

LONG TERM ECOLOGICAL ANALYSIS OF ELECTORAL STATISTICS IN DENMARK*

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1. Introduction

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This apparent stability raises a number of questions which can only be answered by research, on the basis of either time series of available aggregate data or sample surveys which allow for comparisons between generations and different age groups. Until recently, only little research of this kind has been done since most studies of electoral behaviour are concentrating on one election rather than several.

This paper presents some of the first results from a long term analysis of Danish electoral statistics. The project was launched in 1962¹ at the Institute of Political Science at the University of Aarhus with the establishment of a Danish archive of political and census data for each municipality in the country.²

The first parts of this paper deal with some of the technical and methodological problems which arise with research of this kind. This section is followed by a presentation of timeseries of relative strength of each of the three major political parties in Denmark, the Social Democrats, the Liberal party (Venstre) and the Conservative party. These timeseries of party strength are presented for ecological units with different degrees of urbanization, occupation structure and population growth. Also data about the egalization of regional contrasts are presented. In the last part of this paper the concept of stability is discussed from an ecological point of view. It is argued that detailed ecological analysis of time series of electoral data can contribute to our knowledge of the structure and stability within the electorate.

* Parts of this paper were presented in a plenary session at the first Scandinavian Conference of Political Science, Oslo, June 1966.

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2. Technical Problems in Long Term Analysis of Ecological Data

Long term analysis of ecological data has become greatly facilitated through the development of electronic computers. Before, the handling of such data was such a time consuming process that only little use was made of the rich sources of statistical data which have been accumulated ever since census data and other statistical information was made available for individual municipalities or other administrative units. Those who are engaged with the processing of data on electronic equipment are often absorbed in the enormous possibilities which are opened each time a new improved model is introduced on the market. They often stress the quickness of their machines, especially since standard programs for tabulation and statistical analysis have been developed. Contrarily they neglect to pay attention to the intricate and time consuming problems which arise with the preparation of the input data. This concerns to some extent those who during the last ten years have propagated the establishment of data archives containing survey data as well as census data which can be used for secondary as well as comparative and longitudinal studies.

It seems therefore reasonable to mention a few of those technical problems which the research group at the Institute of Political Science in Aarhus encountered when it started to build up an archive of census and other statistical data for each Danish community and prepared them for computer input. They can be divided into two categories: (1) problems associated to the changes over time which occur in the definitions of and grouping of important demographic variables, (2) problems associated to the administrative changes in the boundaries of the statistical units (municipalities) which are used in the longitudinal analysis.

In Denmark, census data and other statistical information has been available for each community since 1920. This does, however, not mean that the information is consistent all through the period 1920–1965. To the contrary. Important changes have been made in the definitions as well as the coding and grouping of data. As an example, the classification of occupations has been the object of important changes between the 1940 and 1950 census when Denmark with a few exceptions adopted the ISIC classification. Also the Danish definition of urbanization has been changed, the last time in 1955. Such changes are an important obstacle for all longitudinal studies.

The second group of problems concern the identification of the basic unit. As long as this unit remains unchanged over time there is no problem. But as soon as the unit is changed only one time during the period which is studied, one has to make a decision about the correction for this change of all data which were collected before it took place. In the present study, the municipality was the basic unit. Over time, however, there have been numerous changes in the boundaries of municipalities. During the last 40 years a substantial number of Danish communes have either been divided in several parts or been united with neighbouring municipalities. Since World War II the policy has been to unite three to ten small municipalities to one large with about 6000–8000 inhabitants.

The aim is to reduce the total number of communes from 1200 to about 400. The bulk of these changes will take place in the next five years.

During the period 1947–1964, which is the first studied in the present research program, the number of changes of municipal boundaries has been relatively small. Since most changes have been of the kind in which two or three communes have been united into one, data for the period 1947–1964 have been reconstructed according to municipal boundaries as they existed before September 22, 1964. In future, however, when the total number of independent municipalities has been brought down to about 4–500, it will not be possible to make longitudinal comparisons between the periods before and after the new municipal act, unless statistical data still are made available for the original municipal units.

3. Methodological Problems In Long Term Ecological Analysis

When these longitudinal studies of electoral behaviour were launched it was clear that the relationship between changes in social structure and the development of the relative strength of political parties was in the focus of interest. Most studies based on data from electoral statistics only deal with one election and although there is a vast literature on the relationship between social factors and party strength,³ relatively little research has dealt with the dynamics of these relationships. In principle there are four ways of studying the dynamics of electoral behaviour on the basis of available statistical sources. First, one can undertake a series of successive comparative static analysis. For each election we can correlate the strength of individual parties as it is demonstrated by the parties' share in the total vote (or of all persons eligible to vote) with data about the social structure for the units. A series of correlation and regression coefficients can indicate changes in the closeness of these relationships as well as their level. In practise, however, the possibilities for carrying out such an analysis are rather limited. It is relatively seldom that elections take place at the same time (in the same year) as census data are collected.

The second possibility is to use a dynamic-static approach in which changes in the social structure of certain types of communes are related to the outcome of a given election. Also here we meet considerable practical obstacles. As mentioned earlier, there is only little consistence in the coding and grouping of data from census to census. Therefore the possibilities of constructing dynamic variables are limited. In the present study it has only been possible to include population growth as a dynamic variable. Changes in the occupational and economic structure of the communes can only be calculated for the period 1950–1960, but not before. Since the number of communes with marked changes in their occupational structure within a decade is very small, the effect of such a dynamic occupational variable can hardly be measured when period in question is too short.

Reversely, the obstacles are few when one carries out a static-dynamic analysis in which the development of relative party strength is related to the fixed social structure of the ecological unit. It is this kind of approach which has been most

used in the present investigation. The relative shares of all parties participating in the election to the *Folketing* in the period 1947–1964 have been tabulated for ecological units with a fixed social structure as given by the census in 1960. It is evident that this approach gives some severe problems of interpretation. It deals retrospectively with the political development in communes which in 1960 had a certain population structure. It does not indicate the forces behind this development.

The remaining approach, which uses dynamic demographic as well as political data, has very limited possibilities since most demographic data are inconsistent from census to census or only consistent for a very short period. In the present study we have only related population growth (1950–1960) within certain ecological units with the development of party strength in the period 1947–1964. Apart from this, however, we are also using fluctuations in the voting turnout from election to election as an independent variable.⁴

Until now it has been stressed that one of the main obstacle in a dynamic analysis of social change and electoral behaviour is the fact that the available demographic data to a large extent are inconsistent from census to census. We have assumed that the political parties in question remain unchanged. This is only true to a certain extent. It is unrealistic to suppose that there is only a one-way relationship between social and political factors. To the contrary it seems necessary to calculate with a certain amount of feed-back, especially in the long run. Political parties have an appeal to certain categories within a population. If a party's relative share in the population declines, it will try to attract other groups, in order to survive. In other words, the parties which are object of a longitudinal study do not remain constant all through the period in question. The difficulty, however, is that changes within the party cannot be quantified and calculated in the same way as we are able to handle variables which come from statistical sources such as population growth, changes in voting turnout and others. Neither are we able to isolate the effect of such changes. But they have to be taken into account when dealing with the analysis and interpretation of time series on electoral behaviour.

Of two additional methodological problems, one concerns the validity of ecological correlations, and the other is related to the interpretation of time series of electoral results. The problem of the so-called "ecological fallacy" concerns the danger of jumping to conclusions about relations between social, political or other variables on the basis correlations of aggregate data. It was Robinson (1950) who initiated the discussion and recently, Scheuch (1966) has given an excellent summary of the whole matter. In general it seems reasonable to say that the actuality of the problem is less pronounced now, than only 10 or 20 years ago. Before, sample surveys of individual political behaviour were scarce or non-existent in most European and other developed countries. The only sources of data at hand were official statical documents produced for each election. Therefore it was natural that those who were interested in the analysis of relations between social factors and political behaviour made use of ecological methods,

running all the risks which are related to this method. Later, as sample surveys took over, ecological studies which wanted to establish relationships between social and political factors became more or less superfluous. Since individual data are available, there is no need to jump to conclusions about "individual correlations" on the basis of "ecological correlations". This does, however, not mean that there is no need for ecological research; its emphasis, however, must not be laid upon the "discovery" of relations between social and political factors.

Studies of this kind do encounter serious problems in the description as well as the interpretation of time series. They are handicapped by the simple lack of terminology, and a frame of reference. We face this problem already when we try to make a simple distinction between long and short term fluctuations. The arbitrary solution in the present study was to define short-term fluctuations very strictly as those fluctuations which occur when a sudden rise or fall in the relative strength of a political party, from one election to an other, is counter-balanced by a development in the opposite direction which re-establishes the original position. In other words, short-term fluctuations occur within a period of three elections. Examples of such fluctuations in Denmark, are the Conservative losses and the Liberal victory in 1947, as well as the gains of the small centre parties in 1953 and 1957.

Interpretation of the observed changes is also handicapped by the fact that all observed fluctuations and changes are netto, and as such, disguising what kind of changes actually took place. Often netto changes are interpreted as if votes are floating from one party to another. Recent research on electoral turnout (J. Jeppesen and P. Meyer, 1964) and on the stability of voting behaviour (H. Valen and H. Katz, 1964) casts considerable doubt on the reliability and validity of such interpretations, both because relatively few voters change their party preference from one election to an other and because such interpretations do neither account for changes during the period between two elections, nor for the fact that the ambivalent voter can become a non-voter. Theoretically it is possible that an increase in a political party's share of the total vote is due only to the votes from (1) new voters and (2) previous non-voters. Only carefully planned survey research, immediately after an election can give some indication about the influence of the new voters, previous non-voters, and the converted voters respectively, on the changes in the political constellation from one election to another.

But how can long term ecological analysis contribute to our knowledge about the relation between social and political change? First of all by the fact that time series of party strength can be computed for individual ecological and geographical units, thus supplying us with a more differentiated picture of what happens in the long run as well as between two or three successive elections. The difference in a political party's relative share of those eligible to vote, between two elections is a gross figure which may indicate a standstill, losses as well as gains, without showing what actually happened in different ecological settings. The more this gross-figure can be broken down by calculating electoral

results for individual ecological and geographical units the more we are able to evaluate the actual situation in spite of the fact that we still deal with aggregate data.

In such research one can examine to what extent there is a parallel between the development of party strength within different ecological units. The more such a parallel exists, the more we are able to predict the development within one unit on the basis of data from others. The very existence of such a parallel may be an indicator for the stability of the relation between party strength at one hand and the ecological variable at the other. Deviances from the general trend in certain ecological units can become warning signals for changes which not yet are large enough to influence the gross figures for the total electorate.

4. The Period 1947–1964

According to the Danish constitution, elections to the *Folketing* take place at least every fourth year. From 1947 till 1964 seven elections were held including two in 1953 when some important changes in the constitution took place. The voting age has been lowered twice during this period in 1953 from 25 to 23 and in 1961 from 23 to 21. When we look at the total electorate in 1964 we find that about 60 per cent of all persons eligible to vote also were registered as potential voters in 1947.

Developments within the Danish population follow a trend which is typical for the post-war period in most European countries. There has been a continued reduction of the agricultural sector and an expansion of industry. This expansion has taken place, partly in the larger cities and their suburban areas, partly in the rural areas. The expansion of the already existing population centers has continued rapidly, while a certain amount of decentralization is making the rural areas less "rural" in character.

During the period 1940 to 1960 there has been a marked increase in the relative number of white-collar workers (Table 1), counterbalanced by a reduction of the relative number of manual workers as well as self-employed people. Also the age structure of the main occupational groups has changed somewhat. In 1940 one out of five blue-collar workers was over 45 years of age but in 1960 one out of three. The same development is observed for the self-employed, both within and outside the agricultural occupations. In 1940 a little more than half of them were over 45 but in 1960 nearly two out of three. The average age of the white collar workers has only changed very little all through this period.

Table 1. The development of the three main occupational groups in Denmark in the period 1921–1960.

	1921	1930	1940	1950	1960
	%	%	%	%	%
Self-employed	30.4	28.7	25.5	24.4	21.9
Salaried employees	20.2	20.9	21.1	24.2	28.7
Manual workers	49.4	50.4	53.4	51.4	49.4
Total	100.0	100.0	100.0	100.0	100.0

Economically the period 1947 to 1964 has been one of increasing prosperity. The years immediately after the war had some marked fluctuations in the employment rate, but especially during the last ten years there has been full employment in nearly all sectors just as well as seasonal fluctuations in the employment rate have somewhat flattened out. The increase in prosperity is illustrated by the fact that durable goods are taking a more and more important part of the budget of the average blue- and white-collar workers. The expenses for food have been reduced from 30 per cent of the total wage-earner budget in 1948 to 22 per cent in 1963.

In spite of these changes in the social and economic structure of post-war Denmark, only little change can be observed in the relative strength of those political parties which participated in the elections to the *Folketing*. The balance between the left and right oriented parties nearly remained unchanged all through this period (Lassen, 1961).

Roughly the period 1947–1964 can be divided into three parts. After the war followed a period of resettlement in which important fluctuations took place within the left as well as the right wing. The first election (1945) brought a large victory for the Communists, but in 1947, the Social Democrats gained most of what they had lost in strength in 1945. The election of 1947 brought a victory for the agrarian liberal party (*Venstre*) due to its policy in regard to the Danish minority in North Slesvig. The conservatives lost heavily, but regained their former position in 1950.

The second period, the elections in 1953 and 1957, is marked by the ambivalence of the voters. It seemed that the Danish voter had lost some of the interest for politics which was demonstrated in the first two post-war elections. The turnout percentage declined from 85 in 1945 to 80 in 1953. Both the left and the right wing experienced minor reductions in their total share of the eligible voters. The most pronounced change within the left block was a gradual reduction of the Communist vote from 10.7 % in 1945 to 2.6 % in 1957. Obviously the political situation outside the country — the communist take-over in Czechoslovakia, the cold war, and the Hungarian revolution in 1956 — had a marked influence on this development. Those who normally would identify themselves with the extreme left found themselves without an acceptable political alternative. During this period the two small centre parties, the "Radical liberals" and especially the "Single taxers"⁵ were the object of small but politically important fluctuations in their share of the electorate.

The third period contains the elections in 1960 and 1964. The 1960 election brought the total share of the socialistic parties up to 42.2 %, higher than it ever had been. This increase was partly due both to the gain of the Social Democrats and to the establishment of Socialist People's Party, which presented an alternative to those left-oriented socialist voters who had been frustrated by the international political developments in the fifties. The right block experienced only a minor loss and the conservatives even gained in strength. The voting turnout was high and the small centre parties, important in the fifties, now

Table 2. Main results from the parliamentary elections in 1947 to 1964 in Denmark.

	1947 %	1950 %	1953 %	1953 %	1957 %	1960 %	1964 %
Left:							
Social Democrats	34.2	32.3	32.5	33.2	32.8	36.0	35.7
Communists	5.8	3.8	3.8	3.5	2.6	1.0	1.0
Socialist Peoples' Party						5.2	4.9
Centre:							
Radical liberals	5.9	6.7	7.0	6.3	6.5	4.9	4.5
Single taxers	3.9	6.7	4.5	2.8	4.4	1.8	1.1
Right:							
Liberal party	23.6	17.4	17.8	18.5	20.9	18.0	17.7
Conservative party	10.6	14.5	13.9	13.5	13.9	15.4	17.1
Independents				2.2	1.9	2.9	1.2
Other:	1.0	—	1.0	0.3	0.3	0.3	0.9
Non-voters	15.0	18.6	19.5	19.7	16.7	14.5	15.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

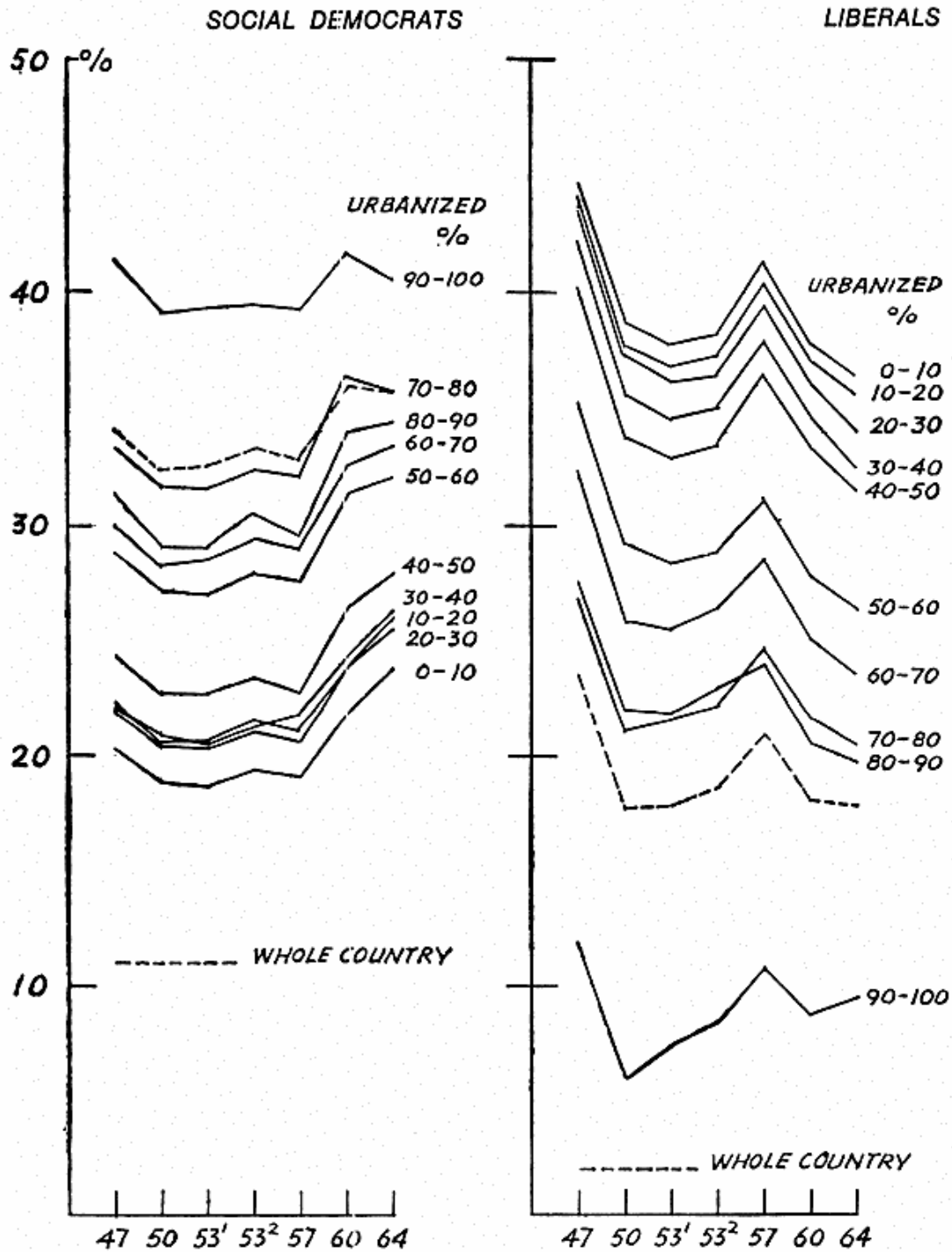
experienced the heaviest losses. The following election brought little change in this overall pattern. The left socialists were able to keep their position, the liberal vote was further reduced and the conservatives continued to enlarge their share.

Compared with other Scandinavian as well as Western European countries there is a certain common trend in electoral behaviour through the first 20 years after World War II. The fifties were a period of political ambivalence demonstrated by low electoral participation and short fluctuations in the shares of the centre parties; the sixties reveal a strengthening of the two extremes. The social democrats are facing stagnation or a reduction of their former position. This development is perhaps less pronounced in Denmark, as long as we only deal with the gross results as they are presented in Table 2.

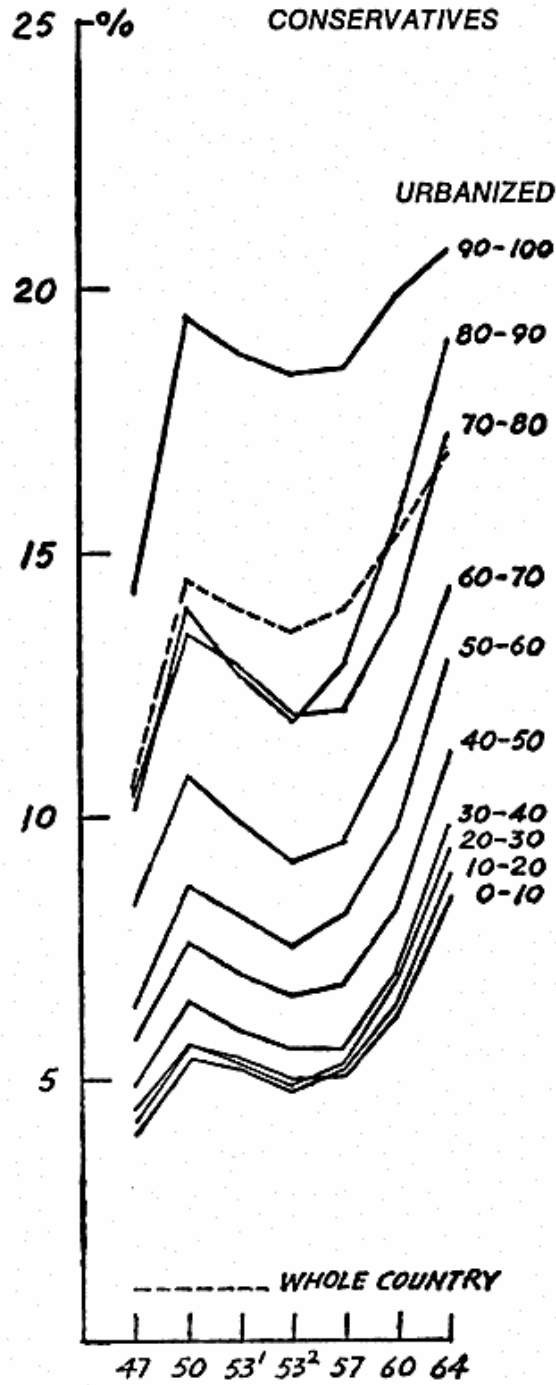
Several questions can be raised in an ecological analysis of electoral statistics for this period. This paper will deal with three. (1) To what extent is there a parallel between the gross national results of the elections in 1947 to 1964 and the results for different ecological units? We will restrict ourselves to the three largest parties and investigate the development of their shares of the total number of eligible voters in communities with different degrees of urbanization. We will discuss the concept of stability, which too often is used to describe the non-fluctuating gross-results.

(2) To what extent has the increased urbanization of rural parts of the country had an effect on the existing political differences between the main geographical regions? Until World War II it was typical of Danish political structure that the Social Democratic party and the Conservative party recruited most of their voters in the urban areas, while the liberals mainly consisted of agrarians. Has increased urbanization and decentralization of industry diminished these contrasts?

Figure 1. The percentage of total electorate voting in 1947-64 for (a) Social Democrats, (b) Liberals, and (c) Conservatives, related to urbanization of communes.



(3) Finally, the impact of occupational structure and population growth are examined. The expansion of the Conservative share of the total vote makes it reasonable to relate this development partly to growing prosperity and partly to changes in occupational structure.



5. The Development In Areas with a Different Degree of Urbanization

The gross figures from electoral statistics for the period 1947 to 1964 indicate that only minor changes have taken place and that a balance of power between the socialistic parties at one side and the liberal and conservative party on the

other remained unchanged. How rooted is this apparent trend of stability in different ecological settings? Is there a parallel between the gross and partial results? To what extent are changes within different ecological units disguised by the gross figures?

We will attempt to answer these questions with the help of a description and analysis of results from ecological units with varying urbanization. For all three parties in question, there is a high correlation between the relative strength and the degree of urbanization. For the Social Democrats and the Conservatives the correlation is positive, for the Liberal party it is negative. Party strength is measured by the relative share of all people entitled to vote and *not* by the share of those who actually voted. By taking the entire electorate as a basis for analysis we incorporate a correction for the fluctuations in voting turnout. Urbanization is measured by the relative size of that part of the population of the commune which is living in its "build-up" part.

Figure 1a shows the development of the Social Democratic vote during the period 1947–1964, and draws the attention upon three different observations. First, we find a striking parallelism between all ten curves. The small fluctuations which can be observed in the gross-figures are reflected in the same way in the development within each of the individual commune types. This parallelism indicates that there is a great stability in the close relation between urbanization and the relative size of the social democratic share.

Secondly we find, as for example also in Sweden, that the relative share of the Social Democratic vote is higher (for all elections) in communes with 70–80 % urbanization than in communes with 80–90 % of the population living in the build-up area. Thus the correlation between urbanization and the strength of the social democrats is nearly but not entirely perfect.

We are able to distinguish between two periods, the first containing the five elections between 1947 and 1957 and the second, including the last two elections. There is a nearly perfect parallelism between all ten curves until the election in 1957. The last two elections show a different pattern. The stability, as indicated by parallelism in the fluctuations of partial results, is broken and the curves begin to converge with each other. In the highly urbanized areas the Social Democratic share keeps its position or decreases. In the least urbanized communes it is still going up. Thanks to an increase in strength in the least urbanized parts of the country, the effect of stagnation and decline in urban areas is counterbalanced in the gross-results. In other words the fluctuations of gross results reflect parallel fluctuations up till the election of 1957 but disguise structural changes which took place in 1960 and 1964.

The change which is taking place in 1960 and 1964 must, of course, be related to the organization of the left socialistic wing when the Socialist People's Party was established. This party recruits most of its voters in the highly urbanized areas. The competition from the Socialist Peoples' Party does not necessarily have resulted in unfaithfulness from previous Social Democratic voters. At the election of 1960 there was a marked increase in the voting turnout, and it is likely

that this party mobilized some of the ambivalent voters of the fifties who did not want to support the Communists and who did not find the Social Democratic party an acceptable alternative. Further it is likely that the Socialist People's Party recruited voters among the young who otherwise would have given their support to the Social Democrats. At the election of 1964 there were about 400,000 new voters (total electorate was about 3,000,000) and about 300,000 people who had abstained in 1960. In other words, about 25 % of the total electorate in 1964 had not voted in 1960. Consequently, one must be careful with interpretations which stress the "unfaithfulness" of the voter. The netto-results disguise actual changes, and stagnation as it is observed for the Social Democrats in 1964 may be due to nothing but the fact that the parties' share of the new voters just about counterbalanced losses through death among its traditional supporters.

The Liberal Party reveals the same kind of parallelism as was observed for the Social Democrats. According to Figure 1.b the short term fluctuations in this party's relative share of the total number of eligible voters are similar for each type of commune. Apart from the parallelism in the short term fluctuations, we observe a structural change for the period as a whole. The general tendency has been that the Liberal Party has been able to keep its position in spite of a gradual reduction of its relative strength among its traditional supporters. The Liberal Party's share has been gradually reduced in the rural parts of the country, has remained unchanged in small towns and large villages and has increased in the most urbanized areas. It is the urban voter who has helped the agrarian Liberal Party keep its position.

Also the conservative vote has developed along the same pattern. Again we are confronted with parallelism in the short term fluctuations, but not quite as pronounced as for the Social Democratic party. In 1950, for example, the Conservative party gained in all commune types, but most in the highly urbanized areas. The following elections brought losses, most in the small towns and large villages, least in the extreme rural and extreme urban parts of the country. From 1957, especially at the elections of 1960 and 1964 we observe a marked increase in the Conservative vote. This increase is not quite as pronounced in the urban centres as in the other types of communes (Figure 1.c).

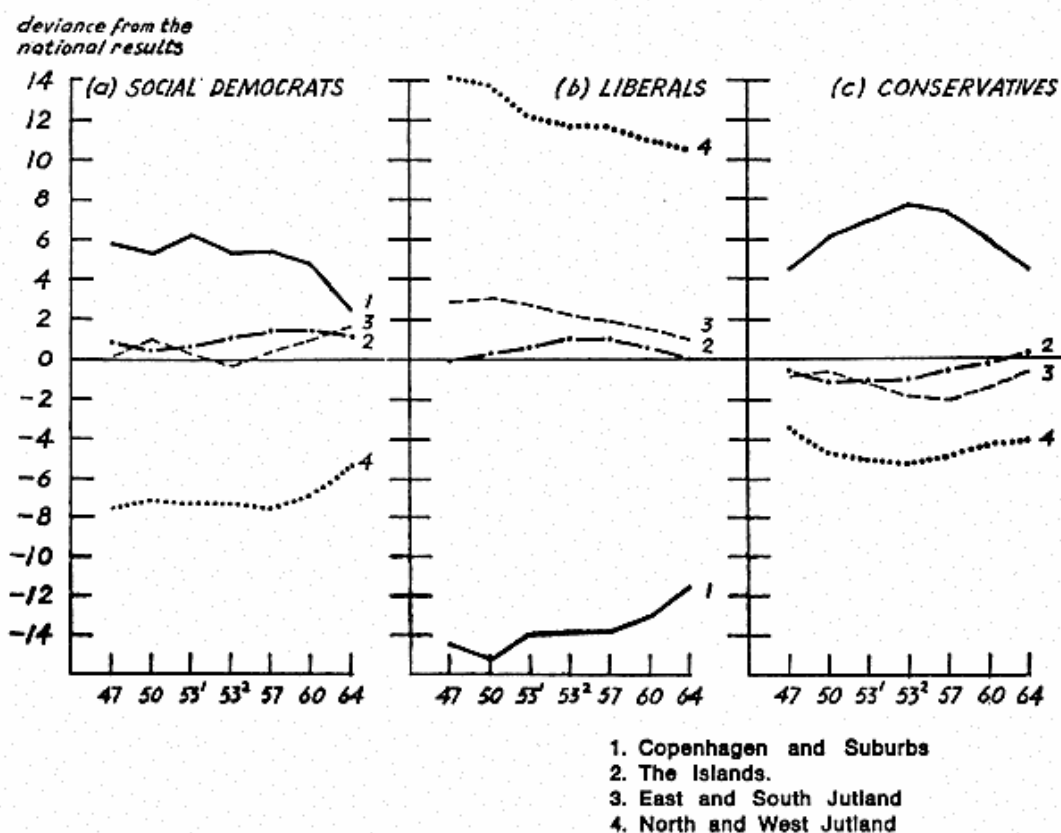
6. Regional Contrasts

Regional contrasts in the relative strength of Danish political parties are a typical element in political and social structure of the country. Moving from East to West, we find, that the relative share of the Social Democrats and the Conservatives declines, although we control for such important factors as community size and urbanization. Reversely we find an increase in the liberal vote the further we move from the Copenhagen area. Also the smaller parties have and have had their regional strongholds. This concerns, for example, the centre parties, "the

Radical Liberals" as well as the "Single Taxers". The Radical Liberals had their stronghold in parts of the North of Jutland as well as in a cluster of communes on the islands of Fyn and Zealand. The Single Taxers' regional strongholds may be less pronounced, but this party had many Copenhagen workers among its supporters during the fifties (Meyer, P., 1965, p. 133).

In a country which is the object of decentralization of industry and which during the past five years has become covered by television, one might expect to find

Figure 2. Egalization of geographical contrasts in the relative strength of the main parties 1947-64.



regional contrasts broken down. Figure 2 presents the development of the three large parties' shares, as deviances from the gross national averages, for the four main geographical regions. In general the figure indicates only a small tendency towards egalization. For the Social Democrats as well as the Liberals we see that the curves for the Copenhagen area and the one for the North West of Jutland converge. For the Conservative party the picture is somewhat different. In 1947 regional contrasts in this party's share of all persons eligible to vote were less than in the middle of the fifties and about equal to the contrasts which were revealed during the last elections.

Regional contrasts can also be quantified by means of the Duncan & Duncan

index of dissimilarity (Duncan & Duncan, 1955, pp. 493–503). This index has mainly been used to analyze differences in the spatial distribution of social and economic groups. It can, however, also be applied in the description of political regionalism. In the present context, this index presents the difference in the relative strength of all political parties (including the non-voters) between two geographical regions. It indicates the relative number of persons who ought to change party in order to equalize the shares of the participating political parties in those two regions which are compared. The smaller the index is the less are the contrasts between the political constellations of the two regions.

Table 3 presents the index for the last 7 elections and the four main geographical areas in Denmark: Copenhagen, "The Islands", the South, and East of Jutland, and the North and West of Jutland. This geographical division of the country is crude and arbitrary but specific enough to demonstrate the above

Table 3. The index of dissimilarity for the 4 main geographical regions in Denmark, based on results from the elections in 1947 to 1964.

		1947	1950	1953-1	1953-2	1957	1960	1964
Between	and							
Copenhagen*	the Islands**	18	22	19	20	18	19	15
Copenhagen	East and South Jutland ..	18	17	17	18	17	16	13
Copenhagen	North and West Jutland	27	27	28	28	27	27	22
The Islands	East and South Jutland ..	7	7	7	10	8	7	6
The Islands	North and West Jutland ..	15	14	14	16	14	11	10
East and South Jutland	North and West Jutland ..	13	14	14	13	13	13	12

* Copenhagen, Fredriksberg and Gentofote.

** The Islands, except the Copenhagen area.

mentioned regional variations. We find that the amount of egalization has been rather small and that the main changes have taken place during the last two elections. Most marked are the regional differences between the Copenhagen area and the other parts of the country. There is no consistent pattern of gradual decrease of these differences. Contrarily we find that some were enlarged during the fifties. Outside Copenhagen we find the largest regional differences between "The Islands" and the North and West part of Jutland. Even here we find no consistent pattern of gradual decrease – but for the period as a whole the index drops from 15 to 10. Also for smaller regions no consistent pattern of egalization can be demonstrated. The conclusion is therefore that regional contrasts are still persistent in the structure of the Danish electorate, although the last elections indicate a tendency that they are becoming less pronounced. The traditionally urban parties (the Social Democrats and the Conservatives) are gaining in the rural areas and the traditional rural Liberal party is able to counterbalance its losses in the rural parts of Denmark by re-enforcements from urban voters. It is likely that the tendency of egalization will soon become more pronounced.

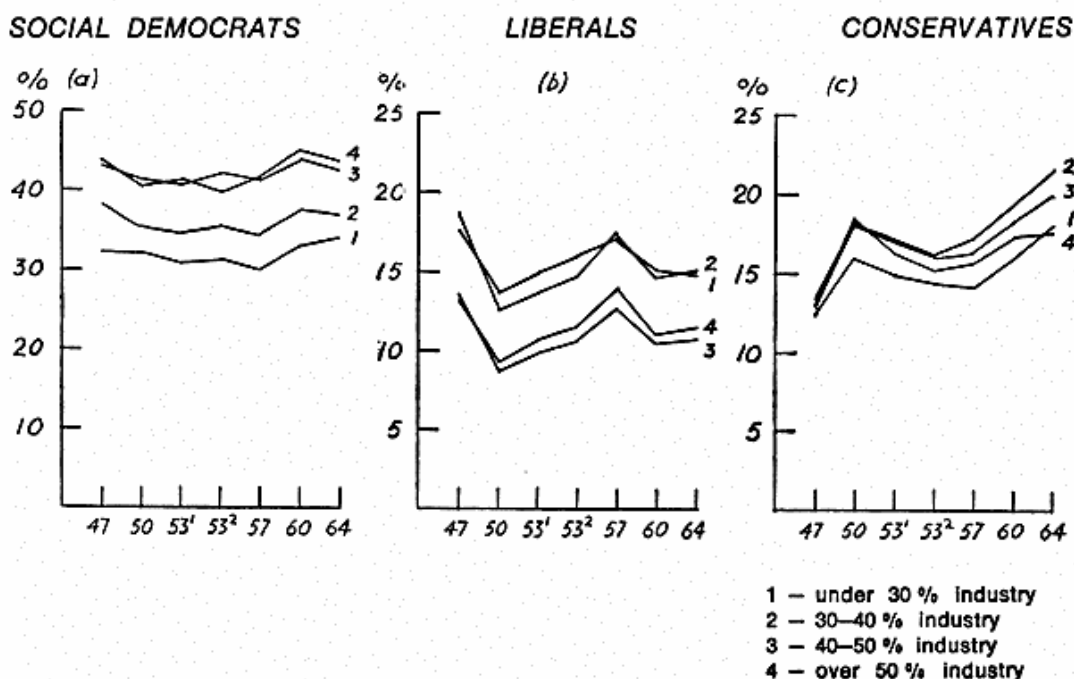
7. The Development in Urbanized Communities with Different Occupational Structure

To what extent does the occupational structure of the commune, apart from its degree of urbanization, influence the relative strength of the major political parties? Is there a certain trend in the development of the Social Democratic, the Liberal and the Conservative vote in urbanized communes with different occupation structure? Does this development reveal the same pattern of parallelism as earlier was demonstrated?

We will try to answer these questions by dealing with communes where 70–100 % of population lives within the build-up area. These communes represent all provincial towns, suburban areas and some industrialized villages which still have some rural districts left. The city of Copenhagen and its fringe communes, Frederiksberg and Gentofte, are not included.

Figure 3 shows the development of the major parties' share of the total number of people eligible to vote in communes with different degree of industrialization. The curves reveal the same pattern of parallelism, but not quite as marked as was demonstrated for the communes with different degrees of urbanization (Figure 1). As far as the Social Democratic shares are concerned, Figure 3 indicates a stable correlation between increasing industrialization and an increase in party support. However, there are no differences between the two most industrialized groups of communes. During the last elections the Social Democrats gained most in the least industrialized urban communes.

Figure 3. The percentage of total electorate voting for the main parties related to industrialization.

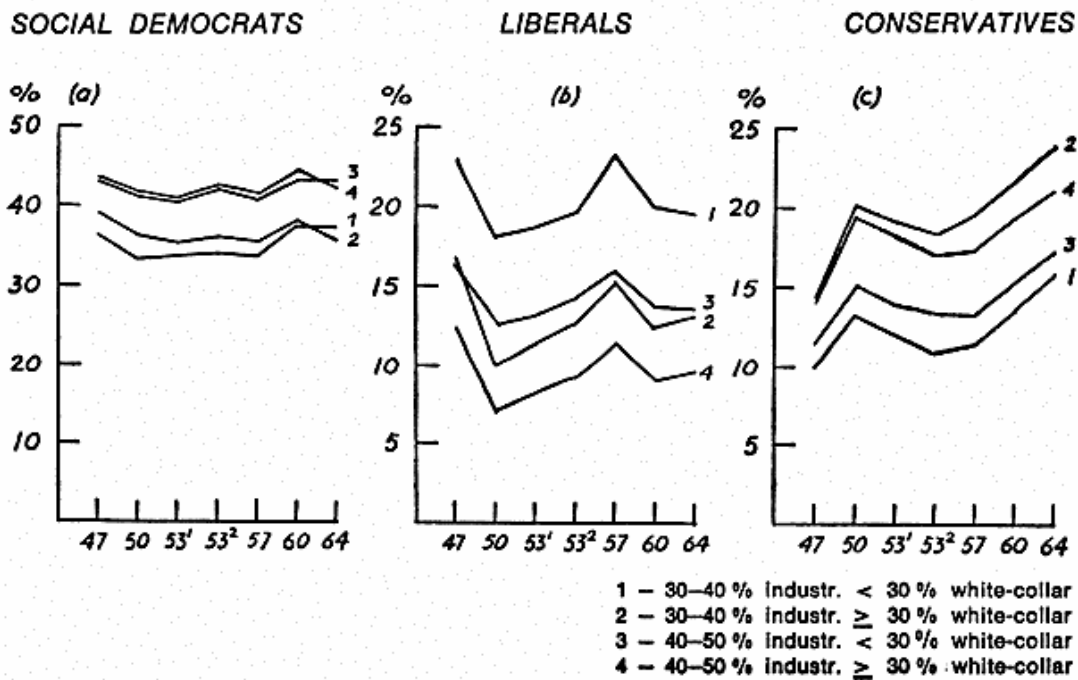


The Conservative party is strongest in communes with moderate industrialization. Its share has continuously increased in all four types of communes since 1957, with the exception of the most industrialized regions in 1964. The rural character of the Liberal party does also effect the strength of this party in urban areas. There is a marked difference in the level of the curves for communes with less and more than 40 % industry.

In Figure 4 we control for three variables, urbanization, industrialization and the relative number of salaried employees. For the Social Democrats we observe that the degree of industrialization carries more weight than the relative number of white-collar workers. The party gains in strength with increasing industrialization and number of salaried employees does not seem to influence this pattern. Figure 4 shows further that the Social Democrats in 1964 lost in communes with more than 30 % white-collar workers, independently of the degree of industrialization in these communities. In communes with less than 30 % white-collar workers, status quo was maintained.

The Conservative vote is quite dependent on the relative strength of the salaried employees, lowest in communes with low industrialization and few white-collar workers and highest in communes with relatively little industry but many white-collar persons. For the Liberal vote, the pattern is about the reverse. It is strongest in the least industrialized communes with relatively few salaried employees and weakest in highly industrialized communes with many white-collar workers.

Figure 4. The percentage of total electorate voting for the main parties related to percentage of salaried employees and industrialization.



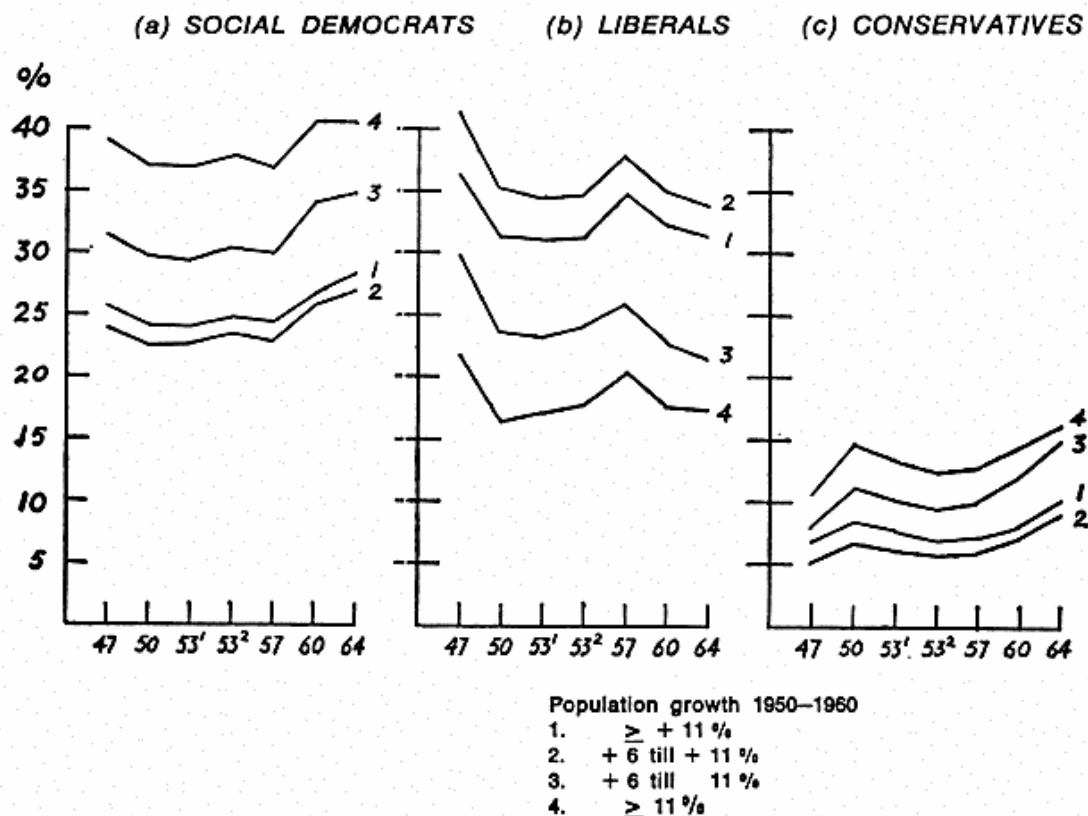
from these observations, it is interesting to see that the Danish liberals are still weak yet gaining in urban areas with a high proportion of salaried employees while they keep status quo in urban communes with few white-collar persons.

Our present data do not permit us to evaluate the effect of the increasing number of salaried employees. We do, however, get some indications of the development at stake by looking at the rapidly growing industrialized communes.

8. The Effect of Population Growth

Although easy to measure, population growth is a very complicated variable, since it must be related to the specific social and economic structure of the community. Among the Danish communes we find rapidly growing villages which are being industrialized; rural areas which are invaded by an urban population employed in a nearby city; and we have examples of rapidly expanding provincial towns. Growth is correlated with urbanization and industrialization but not all highly urbanized areas are growing. Reversely we find migration from isolated rural areas and also stagnation of some of the larger provincial towns, compensated by growth of the suburban area. Copenhagen and Aarhus are experiencing a population decline accompanied by a rapid expansion of all the neighbouring communes.

Figure 5. The percentage of total electorate voting for the main parties (in 1947-64) related to population growth (from 1950 to 1960).



In Figure 5 we present the development of the Social Democratic, Liberal, and Conservative shares of the electorate for communes with a positive and negative population growth, respectively. It must be remembered that population growth is measured for the period 1950–1960. Three observations can be based on Figure 5. (1) We find again the same parallelism in the development within each of the four commune types. Nearly all fluctuations have the same direction, just as the development of party strength within communes with different degree of urbanization and occupational structure. (2) The Social Democrats as well as the Conservatives have their lowest shares in communes with moderate negative growth and not in the extremely depopulated areas. Reversely, we find the Liberals strongest in those communes where depopulation has been moderate. (3) The Social Democrats have been increasing rapidly in strength in the depopulated areas while the Conservatives have been increasing their shares in all commune types, most, however, in communes with moderate population growth.

Finally, a look upon the developments of the left and right block in communes with different population growth and occupational structure, again reveals an extraordinary parallelism between developments in the six different community types. For the left block we observe that its share has increased during the last two elections, except in communes with less than 30 % agriculture (mostly provincial towns). This development must be related to the fact that the Socialist Peoples' Party received the bulk of its vote in the Copenhagen area, which is not included in Figure 6.

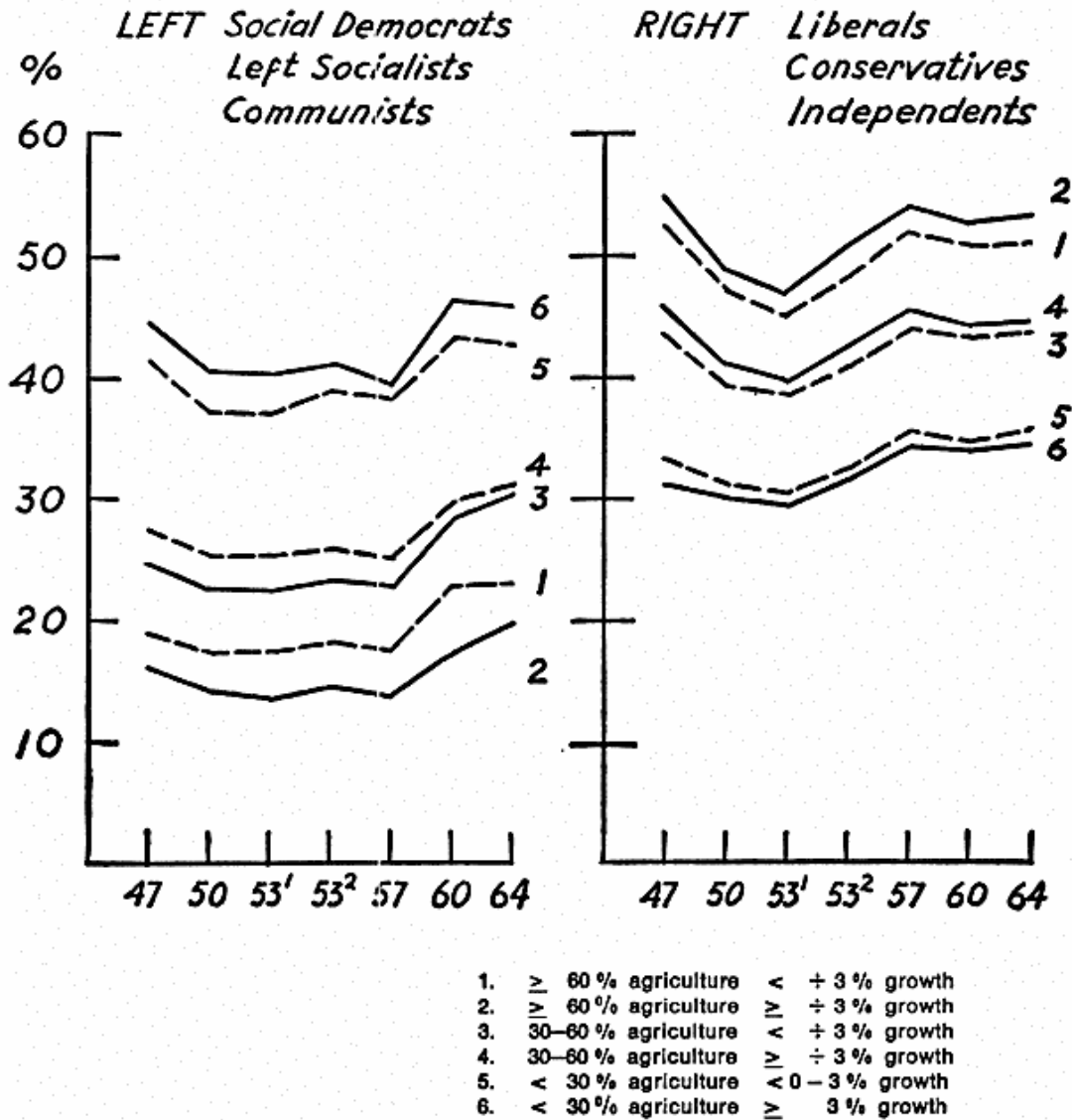
The right block has maintained status quo, except for minor fluctuations in the fifties. This situation is due to the fact that the fall in the Liberal share has been compensated with an increase in the Conservative vote. Attention should also be paid to the level of the curves. Just as in Figure 5, we find (now controlling for occupational structure) that the left vote is stronger in communes with negative population growth, except in the more industrialized areas (less than 30 % agriculture). The opposite tendency is found for the right wing parties.

It seems correct to conclude that population growth, as measured above, seems to have less impact on the fluctuations in the vote of the larger political parties than factors like urbanization and occupation. By varying population growth and controlling for occupational structure, we find each pair of curves parallel with each other.

9. Stability in More than One Way

Those interested in ecological research are often eager to be able to isolate and control different factors in the population structure. Denmark is the ideal object in this respect since it really represents a remarkable homogeneity in its social structure. Especially the absence of religious, ethnic, and linguistic differentiation and the political consequences related to this have contributed to this situation. Politically, Denmark reflects a pattern of stability. During the

Figure 6. Percentage of total electorate voting "left" and "right", related to population growth (1950-1960) and occupational structure.



years after World War II this stability is demonstrated partly by the high voting turnout (never below 80 %) and partly by the ability of the right-oriented and left-oriented parties to maintain a balance of power, both attracting about the same proportion of the total electorate.

But as we have demonstrated above, political stability is not only a matter of "the absence of any serious variation among the parties over a long period" as Duverger (1965, p. 302) defines it. From an ecological point of view we are able to distinguish between several types of variations which all reflect certain aspects of stability within the electorate.

From a micro point of view, stability is the problem of to what extent individual voters are faithful (1) to the party which was supported by their father and mother and (2) to the party which they themselves supported when they cast their vote for the first time. Further it is a question of how active they are, how often they make use of their right to vote (Valen 1960, p. 50). From a macro point of view, stability is a matter of to what extent the participating parties are able to keep their position from election to election. But here again it seems useful to speak of several levels of variation and stability. The first level concerns the individual ecological unit. As long as there are no marked changes in the strength of each party *within* an ecological unit we can speak of *intra-stability*, just as we can speak of *intra-variations* and *intra-fluctuations*, if such occur.

Secondly we deal with the variations which occur *between* different ecological units. We can for example compare the development of a certain political party, within several ecological units, as we have done in this paper. In this case we can speak of *inter-stability* when there is a lack of marked differences in the development of a certain party's strength between several ecological units. *Parallelism* in the developments of party strength in different ecological units has here demonstrated the inter-stability of the system.

Finally there is a general stability when major fluctuations in the relative strength of political parties are absent within a long period. It is clear that general stability can continue long after the occurrence of inter- as well as intra-variations in different ecological units. The general gross data disguise such variation to a large extent, since they often counterbalance each other.

There is a very high degree of interstability in the development of the relative shares of the electorate for all three major parties. This inter-stability indicates that the close correlations between urbanization and occupational structure and the relative share of each party are stable over time. There has been no marked change in these relations for the period studied. Ecological inter-stability is most pronounced in the development of the Social Democratic vote in areas with a varying degree of urbanization. The election of 1960 and especially the one in 1964 broke it however, thanks to the competition of the left socialistic party. We observe that the Social Democrats lose in the urban areas and continue to win in the rural parts of the country.

We also find that there is some relation between intra-variations and inter-stability. For all three parties short term fluctuations have a high degree of parallelism in all ecological units, in other words they do not break the inter-stability of the system. Long term fluctuations, however, seem to lack parallelism and gradually modify the existing structure. Examples of this were found for the Liberals as well as the Conservatives. The Liberals we find gradually lose strength in the rural areas while gaining in the Copenhagen area. This development is slow but still very marked. For the Conservatives we observe something alike. This party started to gain in strength in the urban areas and with a time lag of nearly ten years it is now gaining in small towns, villages and rural areas.

A break in the inter-stability can occur suddenly, for example, for the Social

Democrats in 1960 and 1964 due to competition from the extreme left. In this case we truly see the advantage of detailed ecological statistics of electoral data, since a change of this kind did not effect the gross-results for the Social Democrats in the country as a whole. The observation of a break of the inter-stability can in a way provide some warning signals for the party in question.

There is one aspect of the stability within the electorate which we have not dealt with in detail, the variations in the voting turnout for the period in question. A detailed analysis of the effect of fluctuations in turnout in Denmark will be published later. Here we will restrict ourselves to a few comments. Despite the generally high turnout in Denmark some marked fluctuations have taken place in the fifties — the period of ambivalence, demonstrated by a relatively low turnout and by some fluctuations in the centre. There is a general hypothesis that an increasing turnout helps the socialist parties. Its validity has been strengthened by Danish research on the "non-voters". It is demonstrated that "an increase in electoral turnout over that of the previous election is not reflected in a proportional increase in electoral turnout in all voter groups, as the groups that voted least earlier show the greatest increase in electoral turnout". (Jeppensen—Meyer 1964, p. 68). Since the low status groups turn out least we can accordingly expect that an increase in voting turnout will be an advantage for the socialists. Recent experiences in Denmark as well as in Norway modify this statement however. To what extent an increase in turnout is an advantage for either left or right seems to depend on (1) the size of this increase, (2) the level of turnout at the previous election, and (3) regional contrasts. The election in 1964 in Denmark did not bring a marked change in the voting turnout for the country as a whole, but there were some regional and ecological variations. In the urban parts of the country the turnout remained unchanged or went down and in the rural parts it went up. The Social Democrats increased their relative strength in the rural parts of the country, kept their position unchanged in the small towns, and lost in the big cities. The Conservatives gained in the rural areas and lost in the cities. The election in 1960, which brought a marked increase in voting turnout, showed increase for all three large parties.

The Norwegian election in 1965 brought a large increase in voting turnout. But the Social Democrats experienced heavy losses. A preliminary analysis of the results shows that the Social Democrats were able to keep their position in communes where the voting turnout increased above average. In communes where the voting turnout remained unchanged or increased with only a few percentages, they lost. The same concerns the three socialist parties as a whole. The Norwegian conservatives gained by the large increase in voting turnout in 1965. The larger the increase was, the more the conservatives gained in relative strength (Rokkan—Valen 1965, p. 5).

These observations indicate that there is no simple relationship between an increase in turnout and the increase in votes cast for a given party. Therefore, more systematic research is needed for a series of elections.

10. Summary

Research on the relationship between social and political factors is mostly carried out for one election only, both as far as sample survey research as well as the analysis of aggregate data is concerned. So far little research has been done on the stability over time of relations between social factors and relative party strength.

A long term ecological analysis of Danish voting statistics was launched in 1962 at the Institute of Political Science at the University of Aarhus. The aim of this project is to investigate changes over time in the relations between social factors and party strength as well as the effect of social change on the development of the relative strength of Danish political parties. Longitudinal studies of this kind are stimulated by the development of electronic data processing but complicated by the inconsistencies over time in the available census and other statistical data.

Results from the elections in the period 1947–1964 are presented for ecological units with varying degree of urbanization, occupational structure and population growth. (1) There is extremely high parallelism in the development of party shares within different ecological units. This pronounced ecological inter-stability in the development of party strength indicates that there has been little change in the relations between social factors and party strength. Especially short term fluctuations have a high degree of inter-stability. Long term fluctuations in the relative strength of the Liberal and Conservative party indicate a certain amount of structural change, the Liberal party gaining in strength in urban areas and in this way compensating for losses in the rural parts of the country, the Conservative party gaining both in urban and rural areas. (2) The general stability, which is reflected in the gross results for each party for the country as a whole, to a large extent disguise structural change. Stagnation for the Social Democrats in 1960–1964 was the results of the fact that losses in urban areas were cancelled out by gains in the rural parts of the country. Detailed ecological analysis of electoral data enables us to discover structural changes much earlier than otherwise possible. (3) In spite of an increasing urbanization, industrialization, and decentralization of industry and irrespective of the influence of television, regional political differences are still maintained. Only little egalization can be observed and only in the end of the period in question.

It is evident that the period 1947–1964 in many ways is too short for an analysis of the effect of social change on electoral behaviour, especially so for an evaluation of long term fluctuations. Due to planned changes in the administrative structure of the country – the reduction of 1200 municipalities to only 400, it will be difficult to continue the time series presented in this paper. Therefore the immediate extension of the present research program concerns the period 1920–1945. This part of our research will meet the obstacle of inconsistency in the available data.

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NOTES

¹ This research has been supported financially by a grant from "Statens almindelige videnskabsfond".

² The data archive has been established in collaboration with the institute's statistical consultant, Mr. Ole Borre. A publication by Ole Borre and Jan Stehouwer on social structure and party strength based on the election in 1960 is forthcoming. Another publication by the same authors dealing with the elections in 1960, 1964, and 1966, will also be published in 1967.

³ However, for Denmark such literature hardly exists.

⁴ Results will be published in a forthcoming report from the institute.

⁵ Some will doubt whether or not it is correct to call the "Single taxers" party a "centre party". The program of the party contains a number of items which are extremely liberal. But independently of its ideological base, it seems to be correct that this party has functioned as a centre party during the period in question.

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