the 1960s.

Downtown Omaha remained an area of heavy concentrations of industrial firms while the suburban area grew faster. Although there are numerous disadvantages to a downtown location, certain types of industrial establishments, such as, new facilities for food processing, printing and publishing, chemicals and allied products, fabricated metal products and as well as other groups are still attracted to locate or stay near the core of the city.

Linear patterns of industrial concentration extend westward from the secondary core area in south Omaha between the corridors of I-80 and "L", towards the Industrial Road in southwest Omaha. This pattern appears particularly true for industrial groupings as printing and publishing, chemicals and allied products, rubber and plastics products, fabricated metal products, non-electrical machinery, electric and electronic equipment and transportation equipment. The movements of such industry groups to suburban areas is evident for Omaha in the 1980's. The suburban area shares with the Downtown Zone as an area of planned sites for industrial development. Although industrial firms experienced suburbanization, the Omaha SMSA does not seem to have entered a suburban dominance stage. The degree and pace of suburbanization of

manufacturing is thus smaller and slower when compared to many larger American metropolitan areas.

The size of industrial establishments in the Omaha SMSA likewise remained predominantly small as nearly two-thirds of all firms employed fewer than twenty employees. Still the number of firms increased by 8.6 percent while employee numbers decreased by 6.8 percent from 1967 to 1982. Over the past two decades, the food processing industry experienced dramatic decline, although it still holds its leading position. Printing, Publishing and Non-Electrical Machinery grew very rapidly as Omaha has tended to develop a more diversified industrial base.

To summarize, over ninety-nine percent of the industrial establishments in the Omaha SMSA are located in the Omaha, Council Bluffs and the immediately adjacent area. Land zoned for industrial use in downtown Omaha, and industrial parks developed with accessibility to interstate systems gave a set of ready promises for industrial firms to locate either in the downtown or in the suburbs. The Suburban Zone in Omaha SMSA appears to have greater potential for increased industrial development as the city expands. With this, Omaha, in time may very well continue to develop in a way that has been predicted in the excellent spatial models of urban manufacturing change by Wheeler and Park.

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