OKLAHOMA NORTH AND SOUTH: SPATIAL VARIATIONS IN PRESIDENTIAL VOTING PATTERNS ACROSS TWO STATE BOUNDARIES

By

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1977

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
July, 1979

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PREFACE

The purpose of this study is to discover the effects of a physical and a geometrical political boundary on the electoral patterns of the Oklahoma-Kansas and Oklahoma-Texas boundary regions. The spatial aspects of the two regions will be investigated with regards to their historical, sociological and electoral histories, and the results related to boundary effects. The extent to which these effects are felt will be discussed along with why the effects occur.

The author wishes to express his appreciation to his major adviser, Dr. Robert E. Norris, for his tolerance, guidance and assistance through the duration of this thesis. Appreciation is also expressed to the "other" committee members, Drs. Keith D. Harries and George O. Carney, for their insights, inspirations and invaluable assistance in the preparation of the final typescripts. Thanks also to my friend and typist, Linda Allred.

The Arab mystic, Ibn-ul-Arabi once wrote "Deliver us, oh Allah, from the sea of names" and many more thanks are due. Firstly, I thank my parents for their encouragement and support throughout this graduate study, to sociology professors Drs. Donald Allen and Richard Dodder, and political science professor Raymond Habiby. Those nameless

members of "Thesis Anonymous" (or is it "Anomalous"?) have also contributed a semblance of sanity which is occasionally manifest in this document.

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CHAPTER I

Statement of the Problem

Introduction

Boundaries are ubiquitous. They are applied at all levels of analysis in geography. From soils to solar radiation, physical boundaries exist as human artifacts imposed on gradients. Phenomena associated with these boundaries are the result of the immutable, mechanistic forces of nature, without the presence of man.

From Asia to Anglo-America and from tribe to territorial state, political boundaries have been the subject of controversy, conflict and even war. While these boundaries are thought to be permanent in nature, as the delineation of a state, few have remained unchanged.

The state political boundaries of Oklahoma have likewise been adjusted to accommodate political pressures from forces both outside, and inside the state itself. This study focused on the effect which Oklahoma's Red River and thirty-seventh parallel state boundaries have upon voting for President.

Significance

The purpose of this study was to examine the effects of state boundaries in an electoral context. The significance will reside in its utility to further investigation of this nature and its ability to contribute to the larger body of scientific knowledge.

The implications of this study either reinforce, or call for a reexamination of some of the ideas concerned with the characteristics of boundaries and their impact upon a region.

Statement of the Problem

The purpose of this study was to discover the effects of a "physical" or "naturally marked" boundary, and a "geometrical" boundary on the electoral pattern of the Oklahoma-Kansas and Oklahoma-Texas boundary regions.[1] The spatial aspects of the two regions were investigated with regard to their electoral and sociological histories, and the results related to the boundary effects. The extent to which these effects are felt was also discussed, along with why the effects occur.

Hypotheses

Various definitions of boundaries have been posed. An attempt to combine the functional and locational attributes of an area and its boundary are essayed to define the hypotheses in this study.

Hartshorne identified two types of forces which he believes to be present in the nation-state. The forces, "centripetal" and "centrifugal," are phenomena which function as unifying and devisive forces present in the state, respectively.[2] Jones expanded this thesis and further specified these concepts. He suggested that modern states condition fields of movement and circulation within these states.[3]

Furthermore, McCarty described boundaries as shown in Figure 1.[4]

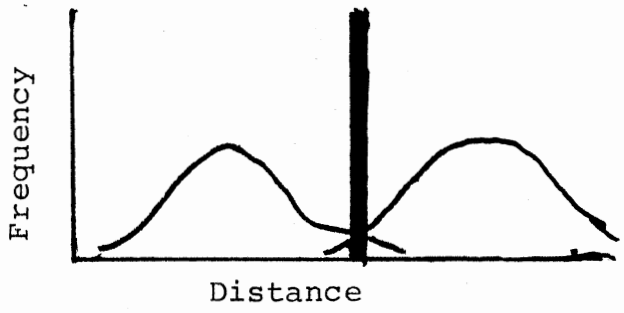

Figure 1. A Diagrammatic Representation of a Boundary

In this figure the thick line represents a boundary. Thus, a boundary can be considered a barrier to spatial interaction and spatial diffusion. Spatial interaction is the movement of peoples and communications between them. Spatial diffusion is the way in which these movements disperse.

The people of each state constitute a separate group, the areal extent of which is determined by the state

boundary. As previously mentioned, this boundary functions as a barrier to spatial interaction, the flows of peoples and ideas. On the Oklahoma side of the state boundary spatial interactions are more concerned with the function of the state (a centripetal force). Thus, the boundary acts as a barrier to the types of interactions (which have been conditioned by the boundary) that are oriented toward Oklahoma. Beyond the boundary the Oklahoma political center is of decreasing importance as proximity to the other state political centers increase. The interactions of Oklahomans are extraneous to those of Kansans or Texans, since the former is not occupied with the maintenance of the latter's state. These behaviors are reinforced by state taxes, voting for state officers, state laws, and courses in public and private schools concerned with their state's history. In short, through these processes the state's citizens learn, either consciously or unconsciously, to identify with the state and its land.

In this research the political center of the state could be defined as the hypothetical point at which the vote for the Democratic presidential candidate is greatest. This county can be described as the functional "core area" of the Democratic vote which may reflect a friends and neighbors pattern of the vote.

The northern study area includes as its state boundary a parallel and is uninterrupted by physical barriers throughout the study area. The southern study area is

interrupted by the Red River which bounds Oklahoma and Texas. This boundary can most effortlessly be crossed only by bridge. Presumably, less spatial interaction occurs across this boundary due to this physical feature.

From the preceding information these assumptions are extrapolated, 1) spatial interaction is a major component of the voting response surface produced by elections, 2) boundaries condition or shape these interactions resulting in a distinct electoral area, and 3) the greater the spatial interaction the more similar the voting.

Based upon these assumptions about the functions of states and their boundaries, the following hypotheses were formulated:

1) voting across both boundaries will be markedly different,

2) the difference in electoral patterns along the Oklahoma-Texas Red River boundary will be more marked than that of the Oklahoma-Kansas geometric boundary,

3) there will be concomitant social differences in relation to voting along these boundaries (a result of decreased spatial interaction, and

4) these differences will be measurable and statistically significant.

Methodology, Data, and Period of Time

The effects of boundaries on voting patterns is demonstrated by the within group (tier of contiguous counties

within state) means being less than the between group (contiguous counties along the boundary) means, in relation to their combined variance. These groups of counties seem ideally established for the analysis of variance and t-test techniques of statistical testing. The statistical testing techniques handled the data most concisely and with the least loss of information compared to other techniques. Both were used since the chance of statistical error for t-test increases with the number of t-tests used. The analysis of variance procedure is essentially the same as the t-test except that it takes into account all the county means in each study area (see Chapter II). The analysis of variance will not be repeated as often as the t-test and will therefore provide a check on the test (see Chapter II). The analysis of variance (AOV) and t-test will be used in an inferential context since it will be assumed that these counties are a sample of all possible samples of counties, along boundaries, with these characteristics. The data required for this study were obtained from the following:

(1) Election Returns - the Secretary of State for Kansas and Texas, the Archives of the State of Texas, the Oklahoma Directory 1977, and the Oklahoma Red Book.

(2) Social Characteristics Data - the U.S. Bureau of the Census, and

(3) Maps, Histories, etc. - any other relevant sources.

The period of time covered started with the date of Oklahoma's first vote in a national election for President (as a State of the Union) in 1908, to the present at a roughly 12 year interval. These dates are 1908, 1920, 1932, 1944, 1956, 1968 and 1976, totaling seven elections. The beginning date of 1908 was chosen because it is Oklahoma's first presidential election, and the next five for their occurrence at 12 year intervals. The final was chosen because it was contemporary with the current writing of this thesis. The decision for 12 year intervals was made arbitrarily.

The decision to use the Democratic vote was made because of that party's proliferation in the study areas. The percent was chosen to give a proportion which would "control" for the raw totals of densely populated counties. The decision to use Presidential elections is a result of these elections, national-involving all states, crossing the state boundaries. These data are also readily available.

The Study Area

An examination of all state boundaries through time would be an impressive (yet rigorously masochistic) feat. Therefore, it was felt that two areas of Oklahoman boundaries were sufficient for an analysis of the problem. The study areas included contiguous counties in two noncontiguous study areas (see Figure 2).

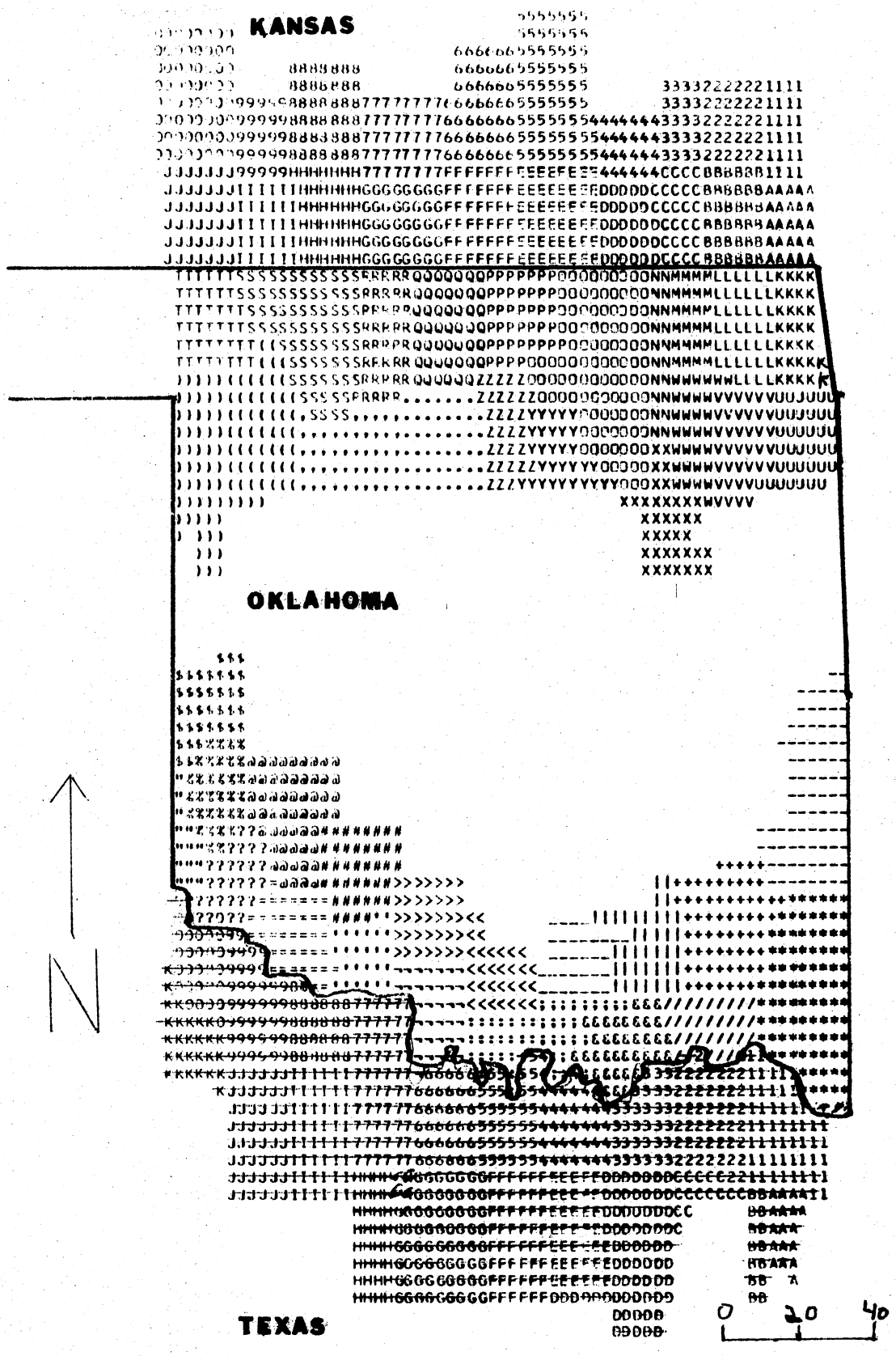

Figure 2. The Study Areas

Figure 2 (Continued)

Key:
1-Crawford County, Kansas
2-Neosho County, Kansas
3-Wilson County, Kansas
4-Elk County, Kansas
5-Butler County, Kansas
6-Sedgwick County, Kansas
7-Kingman County, Kansas
8-Pratt County, Kansas
9-Kiowa County, Kansas
0-Ford County, Kansas
A-Cherokee County, Kansas
B-Labette County, Kansas
C-Montgomery County, Kansas
D-Chautauqua County, Kansas
E-Cowley County, Kansas
F-Sumner County, Kansas
G-Harper County, Kansas
H-Barber County, Kansas
I-Comanche County, Kansas
J-Clark County, Kansas
K-Ottawa County, Oklahoma
L-Craig County, Oklahoma
M-Nowata County, Oklahoma
N-Washington County, Oklahoma
O-Osage County, Oklahoma
P-Kay County, Oklahoma
Q-Grant County, Oklahoma
R-Alfalfa County, Oklahoma
S-Woods County, Oklahoma
T-Harper County, Oklahoma
U-Delaware County, Oklahoma
V-Mayes County, Oklahoma
W-Rogers County, Oklahoma
X-Tulsa County, Oklahoma
Y-Pawnee County, Oklahoma
Z-Noble County, Oklahoma
.-Garfield County, Oklahoma
,-Major County, Oklahoma
(-Woodward County, Oklahoma
)-Ellis County, Oklahoma
--LeFlore County, Oklahoma
+-Pushmataha County, Oklahoma
|-Atoka County, Oklahoma
_-Johnston County, Oklahoma
<-Carter County, Oklahoma
>-Stephens County, Oklahoma
#-Comanche County, Oklahoma
@-Kiowa County, Oklahoma
%-Greer County, Oklahoma
$-Beckham County, Oklahoma

Figure 2 (Continued)

Key:
*-McCurtain County, Oklahoma
/-Choctaw County, Oklahoma
&-Bryan County, Oklahoma
;-Marshall County, Oklahoma
:-Love County, Oklahoma
¬ -Jefferson County, Oklahoma
'-Cotton County, Oklahoma
=-Tillman County, Oklahoma
"-Harmon County, Oklahoma
1-Red River County, Texas
2-Lamar County. Texas
3-Fannin County, Texas
4-Grayson County, Texas
5-Cooke County, Texas
6-Montague County, Texas
7-Clay County, Texas
8-Wichita County, Texas
9-Willbarger County, Texas
0-Hardeman County, Texas
A-Titus County, Texas
B-Franklin County, Texas
C-Delta County, Texas
D-Hunt County, Texas
E-Collin County, Texas
F-Denton County, Texas
G-Wise County, Texas
H-Jack County, Texas
I-Archer County, Texas
J-Baylor County, Texas
K-Knox County, Texas

The county unit was used because materials exist (for example, the census materials) which more fully describe the characteristics of the area. These are aggregated data and no prediction of particular characteristics more specific than these data allow was attempted.

Literature Review

The study of political boundaries is not new. They have held a particular fascination for political geographers.

> Because political boundaries form the areal expression of the jurisdiction and power of the system to which they belong, they are perhaps the most palpable political geographic phenomena, and thus have held a strong attraction for the students of political geography.[5]

Approaches to these studies have varied in accordance to the historical and social factors which influence their occurrence, to concepts of dynamic processes which shape them, to disputes concerning their proximities, to "functional" approaches (the context of the activity to which the boundary is being viewed, stating that activity as a functional relationship).[6] Of these and all other possible approaches, that which is the most conspicuously lacking is the electoral.[7]

The following statements concern the classification of boundaries which are included in the study area, continues with relevant studies concerning international boundaries, followed by an examination of the literature on intra-state boundaries, and concludes with a review of research in the

particular study areas.

Hartshorne called boundaries which are noted for their physical characteristics alone as "naturally marked boundaries."[8] The southern study area is dissected by the Red River and, therefore falls into Hartshorne's description. The northern boundary, defined in the Kansas Statehood Bill in 1861, is the 37th parallel.[9] This boundary type (latitudinal, longitudinal) has been called "geometric" by Stephen B. Jones.[10] These two classes of boundaries describe the Oklahoma-Texas and Oklahoma-Kansas state boundaries, respectively.

These two types of boundaries have been examined on the international scale. Fischer has described what changes occurred along the Breener boundary.[11] After placement of this boundary it was noted the border, once strategic, had become economic, and there were fewer contacts between villages on the same border side. He claimed the longer a border remains unchanged the more "crystallized" the sociological ties and attachments become for each respective state. Hartshorne's examination of Upper Silesia revealed that where boundaries were "superimposed" a lack of integration existed within the state, while contacts, especially economic, were more directed toward the origin of the people.[12] Minghi discovered television program preference bceomes less similar as distance increases from the Canadian-American boundary.[13] Niles Hansen has found that along the Alsace-Baden area economic activity actually is enhanced. He

concluded that it seems more reasonable to study border regions in the context of economic interpretation.[14] The border region produced a hinterland with functions corresponding to the marketing principle and trade and storage activities. In MacKay's analysis of interaction and boundaries across the provincial and international borders of Canada, marriages and phone calls dropped dramatically across both types of boundaries. There was a curvilinear relationship between interaction and distance with more interaction occurring within provinces.[15]

Pounds, in two articles, has traced the idea of natural boundaries in France.[16] Initially, they were based on history, for strategic reasons, then, in the eighteenth century they were based on reason, and finally on history and culture. J. R. V. Prescott, in his article on Nigerian boundaries, established that a major claim by several tribes in Nigeria which were to be united into one region, was due to the river, Niger. This river had linked the two tribes for centuries.[17] Fawcett has used "natural regions" in an attempt to create more harmony in government administrative areas in England and Wales.[18] While primarily a suggestion in nature, Fawcett's regions were divided by physiographic, population and economic factors. Likewise, Gilbert, in a series of two articles, has attempted to show the geographic incongruities based upon boundaries with little consideration for physical features in the landscape, and has attempted his own hypothetical set of boundaries to

rectify the situation.[19] Millman has shown how agricultural and economic factors may be influenced by internal boundary structures of Scotland.[20]

In the United States many other studies of boundaries have also been conducted. Griswald has observed that no state boundary changes had occurred in the northeastern United States from the American Revolution until 1939.[21] He then photographed these boundaries and discussed the history of the boundary delineations, but did nothing in terms of an anlysis of the boundary area. In 1939, Edward Ullman studied the eastern Rhode Island-Massachusetts boundary zone, and was able to find differences.[22] He ascertained valuation and tax incidence in one state does not affect an adjacent property just across the line. However, identical property was equally assessed in the border towns. Lower gas tax resulted in more stations on the Rhode Island side. Also, Rhode Island prices penetrated several miles into Massachusetts, until settlement and gas stations thinned out. He noted that pavement radically changed, but railway maintenance did not noticeably change. In summary, he noted that adaptations are evident in differing degrees, largely according to density of settlement. Howard Nelson found that changes in land use are likely to occur in urban areas where political boundaries change.[23]

The effects of boundaries within populations also have been examined. Thomas Benjamin studied the history and population characteristics in Idaho and called it a

"Geographic Monstrosity."[24] He discovered that Idaho had been formed as a left-over territory from other states and noted internal physical barriers were adequate in separating the state into two distinct areas. Brightman also considered population characteristics in his examination of the boundaries of Utah.[25] However, he concluded that the straight line boundaries of Utah are actually reflective of the economy, population, and settlements of the state.

Prescott has suggested that greater attention be paid to electoral geography.[26] Logan has answered this plea by an article on the Queensland-New South Wales boundary.[27] In a federal election, concerning federation for New South Wales there seemed to be a greater similarity in a border region vote than elsewhere. Rose found similar results with an additional distance decay element in similar voting from the border.[28] He also noted great variation in the distance decay phenomena. Rice found that there were obvious differences in voting across state boundaries within state boundaries when differences in county rank were compared.[29] The differences were suggested by physical features. Within Oklahoma, Dowger, Hicks and Norris have identified a "Canadian River Split" existing in electoral patterns across the Canadian River with one side voting predominantly Democratic, while the other may vote more Republican.[30] Jones has also identified a Democratic "little dixie" and a predominantly Republican area in Oklahoma.[31]

Summary

The paper began by describing what boundaries are, what they mean to political geography and political geographers, and describing some of their functions. It was further noted that this study was justified due to the lack of research, and inconclusive results and methodologies employed by forerunners. Several hypotheses were generated, the main one being the presence of a statistically significant difference among border counties as compared to same-state counties. The literature review revealed that while many studies have been conducted concerning boundary effects, methodologies differed from author to author and the time span covered was usually very restricted. Generally, the literature indicated that boundaries either unite or divide people and their interactions and economies.

This first chapter has comprised the statement of the problem. The second will be concerned with the data analysis, while the third will examine some selected social characteristics of the population in these areas. The fourth chapter will be a summary and conclusion.

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CHAPTER II

METHODOLOGY AND ANALYSIS

The Study Areas

The study areas were decided upon because of the author's experience of having lived in or around these areas for many years and because the characteristics of the physical settings of the state boundaries were found to be desirable for this thesis. These constitute two non-contiguous study areas.

The northern study area consisted of four tiers of counties in two states. These tiers were referred to as NA, NB, NC and ND. NA includes Ford through Crawford counties and NB includes Cherokee through Clark counties (from east to west). These two tiers lie wholly in Kansas. The next two tiers are in Oklahoma. These are NC (Ottawa through Harper) and ND (Ellis to Delaware). Tiers NB and NC lie along the Kansas-Oklahoma boundary and were referred to as "border counties." All counties lie in one contiguous area and have existed in their present form since Oklahoma's statehood.[1] There are ten counties in each tier, resulting in a total of 40 counties in the northern study area (see Figure 2).

The southern study area also consists of four tiers of counties. These were referred to as SA, SB, SC and SD (see Figure 1). These tiers contain (from east to west), Beckham through LeFlore, Harmon to McCurtain, Red River to Hardeman, and Titus to Ford counties, respectively. Tiers SA and SB are located in Oklahoma and tiers SC and SD are in Texas. Tiers SB and SC front the Oklahoma-Texas boundary and were called "border counties." All of these counties lie in one contiguous area. All counties have been in their present form since Oklahoma's statehood except Greer, Harmon, Cotton, and Comanche. Harmon was created by special election as a separate county on May 22, 1909 (from Greer County), and Cotton County (from Comanche County) was proclaimed on August 28, 1912 by Governor Lee Cruce.[2] The southern study area consisted of ten counties in tiers SA, SB and SC, and eleven in SD, totaling 41. This study area is interrupted by the Red River which serves as the Oklahoma-Texas state boundary.

Data

The data were obtained from the Secretaries of State of Texas and Kansas, the Oklahoma Red Book, and the Texas Almanac, 1910, and the Oklahoma Directory, 1977. The data consisted of votes for the Democratic elector at large or the vote for Democratic presidential candidate. The elector at large vote was used for the Texas data in the elections of 1920 and 1932, and for the election of 1920 in the

Kansas data. All other data were listed as votes for the Democratic presidential candidate.

Technique

The data were analyzed statistically. These techniques were used to condense the data, make them more comprehensible to the investigator, and to reveal patterns within the data which might not otherwise be recognizable. The techniques used were analysis of variance (AOV) and the t-test.[3]

The problem was to determine whether county tiers differ in percent vote for the Democratic presidential candidate across the state boundaries, and to demonstrate that they did not differ as much within their respective state. Statistically the null hypothesis was,

$$H_0: X_1 = X_2$$

there is no statistically significant difference in the mean Democratic presidential candidate vote between the tiers. The alternate hypothesis was,

$$H_1: X_1 \neq X_2$$

there is a significant difference between these tier means.

The t-test is appropriate because,

(1) there are two nominal classifications (tiers of counties), and

(2) the data are ratio (there is a zero point, the data area additive).

The essential assumption behind the difference of means

test is known as the central limit theorem. This states,

> If repeated random sample of sizes N are drawn from any population (of whatever form) having a mean μ and a variance σ^2, then as N becomes large, the sampling distribution of sample means approaches normality, with a mean μ and variance σ^2.[4]

The test assumes random sampling and a "normal" population. By normal it is meant that the mean of the sample is 0, and the standard deviation is equal to one approximately 68 percent of the scores (in this case votes) are within one standard deviation, 95 percent are within two standard deviations and 99 percent are within three standard deviations of the mean. A standard deviation is a measure of dispersion or clustering about the mean of the sample.

Computationally the t-test is the difference between the sample means, divided by the standard deviation of the two classifications, in accordance with the central limit theorem. In this case the mean of difference of county tier votes divided by the combined standard deviation of both county tiers. The difference of means test results in a "normalized score" which has the characteristics described above. When the means are compared, if they have been taken from two different populations, the resultant "t" will deviate from what could be expected with one group. It should be noted that a larger "t" value does not mean that the result is more significant than a smaller, and significant one. It does indicate that the distance between the means is greater, and there is a greater difference between the sample means.

The significance level of .05 has been set as the normal research level. If the derived t exceeded the tabled t, the statistic was considered significant. If the derived t is less than that value it was not considered significant. The .05 level meant that we were willing to accept that any derived score greater than the tabled value could have occurred by "chance" factors in the sample.

The analysis of variance measures the degree to which the mean of one group is related to the others. It is similar to the t-test in that it is a difference of means test. In this test each sample variance was computed separately and involved only the deviations from the mean of that particular sample. This was compared to the variance of the separate means treated as individual scores.[5] The analysis of the varaince compares many means, and was useful when comparing several tiers of counties. The analysis of variance did not disclose between which group means a difference exits; it only established that a statistical difference existed between the areas.

Initially, an analysis of variance for each study area (north, then south) was computed, then t-test was used to compare the two tiers of county means. For example, for the election of 1908 an AOV was run for the northern study area, then three t-tests were computed, one comparing NA to NB, a second comparing NB to NC and the third compared NC to ND. The same procedure for comparing tier means was conducted for the southern study area and subsequent study

elections.

The analysis of variance was used to affirm that there was a difference or no difference, in county means (as a check on the t-test). As mentioned in Chapter I, this was believed to be necessary because as the number of t-test used increased, the possibility of finding differences due to "chance" increased. If analysis of variance is not significant and the t-test does reveal a significant difference, and if no other explanation is possible, it may be that the statistic is the result of some chance factor. It was also assumed that if a difference between two continuous counties was found there was a significant difference between the county tiers not directly compared. Where statistical significance was found it was interpreted as the boundary at which the centripetal and centrifugal forces have met, less spatial interaction is present, and a distinct electoral area has been produced (see Chapter I).

It should also be noted that the tabled values are given in terms of the F-value. This statistic is the same as the t-value squared.[6] It is an unavoidable consequence of the computer print out that this value is inserted instead of the "t". Computationally, the AOV and t-test are essentially the same.

In this analysis the border counties of each study area were compared. This was accomplished by taking the border counties of each study area and finding the differences

between those counties. The northern boundary differences were compared to the southern boundary differences in this manner for each election year studied. In this particular analysis the significance level of .025 was set as the research level. This means that we were willing to accept that derived scores above the tabled value could have occurred by chance two and a half times out of one hundred. As a corollary, it was then necessary to predict that one mean (in this case the southern border counties') would be greater than the other (northern) border counties' mean. If the northern mean were found to be greater than the southern the interpretation of the t-value is not changed. This means that a type III error, incorrectly predicting the direction, had been committed and some explanation as to why this occurred was offered.

Finally, and in addition to these analyses, another was performed. The study areas were each divided into east-west groups by assigning the five easternmost, on both sides of the border, to one group, and the remaining counties to the other. Thus the northern study area has 20 counties in the eastern group and 20 in the western. The southern study area has 20 in the east and 21 in the western area. An F-test was computed in each study area, for every study election, with these groups.

Before beginning the analysis two accomodations were necessary. It was previously mentioned that four new counties were created in Oklahoma after statehood which were

inside the southern study area. None of these counties existed in their present form in the first study election, but do thereafter. Therefore, to determine the vote, the proportion of county population was multiplied by the total vote case for the Democratic presidential candidate in that county, and that result was assigned to the group. For example, if Harmon county were created from one-half of the population which was Greer County, the 1908 vote for Democratic candidate was multiplied by .5. Secondly, the election returns for 1908 are semi-official. This was an unavoidable consequence of the data gathering. An examination of these returns with subsequent elections did not distinguish these as being unreasonable.

Analysis

Introduction

This section is divided into four parts. The first is a brief overview of the electoral patterns in both study areas, while the second includes a discussion of the national, state and county tier voting. The third is comprised of an examination of the differences of the border county votes, and the fourth mentions the east-west voting differences.

An Overview. It should be noted that the two study areas are different with respect to voting. An examination of any of the election profiles will show these

obvious differences. No statistical testing was necessary. Figures 3 through 9 are the profiles, the counties are numbered from east to west. For example, NA consists of counties one through ten, NB 11 through 20, and NC 21 to 30. Presumably the great differences in voting patterns between the study areas are due to the migration of people from the neighboring states to these areas. The percentage of the vote for the Democratic presidential candidate is greatest in the eastern counties. Meining considered southern Oklahoma a secondary area of Texas, and it has been observed that Kansas politics had an effect on the politics of northern Oklahoma.[7] Presumably it was mainly Kansans that migrated into northern Oklahoma and primarily Texans who migrated into the southern study area.

The Study Area Voting Patterns. In the national election of 1908 the Democrat lost by a narrow national margin (Table I). He won in Texas and Oklahoma, and all counties in the southern study area (Tables II and III). The AOV statistic was significant in both the northern and southern study areas. The voting within county tiers of Kansas and Oklahoma was not significant, but the difference of the border counties was significant at the 0.05 level (Figures 3 and 10, Table IV). Within the southern study area the Oklahoma and Texas counties are not significantly different, there was a statistically significant difference between the border counties. These results indicate that there are spatial variations in voting across these state

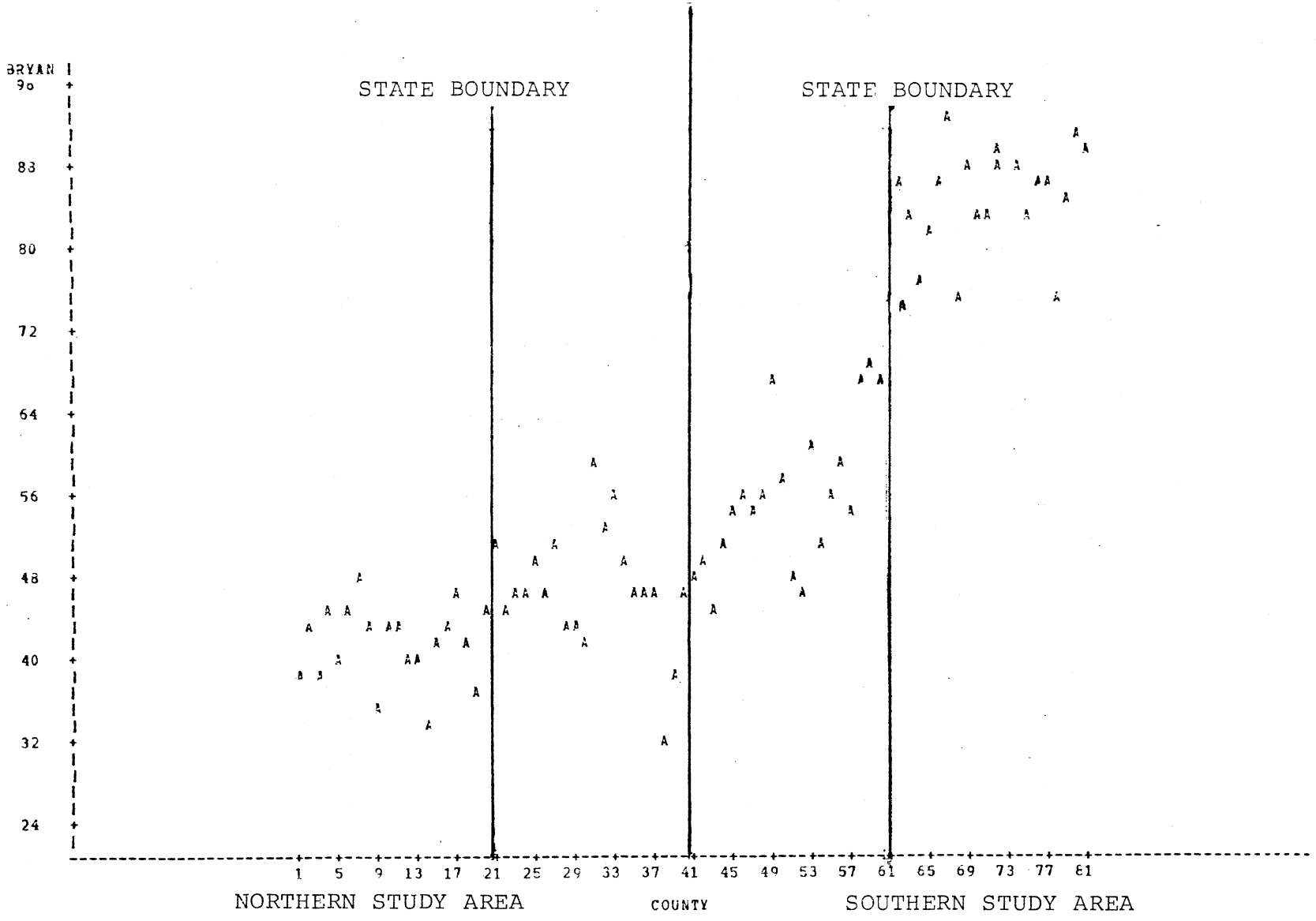


Figure 3. The Election of 1908 - Profile

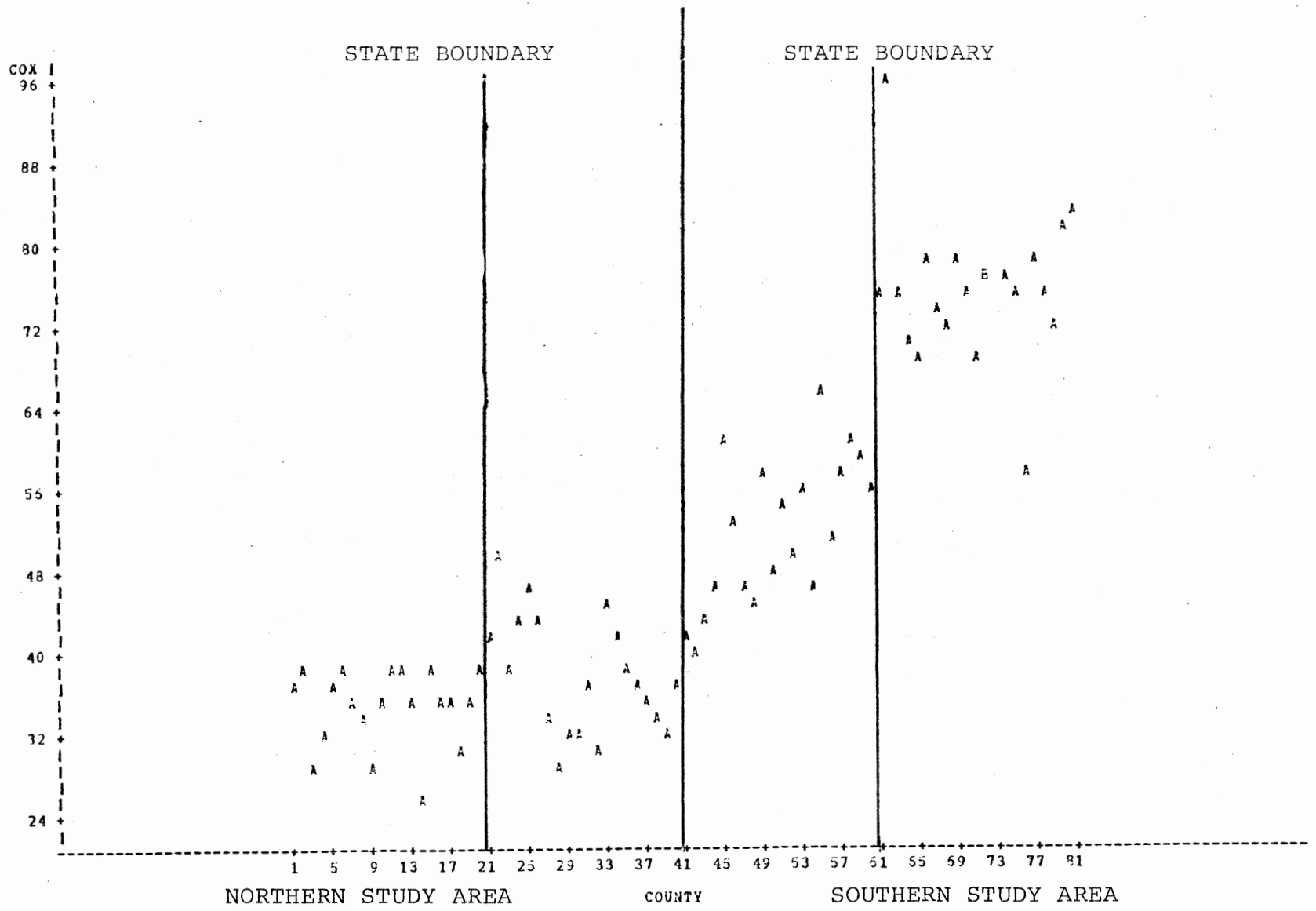


Figure 4. The Election of 1920 - Profile

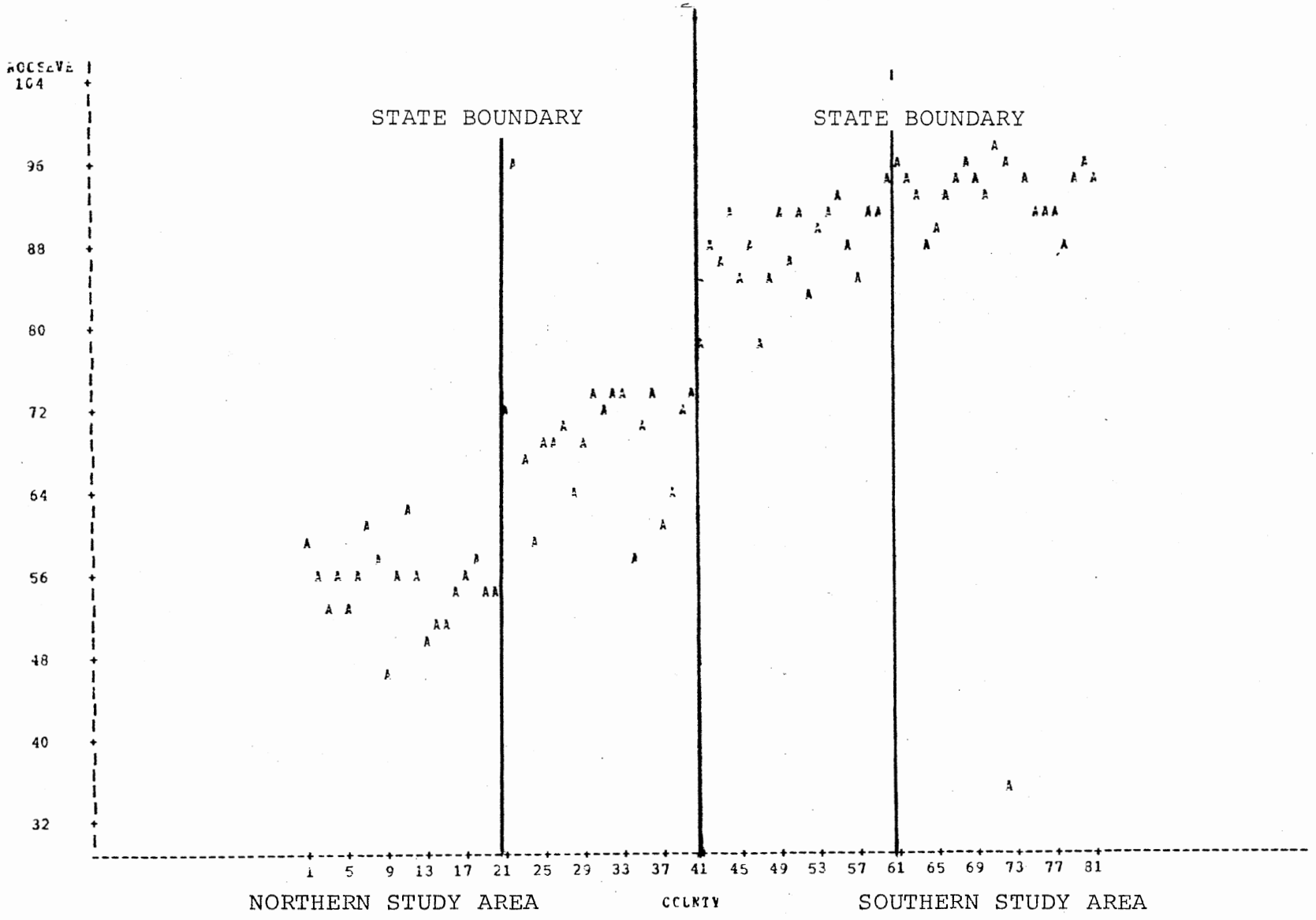


Figure 5. The Election of 1932 - Profile

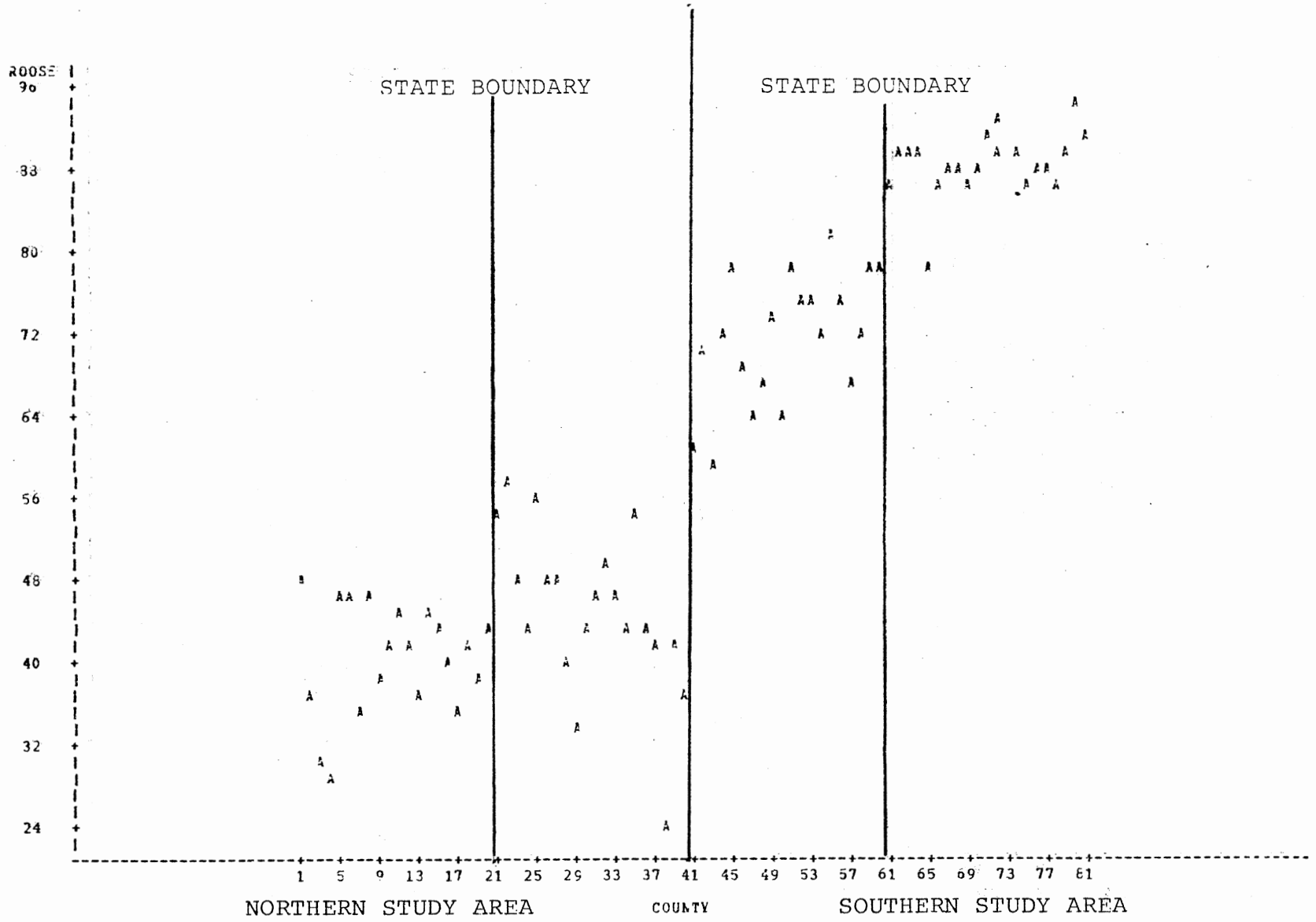


Figure 6. The Election of 1944 - Profile

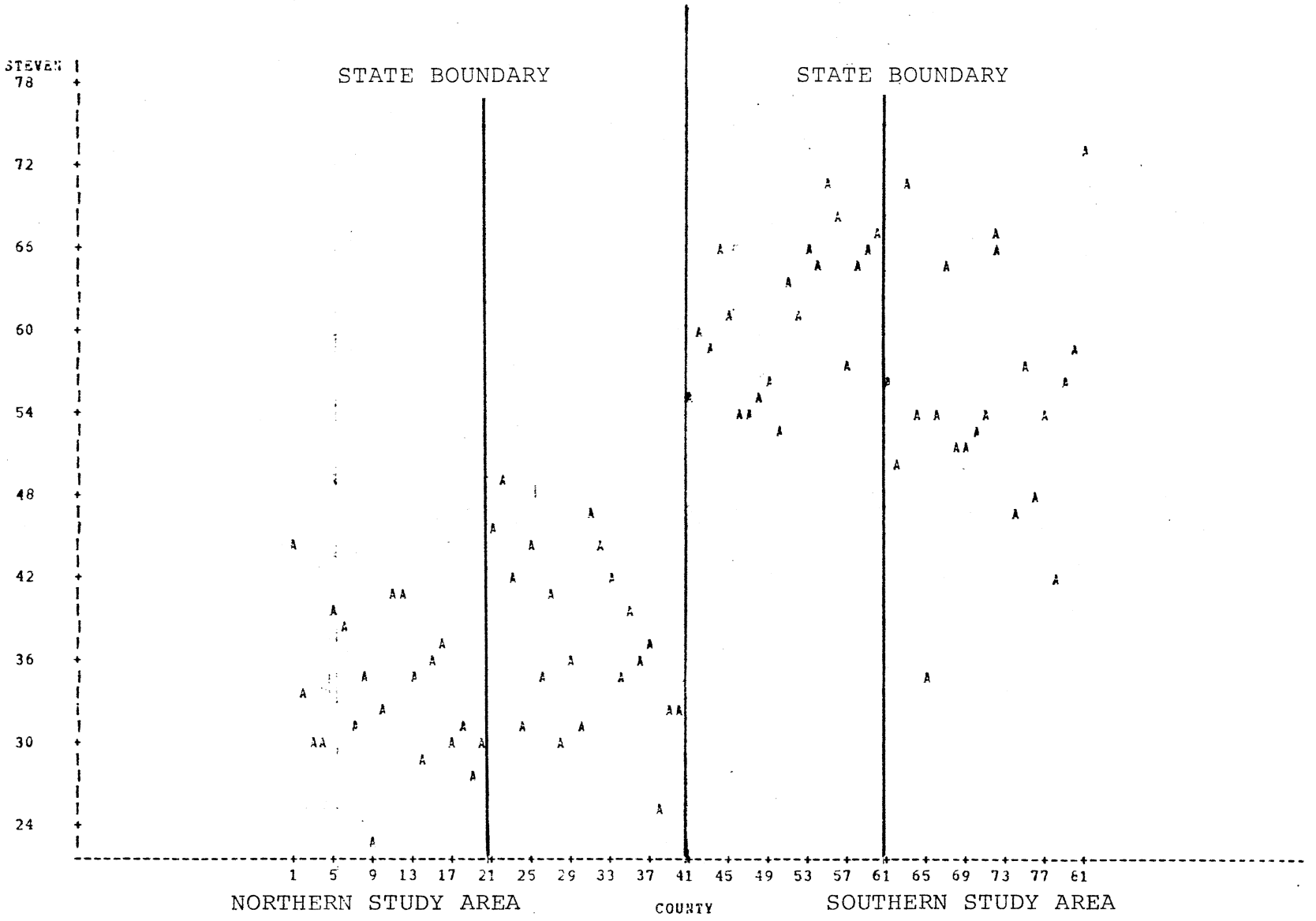


Figure 7. The Election of 1956 - Profile

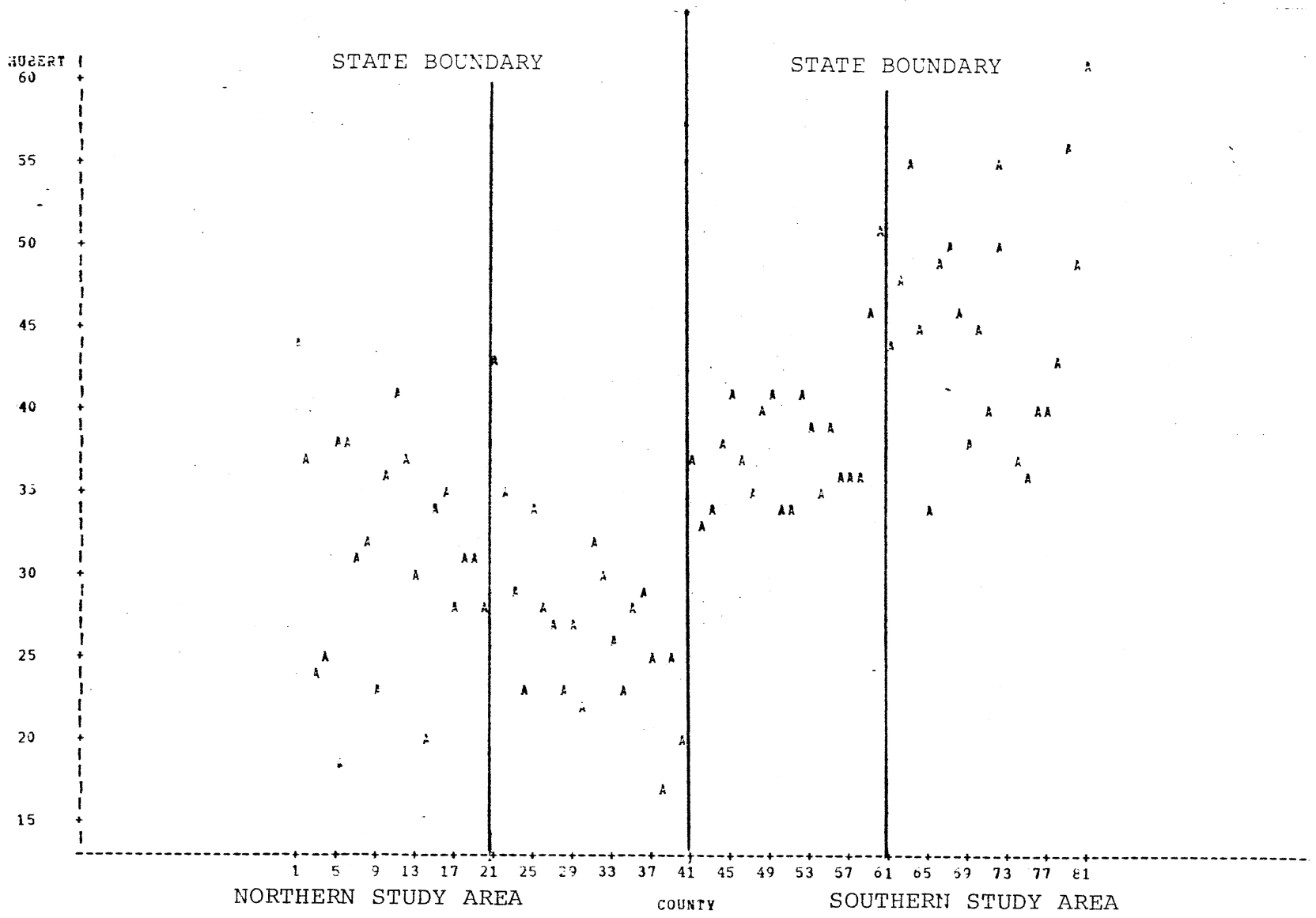


Figure 8. The Election of 1968 - Profile

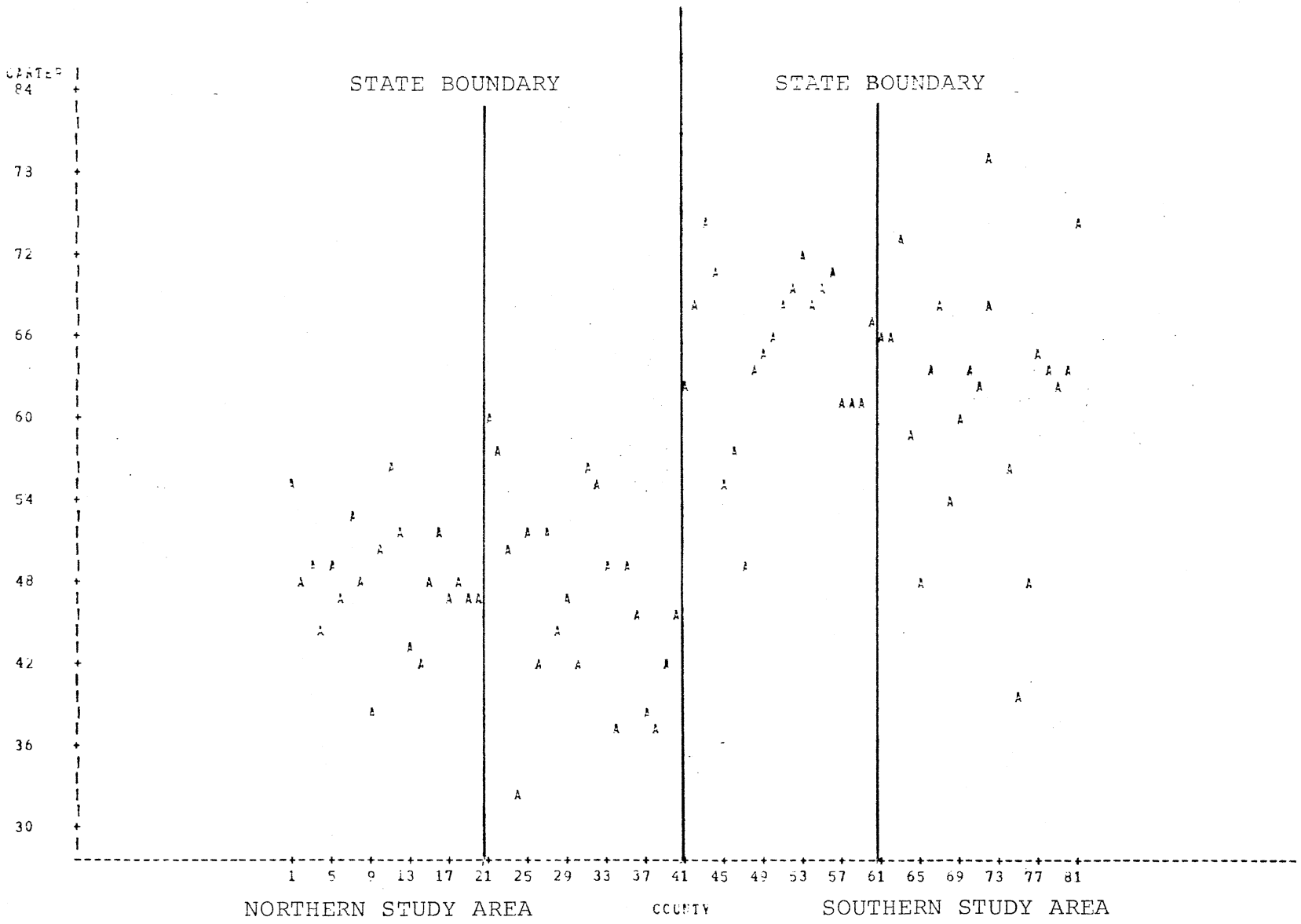


Figure 9. The Election of 1976 - Profile

boundaries. These state boundaries act as a divide between the voting patterns in the study areas. At the time of this election technological innovations obviously had no effect on increasing voter similarity. A spirit of nationalism may have prevailed (Oklahoma had just become a new State of the Union), but regardless, a distinct electoral area of voter response, presumably conditioned by a barrier to spatial interaction (the state boundary), seems to have been produced.[8]

TABLE I

NATIONAL PERCENTAGE VOTE FOR DEMOCRATIC PRESIDENTIAL CANDIDATE

Election Year	Percent of the Vote
1908	44.2
1920	34.1
1932	57.4
1944	53.5
1956	42.2
1968	42.9
1976	50.1

TABLE II

MEAN PERCENTAGE OF THE VOTE FOR DEMOCRATIC PRESIDENTIAL CANDIDATES BY THE STATES AND THE STUDY COUNTIES WITHIN THOSE STATES

Election Years		Kansas	Oklahoma	Texas
1908	State	44.4	48.3	74.3
	County Tiers	44.3	46.7 56.0	70.5
1920	State	52.5	42.9	60.5
	County Tiers	34.7	37.6 51.7	75.5
1932	State	53.5	74.4	89.3
	County Tiers	55.0	69.9 87.7	90.3
1944	State	39.3	55.7	80.9
	County Tiers	40.5	44.7 71.6	88.6
1956	State	34.2	44.9	44.0
	County Tiers	33.6	37.8 61.1	55.5
1968	State	34.7	32.0	41.1
	County Tiers	32.1	27.1 38.1	45.8
1976	State	44.9	48.7	51.1
	County Tiers	48.1	46.7 65.2	62.0

TABLE III

MEAN PERCENTAGE VOTE FOR DEMOCRATIC PRESIDENTIAL CANDIDATE BY COUNTY TIERS

Election Year	NA	NB	NC	ND	SA	SB	SC	SD
1908	42.1	41.6	46.2	47.2	54.0	57.9	82.9	85.7
1920	34.4	35.0	38.8	36.4	47.9	55.5	76.2	74.8
1932	55.4	54.7	70.8	69.1	85.8	89.5	92.8	88.0
1944	40.1	41.0	46.9	42.5	67.7	75.5	87.2	89.8
1956	33.6	33.5	38.7	37.0	57.3	65.0	54.0	57.0
1968	32.8	31.4	28.9	25.4	36.8	39.4	45.5	46.1
1976	48.1	48.1	47.9	45.6	63.3	67.0	62.2	61.8

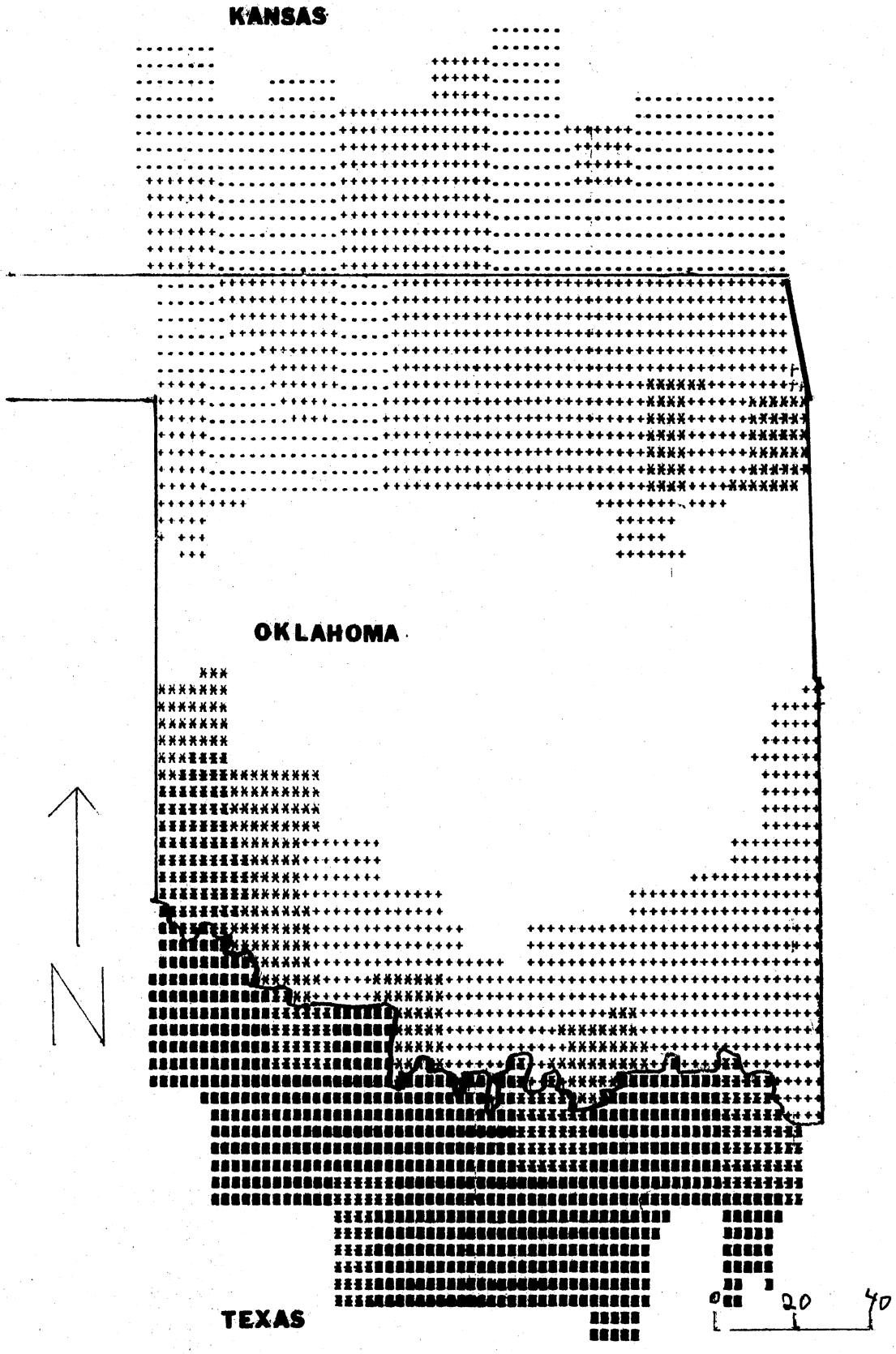


Figure 10. 1908 Election Map

Figure 10 (Continued)

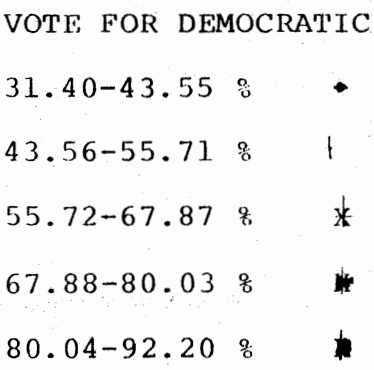


TABLE IV

F-SIGNIFICANCE FOR THE STUDY AREAS AND F-STATISTIC OF THE COUNTY TIERS WITHIN THOSE AREAS

Election Year	NANB	NBNC	NCND	Study Area	SASB	SBSC	SCSD	Study Area
1908	.11	9.52*	.14	*	1.37	62.15*	1.52	*
1920	.11	2.25	.93	*	7.49*	49.13*	.20	*
1932	.16	23.07*	.21	*	4.54*	5.89*	.74	*
1944	.14	5.45*	1.6		11.19*	48.14*	4.27*	*
1956	.00	3.61	.32		19.62*	12.19*	.5	*
1968	.24	.85	1.95		1.93	5.82*	.04	*
1976	.00	.01	.42		1.77	3.17	.01	

*indicates significant at the .05 level

The presidential election of 1920 resulted in a landslide victory for the Republicans (Table I). The Democrat carried the states of Texas and Kansas and all of the southern study area except tier SA (Tables II and III). The AOV for the northern study area was not significant, nor was there a difference between the county tiers. The AOV score for the southern study area was significant (Table IV), and there was a difference within the Oklahoma counties and the border counties (Figures 4 and 11). The vote was so high for one candidate (the Republican) that a certain amount of homogeneity may have been expected, as was found in the northern study area. In the southern study area the F-score was very large, indicating an extreme difference between the border county means. The mean of SA was less than the others resulting in the significant score (Tables III and IV). In the north, where no physical barrier interrupts the study area, no difference in voting occurred. This may be a result of increased spatial interaction.

In the 1932 election the Democrats won, carrying Kansas, Texas and Oklahoma, both study areas, and all county tiers (Tables I, II, and III). The AOV score for the northern study area was significant. There was also a significant difference between border counties, but not within the state's tiers. The southern study area also produced a significant AOV score, with a difference between border, and within Oklahoma county tiers (Table IV). Once again, the difference in means was greatest across the state

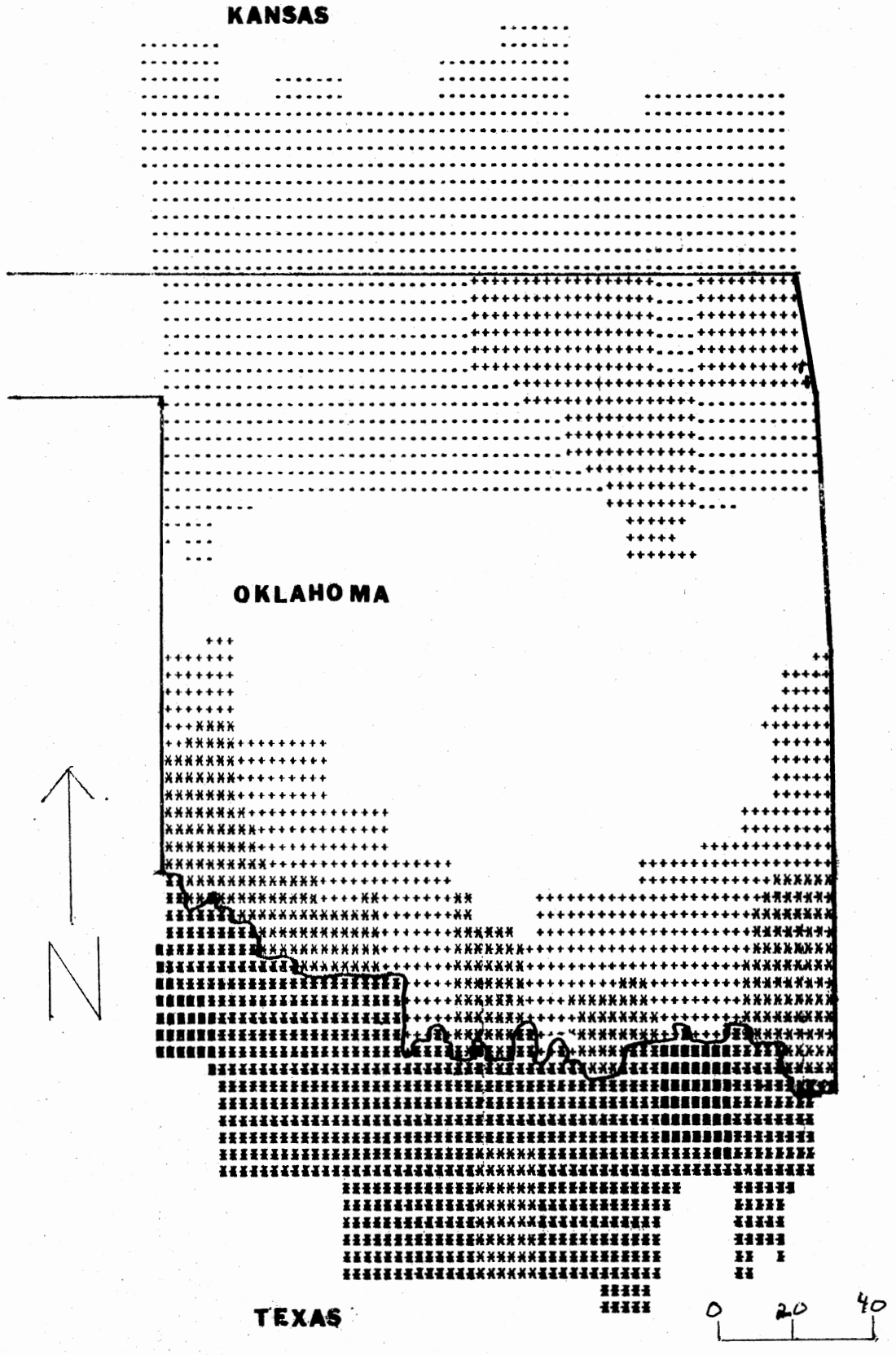


Figure 11. 1920 Election Map

Figure 11 (Continued)

VOTE FOR DEMOCRATIC PRESIDENTIAL CANDIDATE:

25.30-39.33 %

39.34-53.57 %

53.38-67.41 %

67.42-81.45 %

81.46-95.50 %

boundaries, despite technological innovations. The Red River had the most prohibitive effect on spatial interaction. In the southern study area the difference in voting within Oklahoma counties is significant, revealing three electoral areas, presumably due to urbanization (Figures 5 and 12). In the north the absence of a landslide election had exacerbated the difference in voting across the boundary.

The presidential election of 1944 was one in which the Democratic candidate won in Texas and Oklahoma and the southern study area, but neither Kansas nor the northern study area (Tables I, II, and III). The AOV for the northern study area was not significant and there was no statistically significant difference within the state county tiers, but there was a significant difference across the border (Table IV). The southern study area did have a significant difference within Oklahoma, the border and Texas counties. The greatest distance between these means was between the border counties. It appears that the Red River still acted as the major barrier to spatial interaction in this area. The differences within Oklahoma and Texas may have been due to the polarizing effect of this election. (The vote was extremely high for the Democrat in this election.) This concentration may have effected the study area populations in many ways since four electoral areas have been identified in this region. In the northern study area, the differences in vote were still very great and may be due to the polarizing effect of this

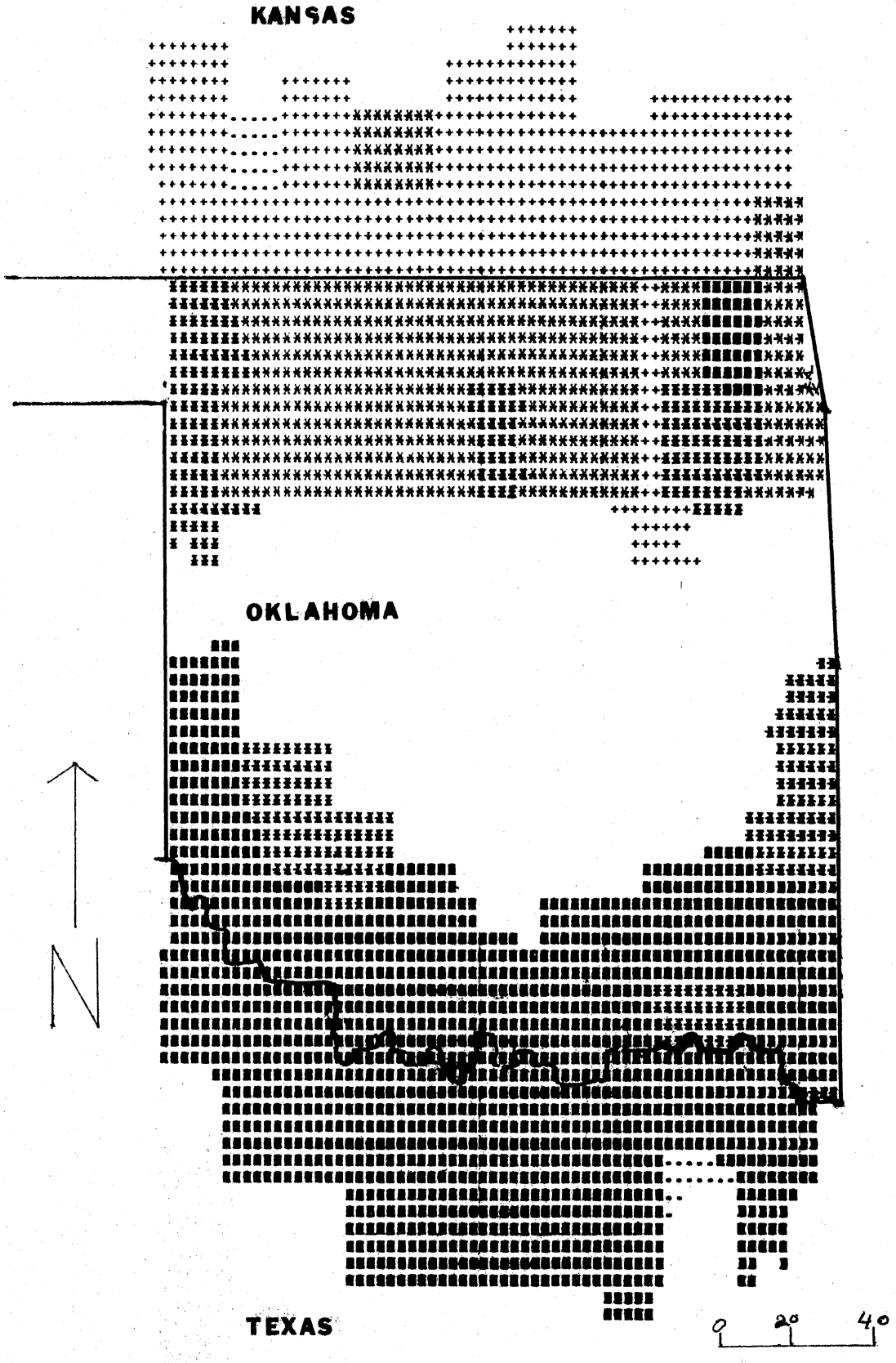


Figure 12. 1932 Election Map

Figure 12 (Continued)

VOTE FOR DEMOCRATIC PRESIDENTIAL CANDIDATE:

35.60-47.89 % •

47.90-60.19 % +

60.20-72.49 % *

72.50-84.79 % ⁕

84.80-97.10 % ■

election effecting the study area in the same fashion as it did in the south (Figures 6 and 13).

In the election of 1956 the Democratic candidate won only the counties in the southern study area. He did not win the national election, Oklahoma, Kansas or Texas, nor the northern study area counties (Tables I, II and III). The southern study area again shows a significant AOV score (Table IV), and there is a difference within Oklahoma and across the border counties. This time, however, the greatest difference is within the Oklahoma counties. The highest mean is in SB, which must have produced the significant difference. It may be assumed that urbanization was not as great in this county tier, and the result is three areas of different electoral patterns (Figures 7 and 14).

The election of 1968 was very close. The Democrat lost the presidential bid (Table I). He did not carry Kansas, Texas, Oklahoma or any of the study area tiers (Tables II, III, and IV). The AOV score in the northern study area is not significant, and there were no significant differences within the states of Kansas or Oklahoma, or between the border counties. The southern study area AOV value is significant. There was a difference between the border counties, but not within either of the state county tiers in the southern study area (Tables II, III, and IV). There were only two electoral areas with the Red River acting as the boundary between them. As a comparison with a more concentrated vote (for example 1944) it appears that when the

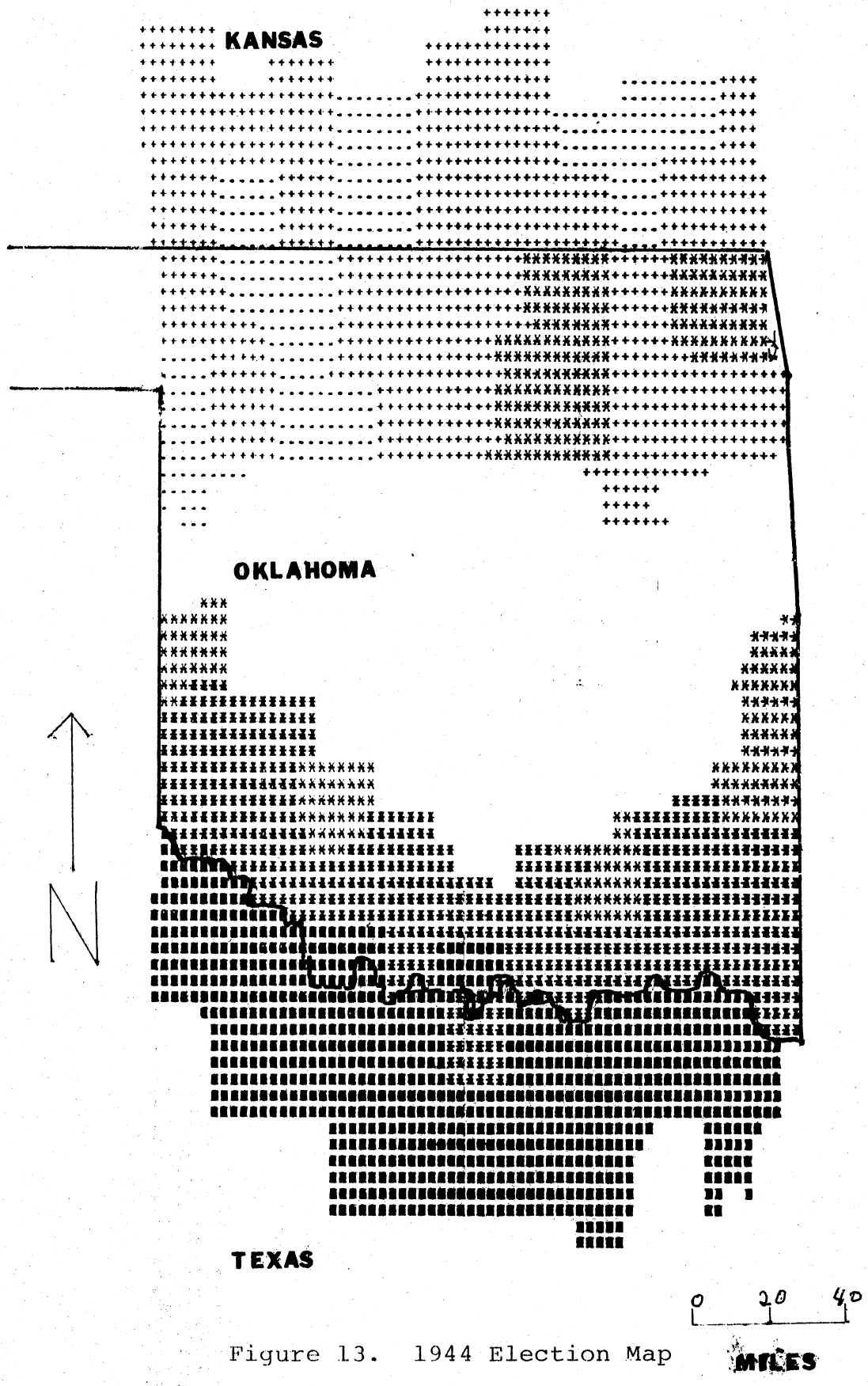
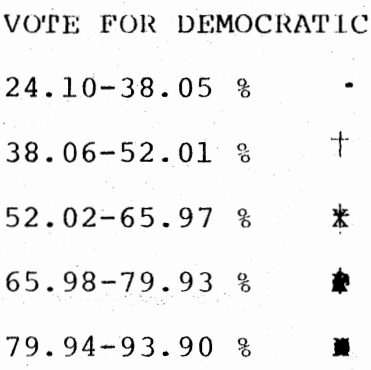


Figure 13. 1944 Election Map

Figure 13 (Continued)



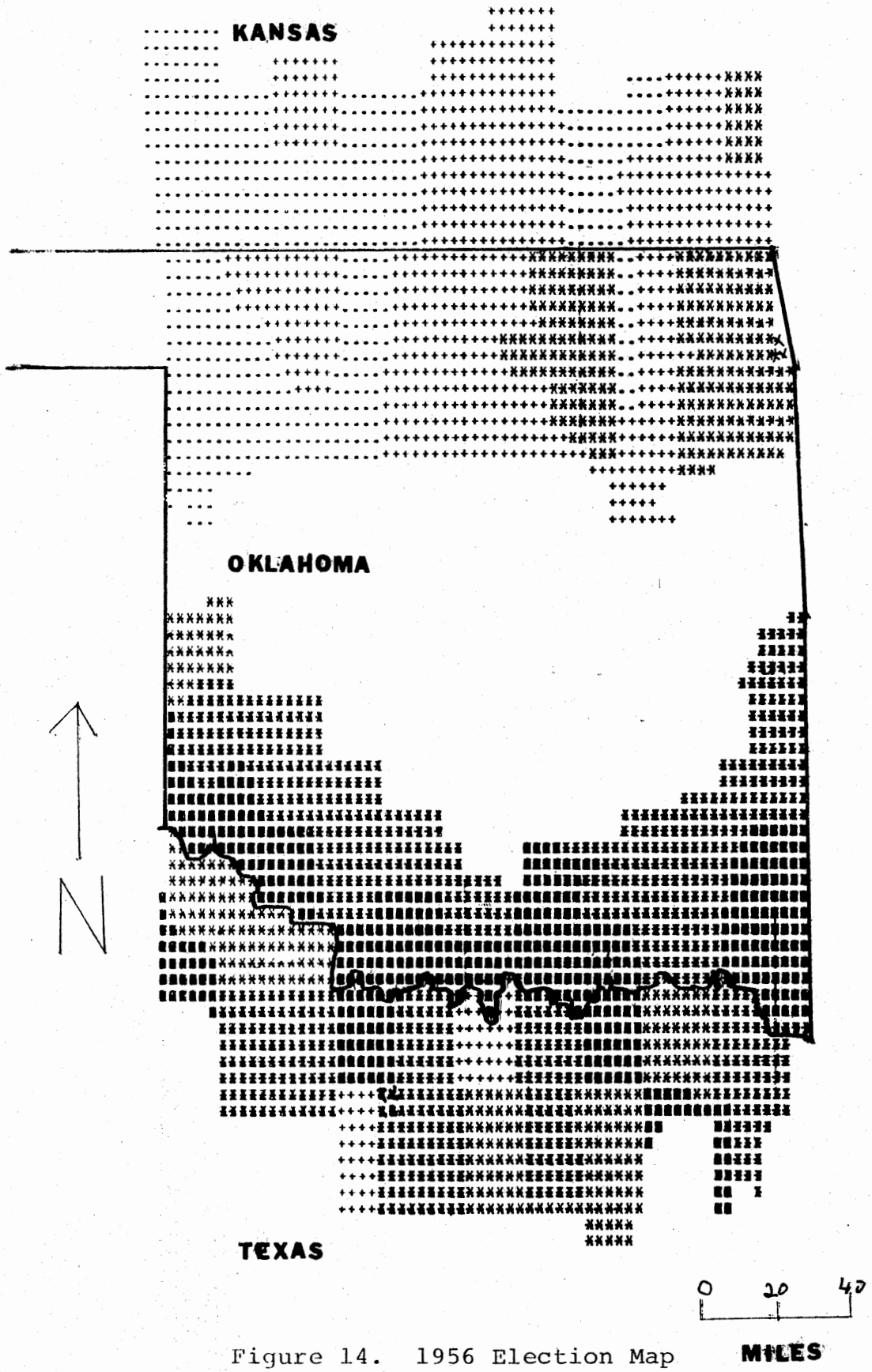


Figure 14. 1956 Election Map

Figure 14 (Continued)

VOTE FOR DEMOCRATIC PRESIDENTIAL CANDIDATE:

22.90-33.05 %

33.06-43.21 %

43.22-53.37 %

53.38-63.53 %

63.54-73.70 %

vote averages are low, within the northern study areas there are differences in vote across the border. In the southern study area it did not appear to matter how great the vote was, the Red River still divided the study area into two distinctly different electoral areas (Figures 8 and 15).

The final study election was 1976, in which the Democrat won the national election, the southern study area and Texas (Tables I, II, and III). There was no significant AOV score for either of the study areas. There are also no significant differences between any of the county tiers in either of the study areas, for the first time in any of the study elections (Table IV). Apparently spatial interaction and spatial diffusion of technological innovations had finally overcome the physical and geometrically marked boundaries in the two study areas (Figures 9 and 16).

The second part of this section will deal with the F-statistic over time. Figure 17 depicts the F-statistic of the northern border counties. Generally the shift was downward. The only exception is 1932, for which the state means for Kansas, Oklahoma and Texas, and all county tiers were highest. After the 1932 election the differences decline over time. In Figure 18 the F-statistic for the southern border counties are shown. The 1944 value is the only exception to an otherwise downward trend. In this election the state and tier means were the most different, compared to other elections. From these two figures it can be discerned that the boundary differences are diminishing

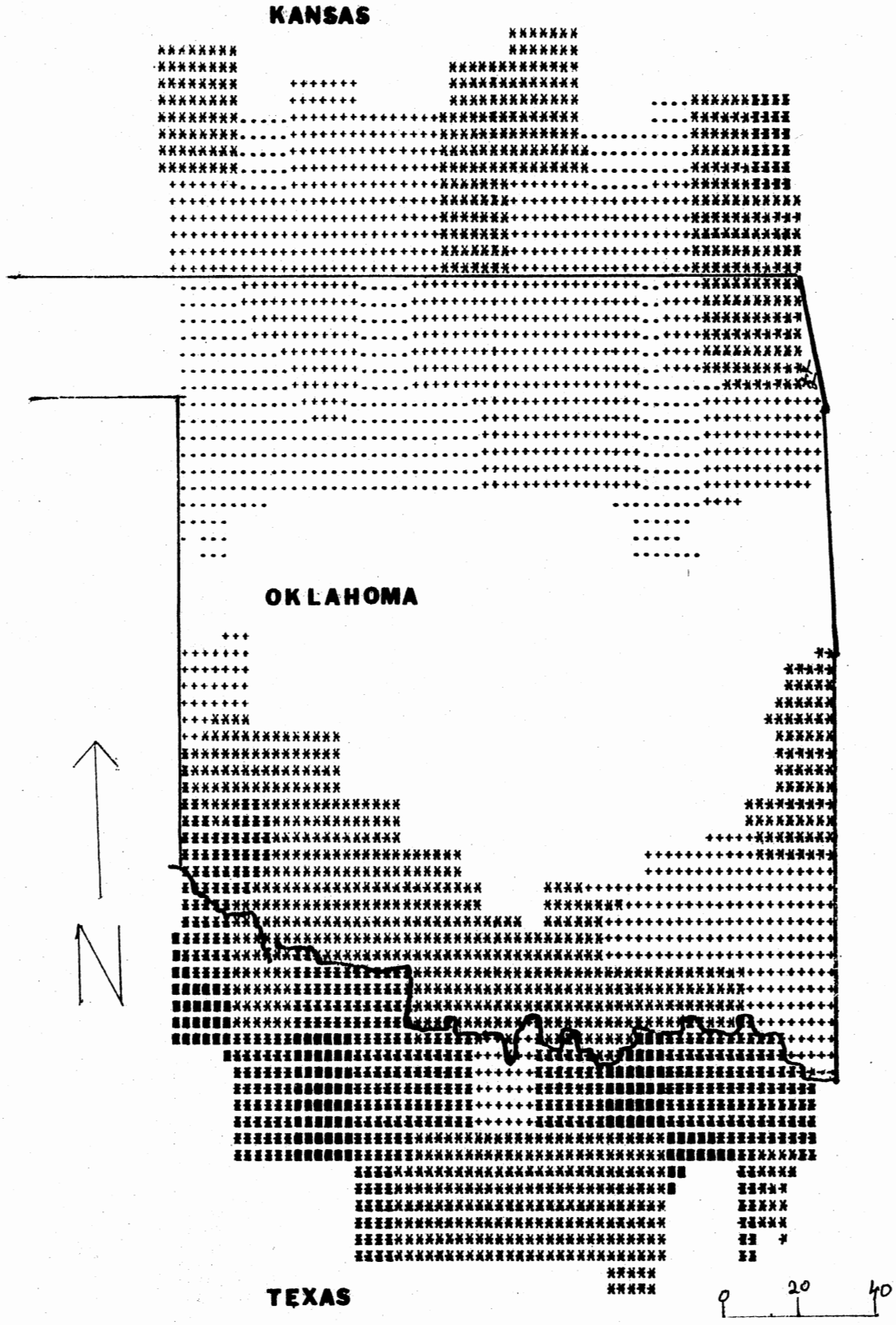
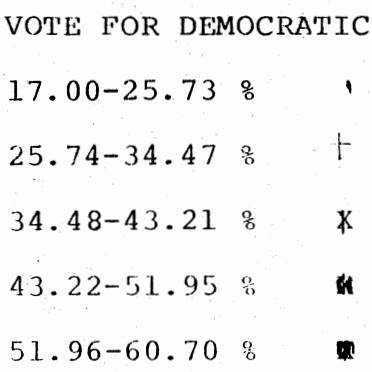


Figure 15. 1968 Election Map

Figure 15 (Continued)



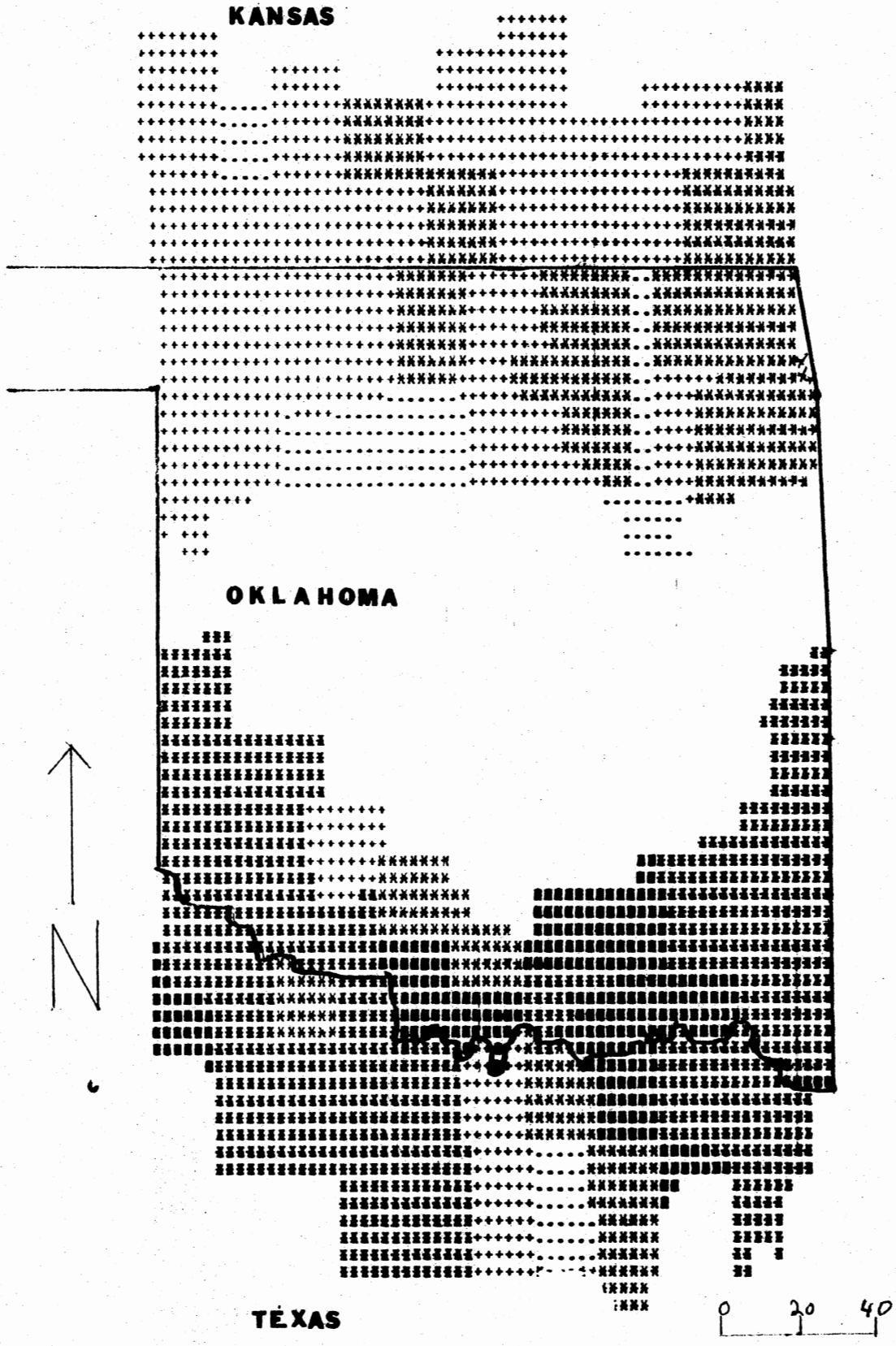


Figure 16. 1976 Election Map

Figure 16 (Continued)

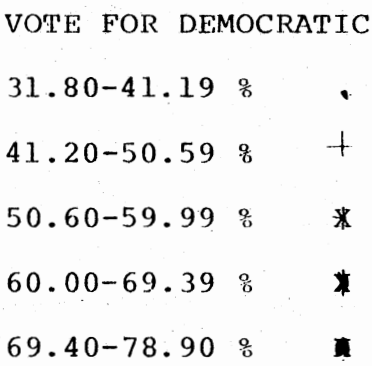


Figure 17. Graph of Northern Study Area Border Counties F-Statistics

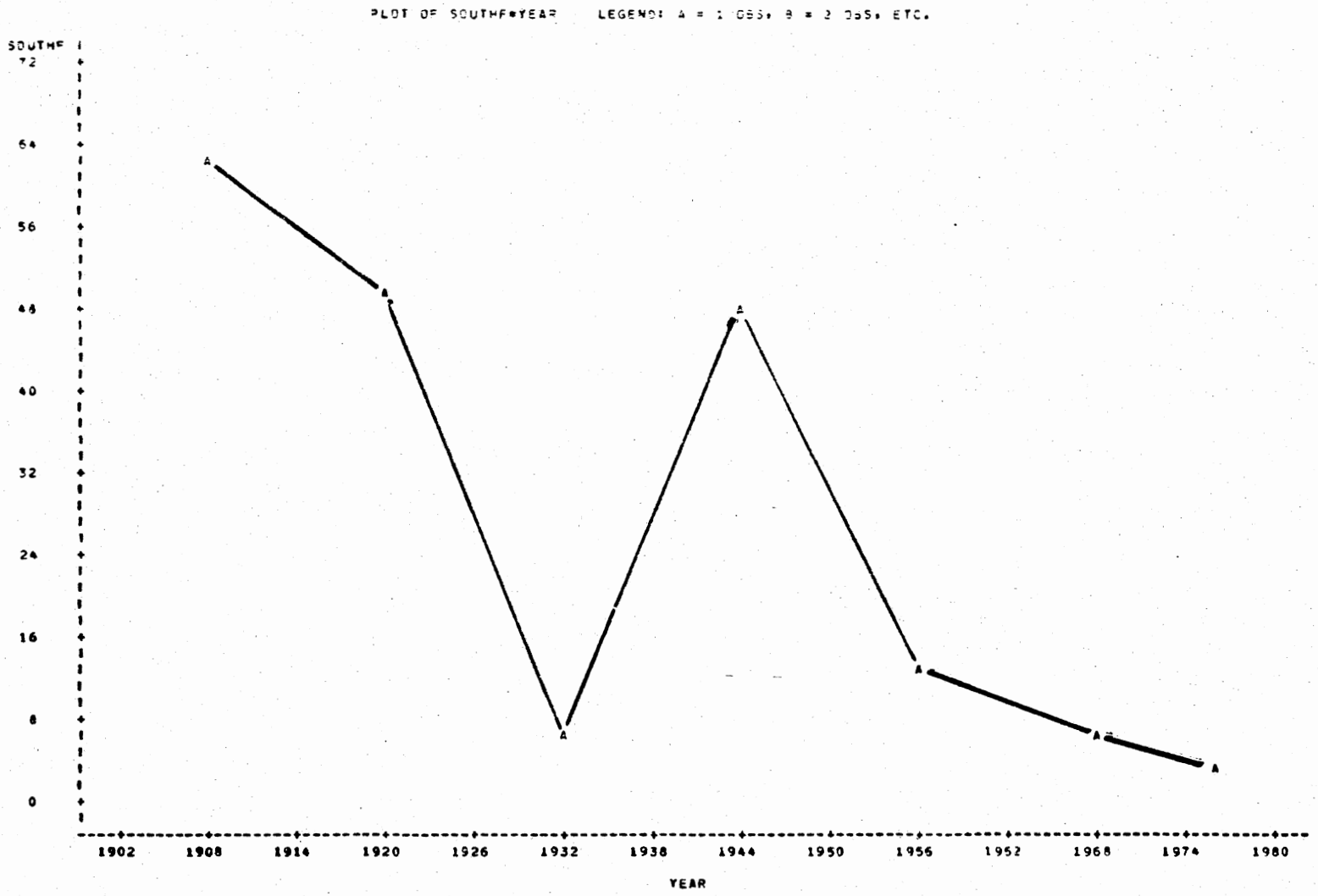


Figure 18. Graph of Southern Study Area Border Counties F-Statistics

over time. This substantiates what was found in the first section of the analysis.

The Boundary Voting Patterns. This section is devoted to an examination of the boundary counties. In Figure 19 the differences in these border counties are shown; once again the indication is that the t-values are decreasing, the differences in voting across these boundaries are decreasing. Furthermore, all values are significant except the one for the 1976 election (Table V). The mean difference of the southern border counties were greater in all elections except that of 1932, indicating that the Red River coincided with a greater voting difference (see Figure 20). The greater difference in the north may be attributable to the fact that the state difference of Kansas and Oklahoma were greater than in any other election (see Figure 21). In the last study election the difference between the river and geometric boundary county voting patterns are statistically indistinguishable.

The East-West Voting Patterns. The final part of this section deals with the east-west differences in voting patterns of the two study areas. The east-west differences in the south are shown in Table VI. None of these values were statistically significant, and there is a gradual decline in the mean vote differences. The proliferation of urbanized areas throughout this area, and concommitant spatial interaction, may explain these results. In the northern

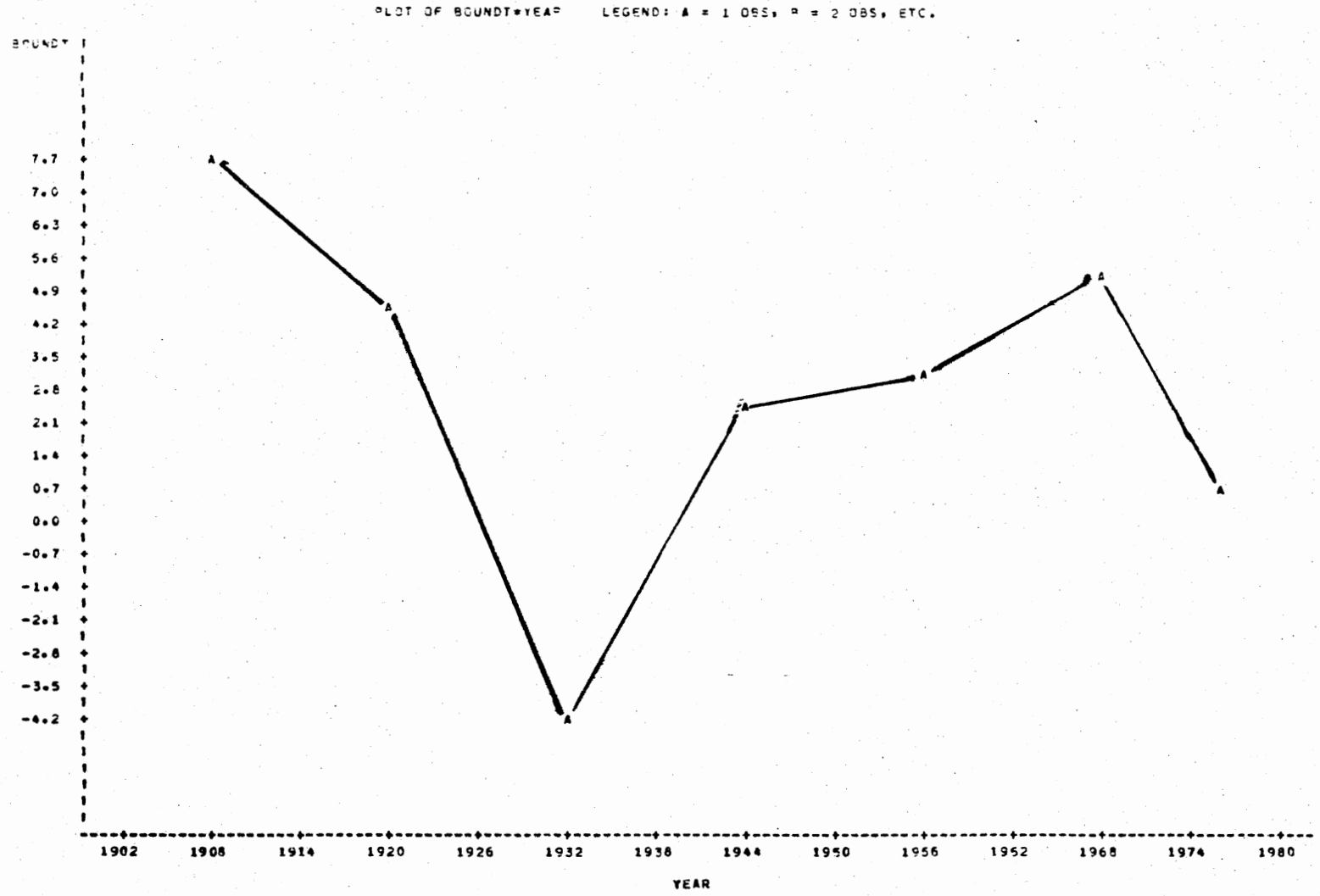


Figure 19. Graph of Boundary Comparison t-Statistic

TABLE V

MEAN DIFFERENCE BETWEEN BORDER COUNTIES AND t-STATISTIC FOR BOUNDARY COMPARISONS

Election Year	North	South	t-Statistic
1908	5.4	25.0	7.7*
1920	6.2	20.7	4.4*
1932	16.1	11.5	-4.2*
1944	7.5	12.4	2.4*
1956	5.8	13.3	3.1*
1968	3.4	9.7	5.1*
1976	5.2	6.5	.67

* indicates significance at the .025 level.

Figure 20. Graph of F-Statistic for East/West Division of the Northern Study Area

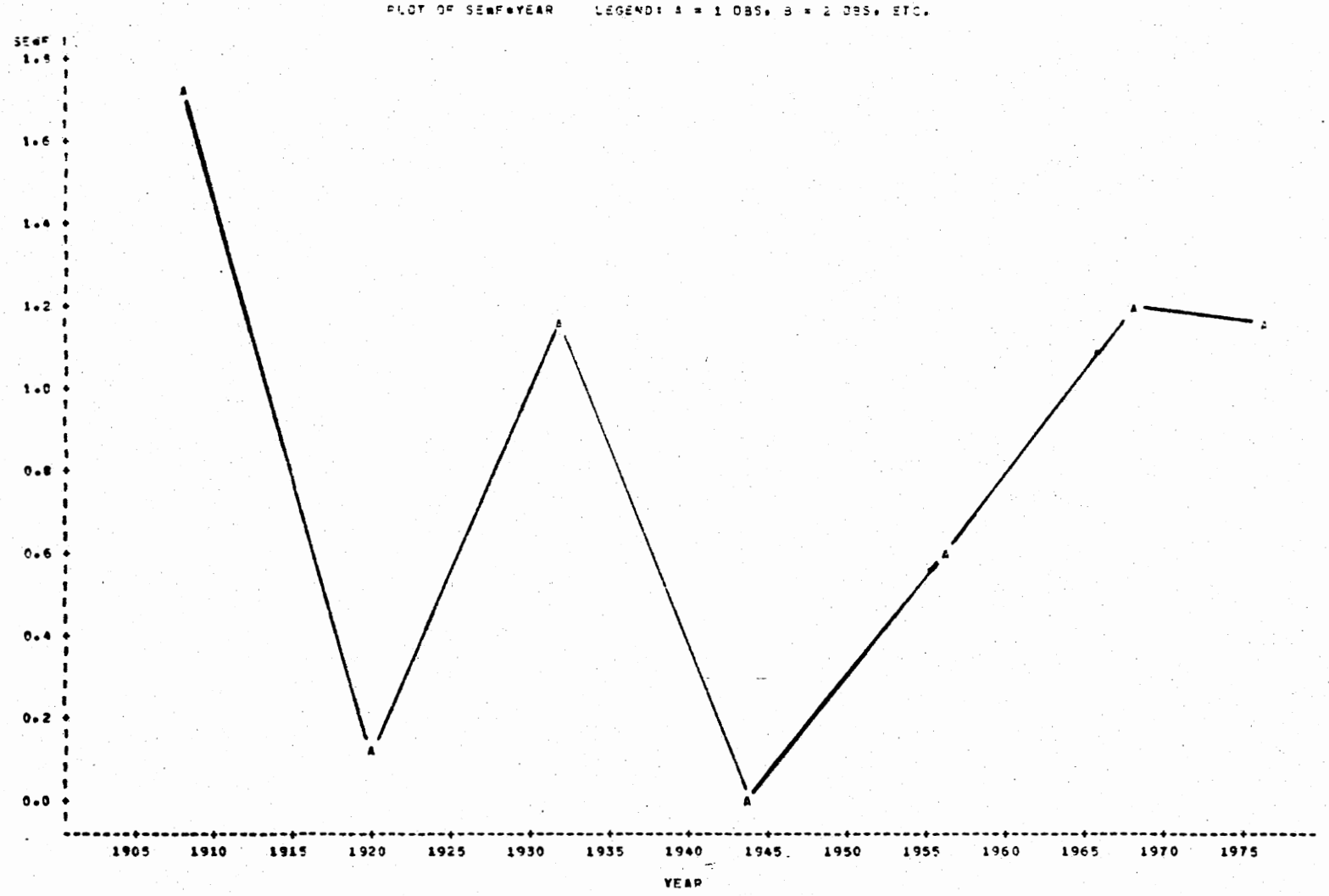


Figure 21. Graph of F-Statistic for East/West Division of the Southern Study Area

TABLE VI

MEAN VOTE FOR DEMOCRATIC PRESIDENTIAL CANDIDATE BY EAST/WEST DIVISIONS

Election Year		North	South
1908	East	45.3	67.2
	West	43.2	73.6
1920	East	37.8	63.2
	West	34.5	64.6
1932	East	63.0	87.3
	West	62.0	90.6
1944	East	45.1	80.3
	West	40.1	80.2
1956	East	38.9	59.2
	West	32.5	57.3
1968	East	31.6	40.8
	West	27.7	43.2
1976	East	49.3	64.9
	West	45.6	62.2

study area the results were quite different. There seems to be, not only an upward trend, but all values are statistically significant except those of 1908 and 1932 (Table VII). A rural-urban split may explain this difference in Democratic presidential candidate voting (see Chapter III). It should be noted that the density of the eastern county group is very high, actually twice as high as the western group in the northern study area (Table VIII). The lack of significant difference in the 1908 election may reflect an east-west migration into this area, that of 1932 may reflect the popularity of the Democratic candidate.

Summary and Conclusion

In the beginning it was hypothesized that the difference in electoral patterns across the boundaries would be significant, and more marked across the Red River state boundary. This hypothesis has been substantiated. It was also hypothesized that there would be statistically significant differences across the state boundaries. This was also been substantiated. All of these were felt to be in accordance with a spatial interaction theory. It was assumed that those areas with easiest access would vote with greater similarity.

An east-west difference in voting behavior was also examined, and found to predominate in the northern study area. No east-west differences were discovered in the

TABLE VII

F-STATISTICS FOR EAST AND WEST DIVISIONS
OF THE STUDY AREAS

Election Year	North	South
1908	1.56	1.74
1920	4.54*	.11
1932	.1	1.15
1944	5.61*	0.00
1956	13.26*	0.59
1968	3.76*	1.22
1976	3.96*	1.16

* indicates significance at the .05 level.

TABLE VIII

MEAN DENSITY OF THE STUDY AREAS BY
EAST/WEST DIVISIONS

Study Year		North	South
1920	East	48.8	40.8
	West	19.3	25.6
1940	East	54.5	36.9
	West	21.9	26.0
1960	East	61.8	24.7
	West	30.7	28.5

southern study area. The difference in the north was believed to be an indication of a rural-urban characteristic of the voting populations, the lack of difference was believed to be the result of similar density throughout that study area.

It has been assumed that spatial interaction, centripetal and centrifugal forces, and the voting patterns which boundaries, (as barriers to spatial interaction) create, explain the electoral differences. The combination of these factors give the states their identity and integrity. The focus of this chapter has been the functional relationship between voting and boundaries. It was believed that this is related to the notion that the people of a state act as one political group, the areal extent of that group marked by the state boundary. The conclusion of this chapter must be that state boundaries, once a barrier to spatial interaction, seem to be disintegrating in the electoral sense, due to the increasing movement of peoples and ideas.

FOOTNOTES

[1]H. Socolofsky and Huber Self, Historical Atlas of Kansas (Norman, 1972; John W. Morris and Edwin C. McReynolds, Historical Atlas of Oklahoma (Norman, 1965).

[2]William Pool, A Historical Atlas of Texas (Austin, 19 1975); John W. Morris and Edwin C. McReynolds, Historical Atlas of Oklahoma (Norman, 1965); State Election Board, 1977 Directory of Oklahoma (Oklahoma City, 1977).

[3]Hubert Blalock, Jr., Social Statistics (New York, 1972).

[4]Ibid., p. 181.

[5]Ibid., p. 318.

[6]Ibid., p. 329.

[7]Donald Meinig, Imperial Texas (Austin, 1969), p. 93; Luther B. Hill, A History of the State of Oklahoma, Volume I (Oklahoma City, 1910), p. 410.

[8]Donald Allen, Professor of Sociology, Oklahoma State University, Stillwater, Oklahoma, personal interview with author at Stillwater, Oklahoma, June, 1978.

CHAPTER III

SOME SOCIAL CHARACTERISTICS

Introduction

The primary focus of this chapter is the association of several selected social characteristics of the population with the vote for Democratic presidential candidate, in the areas defined in Chapter II. To reiterate, it was found that voting patterns became similar over time, both within the states and across the state boundaries. Centripetal and centrifugal forces were assumed to perform a function related to this phenomena. Furthermore, it was believed that the spatial voting patterns reflect these political actions of unity and diversification more nearly than any other single surrogate measure. It was also noted that spatial interaction and barriers to this interaction are phenomena of major significance in determining where these forces converge, and that distinct electoral area emerge as a result of the varying intensities of these forces. Included in this chapter is the definition of the aforementioned social characteristics, data, technique of analysis, and results and conclusions.

Social Characteristics

The characteristics examined were obtained from the U.S. Census. The census years used were 1920, 1940 and 1960. These data are comparable from census to census. All were taken from the county level data. The census years were chosen as an abbreviation of an otherwise monolithic data set. These presumably will reflect the major social and demographic changes which have occurred in the study areas.[1] The chosen characteristics are,

(1) Population change,

(2) Density,

(3) Age, and

(4) Education.

These characteristics have been found or are thought to have significant effects upon the outcome of elections.[2] Each will be discussed in turn.

The variable "Population change" is defined as the proportion of population increase or decrease of each county. The computational formula used was X_i/X_j, where X_i is the decenial year most previous to the election and X_j is the next decenial year (for example, the 1920 county population divided by the 1910 county population). For this variable the total county population was used. For the counties in the southern study area which "split" to form two counties (see Chapter II) proportions were determined by dividing the population of the new county by the old, as was done in

establishing the vote (see Chapter II). The population change figure presumably reflects the migration and growth factors of the county.

The "Density" variable was determined by dividing the population of each county by the total area of the county in square miles. The split county densities were determined by the same proportional method described above. This variable will presumably reflect urbanization as counties with higher densities, and ruralism, as counties with lower densities.

The "Age" variable was determined for each county by estimating the median age for years previous to 1950. The 1960 census data included median age as a standard feature. Prior to 1950 ages were divided into age brackets covering several years, with the population totals for those age brackets. The age classification with the highest total was found, and the average age was computed from this bracket. The age variable may reflect the conservatism of the county population.

The "Education" variable was determined by the above method to determine the median educational level prior to the 1960 census. The 1960 census data included median education level as a standard feature. The education variable may reflect the liberalism of the county population.

Data

The data for this chapter were found in the U.S. Census

of Population from 1910 to 1960, the City and County Data Book, and the Directory of Oklahoma, 1977. As has been mentioned, all data are comparable since they were obtained from the same sources and at equal intervals through time.

Time Period

To condense the materials as much as possible and still retain the demographic integrity of the areas, data from the following years and for the following variables were obtained,

(1) Density, Age and Education - 1920, 1940 and 1960, and,

(2) Population Change - 1920, 1940 and 1960.

While the first study election was 1908, the population change data are from 1920 and 1910. This is because there was no regular U.S. Census data available for Oklahoma in 1900.

Techniques

Two statistical techniques were employed in analyzing the data, correlation and multivariate analysis of variance. The correlation technique used was the "product moment correlation coefficient." In this technique the coefficient varies on the range of 1.0 to -1.0, the former indicating a perfect positive linear relationship between the two variables. As it approaches 1.0 it may be said that as one variable increases the other increases a similar amount, as the

coefficient approaches -1.0 it may be said that as one variable decreases the other increases a similar amount.[3]

The multivariate analysis of variance works in the same fashion as analysis of variance (see Chapter II), except that it takes all the different variables into account through cross tabulations with the other variables and arrives at a "pooled" estimate of the variation in the data. Thus, it determines an "effect" of the variables in relation to each other. Computationally, it will take the education, age, density, and population change variables to determine the between county variance for this combination, and divide by the variation of the vote within the county tiers. If the derived value is significant, variance and difference of means type statistical testing must necessarily stop. This means that the variation between social variables are not sufficient to account for the variation in the vote within the county tiers. If the derived value is not significant, several procedures exist which can be used to determine which variable is more important in effecting the vote.

In this analysis, with a limited set of data, it was felt that the statistical testing would end after the multivariate F was determined. This was a result of a decision to attempt to maximize the data. It should be noted that when the multivariate F was not significant the correlations will be higher since much of the variation within vote has been identified by the variation in the social characteristics.

These techniques were used to compare the county statistics of,

(1) The Democratic vote of 1920 with "Population change" in 1920, the "Density" in 1920, the "Age" in 1920 and "Education" in 1920,

(2) The Democratic vote of 1944 with "Population change" in 1940, "Density" in 1940, "Age" in 1940 and "Education" in 1940, and

(3) The Democratic vote of 1968 with "Population change" in 1960, "Density" in 1960, "Age" in 1960, and "Education" in 1960.

These variable combinations are assumed to reflect the major demographic and sociological conditions at the time of each election. The correlations relate the Democratic presidential candidate vote to each of the variables separately for each election year, with the same county breakdown as was used in Chapter II.

It was assumed that the study elections with significant electoral differences in the Democratic presidential candidate vote will not correlate as strongly with the social variables as those with no significant differences. It should should be noted that the study elections with significant east-west differences do not reveal as high correlations between Democratic presidential candidate voting and social characteristics as those with no significant east-west electoral differences.

Analysis

It was observed that the correlation of vote in any election with the preceding election was very similar (Table IX). In the study areas we can discern that the vote in the election of 1920 correlates with the 1908 vote at .93. The vote in these two elections is very similar or associated. The vote in the elections of 1968 and 1976 correlate at .75, the vote is still very similar. These county voting patterns do not change much from one election to the next. It was also ascertained that there was a general decline in the similarity of the vote. This may be the result of a polarization of rural and urban attitudes (supportative of the spatial interaction hypothesis) or the result of oscillation between conservative and liberal candidates selected by the Democratic party. In the northern study area (Table X) there was increasing similarity in voting. This is due to increased spatial interaction across the border and the diffusion of technological innovations in this area. These do substantiate the conclusions about this area made in Chapter II. In the southern study area (Table XI) the voting between elections became less associated with each election. This was to be expected since it was found that the electoral patterns in this area were becoming more statistically similar over time (see Chapter II). Thus, the voting patterns were becoming less associated.

The first study election of this chapter was 1920, when

TABLE IX

CORRELATIONS OF ALL STUDY ELECTIONS
IN BOTH STUDY AREAS

	1908	1920	1932	1944	1956	1968	1976
1908	1.0000	0.9314	0.6883	0.8888	0.6179	0.7401	0.5404
1920	-	1.0000	0.7253	0.9254	0.6785	0.7810	0.6017
1932	-	-	1.0000	0.8074	0.7457	0.5373	0.6212
1944	-	-	-	1.0000	0.8233	0.7973	-.7206
1956	-	-	-	-	1.0000	0.7468	0.8690
1968	-	-	-	-	-	1.0000	0.7479
1976	-	-	-	-	-	-	1.0000

TABLE X

CORRELATIONS OF ALL STUDY ELECTIONS
IN THE NORTHERN STUDY AREA

	1908	1920	1932	1944	1956	1968	1976
1908	1.0000	0.4578	0.4572	0.4496	0.5940	0.1552	0.4017
1920	-	1.0000	0.4307	0.5387	0.5690	0.3902	0.2272
1932	-	-	1.0000	0.4645	0.5836	-0.0340	0.3459
1944	-	-	-	1.0000	0.7499	0.4554	0.4482
1956	-	-	-	-	1.0000	0.6089	0.7200
1968	-	-	-	-	-	1.0000	0.7256
1976	-	-	-	-	-	-	1.0000

TABLE XI

CORRELATIONS OF ALL STUDY ELECTIONS
IN THE SOUTHERN STUDY AREA

	1908	1920	1932	1944	1956	1968	1976
1908	1.0000	0.8822	0.1572	0.8681	-0.2084	0.6302	-0.1723
1920	-	1.0000	0.1712	0.8911	-0.1460	0.6452	-0.6470
1932	-	-	1.0000	0.1598	-0.1081	-.0357	-0.2145
1944	-	-	-	1.0000	-0.0277	0.6796	-0.0414
1956	-	-	-	-	1.0000	-.3215	0.6270
1968	-	-	-	-	-	1.0000	0.3302
1976	-	-	-	-	-	-	1.0000

James Cox (Democrat) lost in a landslide election to Warren G. Harding (Republican). In the northern study area there were no statistically significant vote differences between any of the county tiers (Chapter II, Table V). In the southern study area there was a statistically significant difference in Cox vote within the Oklahoma and border counties (Table IV).

In the northern study area the multivariate F was not significant for the Kansas, Oklahoma and border county tiers. This means that the variation of the vote within the county tiers was explained by the variation of the social characteristics between the county tiers. It was assumed that these social characteristics were representative of the populations who voted for the Democratic presidential candidate.

The correlations of the vote and social characteristics indicated a linear relationship between these variables across the northern study area (Table XII). The correlation of the vote for Cox and population change was very similar in the Oklahoma and border counties, but that of Kansas is approximately one-half of this value. This may be explained by the growth of the Oklahoma counties; the increased spatial interaction seems to have affected this association with the vote. All correlations of density and vote for Cox indicate that high density was associated with higher voting for this Democratic presidential candidate. These correlations, reflecting urbanization, seem to be slightly less associated with the Cox vote than population change.

TABLE XII

CORRELATIONS OF SOCIAL CHARACTERISTICS WITH STUDY AREA COUNTIES BY STUDY ELECTION AND MULTIVARIATE F SIGNIFICANCE

	Population Change	Density	Age	Education	F
Northern Study Area - 1920					
Kansas Counties	.24	.43	.3	.04	
Border Counties	.49	.37	.05	-.33	
Oklahoma Counties	.45	.34	-.04	0	
Southern Study Area - 1920					
Oklahoma Counties	-.31	.3	0	.4	*
Border Counties	.25	.19	.11	-.43	*
Texas Counties	-.13	-.12	-.12	-.03	*
Northern Study Area - 1944					
Kansas Counties	.1	.33	.26	.22	
Border Counties	.34	.22	-.29	-.34	*
Oklahoma Counties	.27	.01	-.13	-.03	
Southern Study Area - 1944					
Oklahoma Counties	-.30	.24	-.27	.27	
Border Counties	-.04	.28	.28	.27	*
Texas Counties	-.03	-.01	.31	.34	*

TABLE XII (Continued)

	Population Change	Density	Age	Education	F
Northern Study Area - 1968					
Kansas Counties	.5	.34	-.55	0	
Border Counties	-.01	.20	.26	-.42	
Oklahoma Counties	-.08	-.13	0	-.49	
Southern Study Area - 1968					
Oklahoma Counties	-.24	-.09	.06	.34	
Border Counties	-.10	.15	.30	.22	*
Texas Counties	-.55	-.19	.52	-.22	

* Indicates significance at the .05 level.

It appears that Cox vote and age are the least associated. The highest association is in the Kansas counties. This may reflect the older, more conservative population voting for Cox. Education and Cox vote were the most inconsistent with respect to the areal groupings. In the border area, the greater the Cox vote the less educated the population, otherwise the association is extremely slight.

In the southern study area the multivariate F is significant for the Oklahoma border and Texas counties. This means that the variation within the social characteristics between the county tiers is not sufficient to explain the variation in the Cox vote within the county tiers. It can be assumed that these social factors are not representative of the voters, they reflect the voting in a way which is not additive, or there was some other factor affecting the vote for Cox.

In the southern study area the correlations of the Cox vote and the social characteristics indicated a linear relationship between these variables across the study area. The population change and age correlations are more similar within Oklahoma and Texas counties than within the border counties. In the Texas counties, the greater the vote for Cox, the less the population change, density, age and education. This indicated that these voters were more conservative, rural, and from areas of little population change. The border counties differ from the Texas counties in that the correlations are positive. The greater the vote for Cox the

greater the population change, the higher the density and the greater the education. This may reflect the growth of urbanized areas in this region. In the Oklahoma counties the greater the density and education the higher the Cox vote, and the greater the population change the less the vote for Cox. The age variable is unassociated with the Cox vote. These correlations indicate that Cox had rather widespread support in both urban areas and areas with little population change.

The next study election was 1944, in which Franklin D. Roosevelt (Democrat), ran for an unprecedented fourth term as president against Thomas Dewey (Republican). There was a statistically significant difference in voting between the border counties in the northern study area. There were no significant difference in voting between the border counties in the northern study area, nor were there no significant differences within the Kansas and Oklahoma study area county tiers (Table IV). In the southern study area, there were significant differences in voting between all county tiers.

In the northern study area the multivariate F was significant for the border counties but not statistically significant for the counties within Kansas or Oklahoma. This means that the variation of the vote within county tiers was explained by variation of the social characteristics in the Kansas and Oklahoma county tiers. However, the variation of the social characteristics between the county tiers was not sufficient to explain the variation within the vote in

the border counties. It could be assumed that these social factors were representative of the voter characteristics within these Kansas and Oklahoma counties but some other factor had influenced the vote in the border counties.

In the northern study area, there was a line or relationship between the voting and social characteristics across the study area. The correlations within the Kansas counties were positive for each variable. The greater the vote for Roosevelt the greater the population change, higher the density, greater the age and higher the education. Given the fairly strong correlations the urban, educated and older populations seem to have voted more for Roosevelt. Among the border counties, population change and density were positively associated with the vote, while age and education were negatively associated with the vote for Roosevelt. This seemed to indicate that younger, urbanized and changing county populations voted for Roosevelt. The Oklahoma counties have correlations which were very similar to those of the border counties. Once again Roosevelt seemed to have captured the younger and more changing county populations. The very slight correlation with density may be due to Tulsa county and its Republican leanings.

In the southern study area the multivariate F was significant for the border and Texas study area counties, and not significant for the Oklahoma counties. This means that the variation of the social characteristics between the county tiers was not sufficient to explain the variation

within the vote of the Texas and border county tiers, but the social characteristics were representative of the voter characteristics in the Oklahoma counties. Some other factor seems to have been operating on the vote in the Texas and border counties.

The southern study area correlations of the Roosevelt vote and social characteristics indicate a linear relationship between the variables across the study area. Within the Oklahoma counties the greater the density and education, the higher the vote for Roosevelt. Roosevelt had secured the vote of the liberal urbanites, and lost the vote of the conservative and little changing county populations. The Texas and border counties were similar in that the greater the vote for Roosevelt, the greater the age and education. Here, Roosevelt had received the vote of the old and educated. It should also be noted that urbanization was highly associated with vote in the Texas counties. Otherwise the correlations of the border and Texas counties were negligible.

The final study election was 1968, in which Hubert H. Humphrey (Democrat) ran against Richard M. Nixon (Republican) There were no statistically significant electoral differences between any of the county tiers in the northern study area. There was a statistically significant difference between the border counties in the southern study area, but not within the Oklahoma or Texas counties (Table IV).

The multivariate F was not significant for any of the county tiers in the northern study area. This means that

the variation within the vote was explained by the variation of the social characteristics between the county tiers in this area. It was assumed that these social factors were representative of the voter characteristics within this area.

The correlations in the northern study area of vote and social characteristics indicated a linear relationship between these variables, across the study area. Within the Kansas counties the greater the population change and urbanization, the higher the vote for Humphrey. The age variable was associated with less Humphrey vote and there was no association of vote with education. This means that Humphrey received greater vote from populations which were urbanized, changing and young. Among the border counties Humphrey received votes from the young, urbanized, and less educated. There was a negligible association with population change. The Oklahoma voters which gave greater vote to Humphrey were rural and less educated. The association of this vote and population change and age was slight.

In the southern study area the multivariate F was not significant for the Oklahoma and Texas counties, but was significant for the border counties. This means that the variation within Humphrey vote was explained by the variation of the social characteristics between the Oklahoma and Texas counties, but the variation of those characteristics in that area was not sufficient to explain the variation of the Humphrey vote within the border counties. It was

assumed that the social factors are representative of the voter characteristics within Oklahoma and Texas, but there was some other influence on this voting among the border counties.

These correlations also reveal a linear relationship between vote for Humphrey and the social variables, across the study area. In the Oklahoma counties Humphrey voters tended to be more educated and from less changing populations. Among the border counties, the Humphrey vote was associated with the urbanized, more educated and older populations. The Humphrey voters in the Texas counties tended to be more rural, older, less educated and from less changing areas.

Summary and Conclusions

This chapter began by noting that the voting in the study areas combined were similar when the study elections were compared over time. A trend toward greater similarity in voting was observed in the northern study area, and a tendency toward greater dissimiliarity in the southern study area.[4] Given the disintegration of the statistically determined boundaries, several hypotheses were tested (Chapter I). The main hypothesis, that greater similarity in voting would be accompanied by greater similarity in the voting populations, was substantiated. When totals were compared, county tiers with no significant difference in voting had greater correlations than county tiers where there were significant

differences. In addition, it was assumed that when the multivariate F-score was significant and when east-west differences predominated, correlations would be the lowest. This assumption was verified. (Hartshorne had stated that similar people aid centripetal forces, while dissimilar populations will act decisively upon a political region.)[5]

As a last comment, it should be observed that in all cases, with the exception of the Oklahoma counties in 1944, when the differences between counties in voting was statistically significant, the multivariate F was also significant. This probably means that some other variable is needed to more fully describe the vote difference. Quite possibly, income and/or transportation data would ameliorate this quizzical condition. Such data, however, are difficult to obtain.

FOOTNOTES

[1]Robert E. Norris, Associate Professor of Geography, Oklahoma State University, Stillwater, Oklahoma, personal interview with the author at Stillwater, Oklahoma, September, 1978.

[2]Stephen S. Birdsall, "Preliminary Analysis of the 1968 Wallace Vote in the Southeast," Southeastern Geographer, 9 (1969), pp. 55-66.

[3]David M. Smith, Patterns in Human Geography (New York, 1975), p. 212.

[4]John K. Wright, "Voting Habits in the United States," The Geographical Review, 21 (1931), pp. 666-72.

[5]Richard Hartshorne, "The Functional Approach to Political Geography," in Harm de Blij, Systematic Political Geography (New York, 1972), p. 256.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary

The objective of this thesis was to discover the effects of political boundaries on the vote for Democratic presidential candidate. The primary idea behind this study was based upon the federalistic system. In this system the people of each state are considered a separate entity, with different tax structures, laws and such. Hartshorne had described such forces which function to unite and divide the state as "centripetal" and "centrifugal," respectively.[1] Since state boundaries mark the legal limit of each state it was assumed that these forces would meet at the state boundaries.[2] It was further assumed that boundaries would act as a barrier to spatial interaction, resulting in greater interaction along either side of the boundary.[3]

The central assumption of this thesis was that a functional relationship exists between the Democratic voting and the spatial interaction among the people of the state. In this case, the vote for the Democratic presidential candidate was assumed to reflect these two factors: 1) the identification of the people with the state (the centripetal

force described above, a cognitive mechanism), and 2) spatial interaction, the movement of people and ideas (their behavior).

The state boundaries of Oklahoma were chosen as a site to study these boundary effects on voting. The northern study area had no "naturally marked boundary," while the southern study area had such a boundary, the Red River.[4] Presumably, spatial interaction across the northern border was less inhibited than across the southern, where the river acted as a greater barrier to spatial interaction.[5]

The second chapter of the thesis illuminated the spatial variation in voting across these state boundaries. Based upon the previous assumptions several hypotheses were tested. The boundary did divide the vote into distinct electoral areas. Statistically significant differences in voting were found across both state boundaries. In the north, these differences were found in the elections of 1908, 1932 and 1944. Otherwise, no significant differences across the boundary or within this study area were found. It was also discovered that, in all elections in which there were no significant differences across the boundary, there were significant east-west differences in the study area. The election of 1944 was the only exception to the east-west/split-no boundary difference rule. In this election, the mean difference in east-west voting is nearly identical to that of the difference between the border counties. It was also found that the AOV

(analysis of variance) score was not significant, indicating that a great deal of variation in the data existed. This meant that the sociological differences of urban and ruralism were approximately equal to that produced by the boundary. Since subsequent elections showed predominately east-west differences, it was assumed that the socio-electoral "turning point" occurred in this election and there was a subsequent voting alignment change. In the southern study area, statistical significance was found across the boundary in all study elections except the 1976 election. It was discovered that there were significant differences within the county tiers of Oklahoma (in four elections) and Texas (in one election). It was felt that the boundary had effected the spatial interaction causing the electoral difference, otherwise it was posed that urbanization contributed to the within state electoral differences. When east-west comparisons were made no statistically significant differences were found.

When the differences between the border counties in the two study areas were compared, they were found to be statistically significant in all but the final election. Apparently the type of boundary became of decreasing importance over time. Both boundaries acted as less of a barrier as technological innovations and mass media devices increased.

The third chapter was directed toward an examination

of the social characteristics of the populations in the study area counties, in relation to the vote. It was assumed that the majority of the people in the study areas were from the same population (the population of northern Oklahoma came from Kansas, those in southern Oklahoma came from Texas).[6] The characteristics examined were 1) population change (a ratio of county population taken at three ten year intervals), 2) density (of each county), 3) age (median of each county population), and 4) education (median of each county population). Respectively, these were assumed to reflect the migration, urbanization, residential status, and conservatism, and liberalism and (possibly income level), of each county population. The analysis of this data indicated that, in the northern study area, population change and density were most consistently highly correlated with the Democratic vote, and age and education were most highly associated with the Democratic vote in the southern study area. A linear relationship between the vote and these social characteristics was observed for each study election when significant differences in voting were discovered. Multivariate statistical testing showed significant "effects" when the variation of the social characteristics between county tiers was compared to the variation of the vote within the county tiers. This means that these variables are not additive or that some other factor was influencing the voting patterns. When no significant electoral differences were found, the multivariate F was not

significant. This means that the variation of the social characteristics between county tiers was sufficient to "explain" the variation of voting within these county tiers. This indicated that the social characteristics in the analysis were representative of the voter characteristics.

Conclusions

The Oklahoma side of the southern study area has been called "little dixie" because of the high turn out of Democratic vote in this area. It is also characterized by an older population.[7] The boundary differences in voting is a result of Texas and Arkansas migration patterns into the area and the predominance of the Democratic party through time, a result of an older, less changing population concentrated in this area. Many of these older people still remember their migration into the state, thus accounting for the difference across the border (this migration may reflect differences which led these people to migrate into this area). The differences between the counties within Oklahoma and Texas is an indication of their lack of contact with the border or different kinds of information reaching the more urbanized counties within this study area. The history of border conflicts with Texas is reflected in the voting differences. Those people nearest the border are more keenly aware of the border than those further back from the Red River.

The boundary differences were found to decrease over

time in the southern study area. This was the result of increased interaction across the boundary. The government began to grant many bridge contracts in the 1920's, making interaction easier. Also, the older population in this area is declining, since the study election covers 68 years. No east-west differences were found in this study area.

In the northern study area, population change and density correlated most consistently high with the Democratic presidential candidate vote, and east-west differences were found to prevail. The voting differences across the boundary were found only in the elections of 1908, 1932 and 1944. Spatial interaction may be the primary motivator, although it was noted that this older population seems to vote as conservatively as those in the southern study area. The large difference in east-west voting indicates a "rural-urban" split. These differences were found when the boundary differences were not significant in all study elections, except that of 1944. In his book on Oklahoma politics, Jones has posed that when it "comes to a choice between Democrat and Republican" the rural-urban split is most evident. A visual scan of Figures 2-8 will reveal a greater dispersion of the vote in the westernmost counties of Oklahoma and Kansas. This variability in political attitudes in agricultural areas has been noted by several researchers and is the most likely reason for the east-west split.[9] (It can be observed that, in the closer elections, counties surrounding the urban areas voted more similarly.) The

boundary differences in the northern study area decreased over time. This was a result of increased interaction and innovation diffusion across the boundary.

When border county differences were compared over time, they diminished. This was due to increased spatial interaction across both boundaries. As has been mentioned, the northern boundary does not occur as a physical feature and presumably was less a barrier to spatial interaction than the Red River boundary in the southern study area. As innovations such as automobiles, televisions and radios became more abundant, interactions increased, the growth of urban centers also contributed to the declining electoral significance of the boundaries.

Implications

It has been shown that political boundaries may coincide with existing electoral patterns. These boundaries may coincide with existing electoral patterns. These boundaries appear to perform some function which decreased sparial interaction. It has also been shown that the significance of boundaries may change over time, and in relation to the type of boundary. As technological levels become more developed, certain kinds of boundaries may no longer be effective to control expansion of these technologies. And, finally, spatial interaction seems to be a major component of electoral change and boundary disintegration.

A more specific comment on the declining electoral significance of the state boundaries is pertinent. An important consideration of this thesis was the presumed relationship of the electoral patterns to the identification of the people with their state. The disintegration of the distinctly marked electoral areas may suggest that this presumption as superfluous and illusory, or that some more deeply rooted culture change aspect has been measured. The rural-urban split, which was suggested by the east-west voting patterns in the northern study area and thought to be the reason for the within state electoral differences in the southern study area, indicates that an economic influence has overridden the politico-sociological state boundary voting differences. This indicates that the people in the study areas are now more concerned with their economic situation than the political alignment of their state. These results may be construed as a general trend toward a cultural homogeneity that is believed to be occurring in the United States, but it may also reflect cultural stratification (rural and urban), a result of the economic condition of these people. As industries tend to move toward more rural areas, these people may be more able to afford and buy more of their own culture. (It must be remembered that this is a type of spatial interaction, although it is not exactly the same type of spatial interaction which was postulated at the beginning of this thesis.) Thus, it may be that areas with more similar economic and cultural features vote with greater similarity.

Further Research

Eventually all state boundaries should be studied, through time, to reinforce the findings presented in this thesis. Diffusion pattern studies would yield interesting results in relation to this political phenomenon. The circulation across boundaries would illuminate some important aspects of political boundaries. The effects of urbanization and ruralism, migrants and residents, ethnic and population voting patterns, would undoubtedly shed light on much of what has been presented.

Furthermore, the variables used did not "explain" the boundary differences (see Chapter III). This was an unfortunate, yet not unpredicted result. Given the limited data set and restricted nature of the data, it might have been more surprising if the difference were so easily explained. Further, more detailed analysis, should include more spatial interaction data, transportation, and income data. These variables would quite possibly account for the variation in the boundary voting patterns.

FOOTNOTES

[1]Richard Hartshorne, "The Functional Approach to Geography," in Harm de Blij, Systematic Political Geography, (New York, 1972), pp. 241-64.

[2]Ladis K. D. Kristoff, "The Nature of Frontiers and Boundaries," Annals, Association of American Geographers, 49 (1959), pp. 269-82.

[3]Stephen B. Jones, "A Unified Field Theory of Political Geography," Annals, Association of American Geographers, 44 (1954), pp. 111-123.

[4]Richard Hartshorne, "Suggestions on the Terminology of Political Geographers," Annals, Association of American Geographers, 26 (1936), pp. 256-57.

[5]Kritoff, "Nature of Frontiers,", pp. 269-82.

[6]Stephen Jones, Oklahoma Politics in State and Nation (Enid, 1974), pp. 120.

[7]Ibid., pp. 122-24.

[8]Ibid., pp. 131-35.

[9]Bernard C. Hennessy, Public Opinion (New York, 1973), pp. 174-205.

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APPENDIX

A NOTE ON THE FIGURES

Figures 3 through 9 and 17 through 21 are computer produced. These figures were executed by the Statistical Analysis System (1976 version) under the "plot" procedure.

Figure 2 and figures 10 through 16 were also computer produced. These choropleth maps were generated with the CHORMAP computer mapping program currently available to the Oklahoma State University students.

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