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Abstract

Differences in the understanding of electoral geography between social sciences are discussed in the article. Main fields and spatial scales of Polish electoral geography are identified. Main methods of multidimensional statistics are discussed. A necessity of a proper choice, based on theories of voting behaviour, of explaining variables to statistical models are emphasised. Regression analysis indicates only a formal usefulness in electoral geography, for quantitative relationships between variables in the model can be evidenced, which may be meaningless not only essentially, but even statistically.

The application of canonical analysis in electoral geography brought a methodological turning-point to the statistical approach. This method allowed to combine: (1) the foundation of the selection of input variables on theories of voting behaviour; (2) the analysis of dependence of the electoral results on socio-economic characteristics of areas; (3) an identification of electoral options; (4) a quantification of the role of the historical heritage in the contemporary voting behaviour; and (5) the analysis of the stability of the electoral space.

A well grounded opinion was weakened about the general competitiveness of right- and left-wing parties in Poland's political space. Parties with similar rather than different programmes compete in given areas. It was indicated that elections have only formal influence on the structure of Parliament while the electoral system is decisive. Electoral, including territorial, manipulations also play their part.

The empirical analysis indicated that Poland's political space is polarised between the right-wing-oriented areas of the south-eastern half of the country and the left-wing-oriented areas of the north-western half. The political competition between the left and the right operates merely on the national scale, while it is not reflected territorially.

The quantification of the influence of the nineteenth-century territorial divides on voting behaviour was measured by canonical analysis. The analysis on the national scale indicated that

merely 11% of the variance of voting behaviour was accounted for by the historical divides while in case of the Katowice region it equalled to 30%. In this way, those results demythologised the role of the historical heritage in the contemporary voting behaviour in Poland.

Few attention was so far paid in literature to (1) the relatively stable intended voting absenteeism, which can be analysed in terms of the, largest on the Polish political scene, Non-Voters Party, and (2) invalid votes, which might be discussed in the context of the, considerable on the scene, Party of the Unreasonable or, alternatively, the Party of Contest.

Key words: Poland, electoral geography, canonical analysis, electoral systems, electoral manipulations, historical heritage

1. Introduction

The term *electoral geography* is not understood unequivocally. Within the classification of sciences electoral geography is one part of political geography as a social science. As such it is obviously much closer to political science, sociology, and psychology than to classical (physical) geography. It is the most energetically developing sub-discipline of political geography, as measured by the number of publications (Taylor, Flint, 2002). The territorial dimension of elections and their results is the subject of electoral geography.

Within political science and sociology of politics, however, electoral geography is understood much more narrowly, i.e. purely technically, as a territorial approach to electoral data, opposite to that based on individual social categories (Raci-borski 1997), or even as a special case of electoral manipulations (Żukowski 1997), if not frauds. This is one part of a wider phenomenon of a rather loose application of terminology, abstracted from the related analytical concepts. Interpretations of the results of, in fact rather limited, electoral data in wide categories of socio-political space of the country (Zarycki 1997), new political geography (Florczyk et al., 1989) or a new political map (Parysek et al., 1991b) form another extreme of this phenomenon.

The neglecting of the role of geography in the development of concepts of social sciences is rather typical for sociology, if not political sciences, and this fact also applies to electoral geography. Interestingly, however, it was geographers (Siegfried 1913, Kareil 1916, Sauer 1918) who pioneered the investigations of political behaviour

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(Taylor, Johnston, 1979). More generally, however, space was analysed in models of electoral behaviour either as a supplementary element of non-spatial models or as the 'causal factor' (Kavetsky 2010: 64), recognised by some authors (Agnew 1990, Reynolds 1990) as promising, because, however, being merely a correlate of social identity in different spatial scales (Rykiel 2010).

Three domains of analysis can be identified within electoral geography as a science, viz. (1) geography of voting and its special involvement, (2) geography of representation, and (3) analyses of spatial results of elections (Taylor 1978; Taylor, Johnston, 1979; Matykowski 2002). In prevailing analyses electoral geography in general, and in Poland particularly, did not basically go beyond the first of the domains, the latest being particularly underestimated. In this way the fact was ignored that elections are merely a means of appointment of the legislative and executive authorities rather than an autonomous aim. Two main fields of interest of electoral geography can thus be distinguished in this context, viz. (1) geography of support, which gains a considerable interest of students, and (2) neglected geography of power (Taylor, Flint, 2002).

Within the former field, the notions of political, electoral, and voting behaviours are essential. Political behaviour is people's reactions to stimuli from political phenomena and processes (Zieliński 1999). Electoral behaviour is more or less expressive reactions to the political stimuli, which stem from elections as an institution (Kavetsky 2010). The electoral behaviour include: voting, decision making, and engagement in the election (Wróbel 2000). Voting behaviour, in turn, includes the participation, giving preferences, and obstruction, i.e. giving invalid votes (Kavetsky 2010).

2. Studies in electoral geography in Poland

The interest of Polish geography in results of elections originates in the interwar period. Under communism few analyses of electoral questions were made by non-geographical social scientists, some of whom considered, however, spatial differentiations. In the 1980s students' interest was concentrated on electoral participation and, especially, absenteeism levels (Mucha et al., 1985), the latter being the most easily measurable, if not the mere, electoral indicator of the political contestation in those times.

After the Round Table Talks Contract election of 4 June 1989 many commentaries, as well as sociological and political scientific analyses appeared, in which the spatial variation of the electoral results was noticed only after some time (Florczyk et al., 1989). An explorative approach dominated in this early pioneer period, of which a lack of the acquaintance of the world scientific output in the discipline, and even ignorance of the already published Polish works, were characteristic.

The analyses in electoral geography in and of Poland applied to three spatial scales (Rykiel 2004):

- (1) national, in which analyses of voting behaviour were presented by voivodeships and communes (Matykowski, Rogacki, 1990; Michalski 1991; Parysek et al., 1991a, 1991b; Matykowski, Tobolska, 1994c, 1996a; Matykowski et al., 1995; Węclawowicz 1995, 2002; Matykowski 1997a; Zarycki 1997, 2000a, 2003; Kabath, Sobczak, 1998a, 1998b; Kowalski 2000; Kabath 2002; Kabath, Rykiel, 2003; Rykiel 2004; Krzemiński 2009; Kavetsky 2010);
- (2) regional, concentrated on the voting behaviour of ethnic minorities (Matykowski, Rogacki, 1990; Matykowski 1997b, 1998; Matykowski, Tobolska, 1993, 1994a, 1994b, 1996b; Rykiel 1994, 1995; Kowalski 1997, 1998b; Zarycki 1998; Kowalski, Śleszyński, 2000);
- (3) interurban, limited to analyses of voting behaviour in large cities (Żelazo 1991; Węclawowicz 1994; Duda 1997; Sobczyński 2000; Kavetsky 2004, 2005, 2006).

The essential containment of those investigations was presented by Roman Matykowski (2002), and this fact releases the present author from its detailed discussion herein. The prevailing part of works in electoral geography in Poland was devoted to elections to Sejm¹ and of President while analyses of local elections gained much less attention. The political incomparability of the results in different parts of Poland or a lack of a proper methodology of comparative analyses were the most probable reason of this fact (Rykiel 2004). Analyses of the results of national referenda gained a limited students' interest, either. Interestingly, however, the same ap-

¹ From the 15th to 19th centuries Sejm was a name of Polish Parliament, which consisted of the House of Representatives and Senate. Since 1919 Sejm has only been equivalent of the Representatives.

plied to elections to Senate. On the other hand, elections to the European Parliament, as a new political phenomenon in Poland, have not yet provided extensive comparative material.

3. Methods of analysis

3.1. General remarks

Methodologically, Polish investigations in electoral geography includes three approaches, viz. descriptive/cartographical, historical/quasi-sociological, and statistical (Rykiel 2004), or spatial-structural (Kavetsky 2010) that combines the latest two.

Within the first approach, characteristic of the earliest stage of the development of the discipline, the spatial differentiation of electoral support of parties and candidates for President was presented descriptively or cartographically (Węclawowicz 1993, 1994, 1995, 2002; Węclawowicz et al., 1998; Sobczyński 2000; Zarycki 2000a; Kavetsky 2004, 2005). Because, however, this approach did not appear as first, it must have resulted from the authors' methodological shortcomings.

Within the historical/quasi-sociological approach, voting behaviour was explained by historical conditionings and civilisation/cultural differences (Kowalski 1997, 1998a, 2000; Zarycki 1997, 1998, 1999; Kowalski, Śleszyński, 2000). As a result, interesting explanations of dynamics of social processes over time were provided in places.

Within the statistical approach, in turn, attempts were made to reveal the relationships between voting participation level and electoral results, dependencies of the results on socio-economic characteristics of areas, and electoral options, using mathematical/statistical methods: linear correlation, multiple regression, principal component, and canonical analyses (Matykowski, Rogacki, 1990; Parysek et al., 1991a, 1991b; Krawczyk et al., 1993; Matykowski, Tobolska, 1993, 1994a, 1994b, 1994c, 1996a, 1996b; Baudelle, Matykowski, 1994; Matykowski 1994, 1997a; Krawczyk, Matykowski, 1995; Matykowski et al., 1995; Zarycki 1997; Kabath, Sobczak, 1998a, 1998b; Kabath 2002; Kabath, Parysek, 2002; Kabath, Rykiel, 2003; Kavetsky 2006, 2010).

A comparative analysis of three methods of multidimensional statistics used

by Polish students of electoral geography was made by Zbigniew Rykiel (2004). These included: multiple regression analysis (Parysek et al., 1991a, 1991b; Matykowski et al. 1995; Matykowski 1997b), principal component analysis (Parysek et al., 1991a, 1991b; Matykowski 1997a, 1997b; Zarycki 1997; Kabath, Sobczak, 1998b), and canonical analysis (Kabath 2002; Kabath, Rykiel, 2003; Kavetsky 2010).

A proper choice of explanatory variables is essential in the application of mathematical/statistical methods in electoral geography. This question is, however, frequently underestimated, or even ignored, while parameters testing the correctness of the model building are emphasised. In the prevailing applications the choice was frequently made by instinct or by taking the accessibility of published statistical data as the leading criterion. Because, however, an output can only be a linear transformation of the input, the application of accidental explanatory variables must result in accidental results. As Elżbieta Kabath and Zbigniew Rykiel indicated (Kabath, Rykiel, 2003), the choice of input data in electoral geography should be based on theories of voting behaviour, presented exhaustively in literature (Zarycki 1997, Kabath 2002).

The prevailing empirical output allows to formulate some more general methodological conclusions (Kabath, Rykiel, 2003). First, therefore, a well known regularity is confirmed that more than one method of the investigation of the same segment of reality is useful, for they allow to approach the truth iteratively. Secondly, the selection of independent variables in regression models and canonical analysis is essential and should be based on a solid knowledge of the investigated subject, including theories of voting behaviour. This constraint indicates that the pure technical knowledge of statistical techniques is not sufficient for in-depth analyses in electoral geography. Thirdly, regression analysis indicates only a formal usefulness in electoral geography, for quantitative relationships between variables in the model can be evidenced, which, however, may, in most cases, be meaningless not only essentially, but even statistically. Fourthly, canonical analysis evidenced a firm predominance over regression analysis in the identification of relationships between electoral results of individual parties (and candidates for President) and socio-economic characteristics.

More detailed questions of the application of individual statistical methods in electoral geography were presented beneath.

3.2. Problems of the application of multiple regression analysis

Regression analysis is aimed at the identification of the relationships between the dependent variable (the electoral result of a party or a candidate for President, in the discussed case) and independent variables (socio-economic characteristics of individual areas). This procedure allows to identify characteristics (predictive values of the model) of the citizens' electoral behaviour. A question, however, arises of a proper building of the model. The procedure of the building of any regression model includes the statistical reasoning, which underlies an evaluation of the resultant model (Ratajczak 2002). This stage of the analysis is, however, frequently minimised and little attention is paid to the in-depth recognition of the nature of the complex mathematical transformations that lead to the final result. This attitude of the students may result from the fact that modern statistical computer programmes allow to obtain almost complete regression models, and this fact results in an elimination of reasoning, if not thinking, in the whole procedure; in this way the statistical analysis is treated as a purely technical question rather than a scientific investigation (Rykiel 2004).

In this context, six important questions related with the proper building of the regression model should be pointed to.

Multicollinearity of variables is the first question. The variables that are highly intercorrelated include nearly the same information, even though this is hardly reasonable. In this situation, only one of the highly intercorrelated variables (e.g. of $r > 0.90$) should be left in the model. This is, however, not very easy to proceed because high correlations apply to pairs rather than groups of variables; a chain of highly correlated variables may thus be identified, in which the extreme variables of the chain are not necessarily highly correlated.

Tolerance of the variable, also related to the collinearity of variables, is the second question. If the tolerance of a given independent variable is close to zero, or its value declines under 0.1, no coefficients of the regression equation can be calculated.

The determination coefficient R^2 as a measure of the goodness of fit of the model is the third question. It can reasonably be assumed that the determination

coefficient $R^2 < 0.50$ (i.e. $100R^2 < 50\%$) suggests a poor fit of the model. An impossibility of the building of a proper regression model can thus be noted. Such situations are frequent in analyses of electoral support of individual parties and candidates. As E. Kabath (2002) indicated in her analysis, no proper regression model was able to be built for 32 out of 36 Polish political parties in the 1991 parliamentary election, eight out of 17 parties in 1993, and six out of 11 parties in 1997. This also applied to three out of six candidates in the 1990 presidential election, the fact that was unnoticed by the investigators (Parysek et al., 1991b).

On the other hand, however, it cannot be *a priori* assumed that the determination coefficient $R^2 > 0.50$ evidences a good fit of the regression model. The fact is that the R^2 coefficient is easy to manipulate by adding another variable to the model; in this way the value of R^2 increases and parameters of the model are changed. In order to use R^2 as a statistic of the test, a possibility of the identification of the distribution from a sample, or the function of density of R^2 , is necessary (Charemza, Deadman, 1997). The density of the distribution of R^2 depends on both the unknown variance of errors and the particular values of explanatory variables of the model, which the function of the density of distribution of R^2 is especially sensitive on. The values of R^2 for different models, e.g. with different explaining variables, cannot thus be compared directly, for their distributions may be different. Generally, therefore, there are no sufficient reasons to maintain that the highest determination coefficient indicates a proper construction of the model.

The statistical importance of parameters of the model is the fourth question. This question was frequently ignored in regression analyses, while it is a considerable shortcoming of the analyses. The modern computer statistical programmes allow easily to find whether or not individual parameters of the regression model are significantly different from zero (in short: statistically significant). It happens in analyses in electoral geography that a model can be built, in the sense that the determination coefficient is higher than 0.50, no parameter is, however, significant statistically. This is to say that a model was built in which there are no independent variables with statistically significant parameters. Such a model can be categorised as empty, i.e. proper at the most formally (Rykiel 2004). This is a case of a disintegration of the regression model.

This happens when the student attempts to maximise the number of explaining variables in order to maximise the determination coefficient. With a certain critical number of explaining variables, despite their unrestrictedly high correlation with the explained variable, all regression coefficients tend to be insignificantly different from zero (Hellwig, Kania-Gospodarowicz, 1975; Rutkowski 1975). This is an important weakness of the investigation procedure, especially if it applies to political parties with the highest electoral support (Kabath 2002).

The essential significance of parameters of the model is the fifth question. This applies to situations when the model indicates astonishing, and thus difficult to interpret, correlations. As examples, high correlation of the percentage of those with university education and those with primary education in case of the electoral support of one party, as well as the percentage of the smallest (<2 ha) and largest (>15 ha) farms in case of another party may be shown (Kabath 2002) or a positive or negative correlations of all age groups with a third party (Kavetsky 2010). Those facts illustrate an obvious, even though not always considered, observation that correlation, and thus also regression, analysis indicates statistical rather than causal relationships.

Analysis of residuals from regression is the sixth question. This analysis is a classical method of searching additional, not considered in the model, explaining variables in spatial analyses. The sensibility of such a procedure is, however, doubtful when a satisfactory regression model (i.e. with $r^2 > 0.50$) is impossible to build. Inadequacy of the selected independent variables for the model results, in this case, from the model itself, and thus an analysis of residuals is unnecessary, and even senseless (Rykiel 2004).

The many limitations of a proper building of the regression model weaken the applicability of this method in electoral geography. In the analysis by E. Kabath (2002), only for two out of five analysed elections it was possible to build regression models merely satisfactory in terms of statistical and mathematical criteria. Examples of the application of multiple regression analysis to electoral geography were provided by E. Kabath and Z. Rykiel (Kabath, Rykiel, 2003).

3.3. Canonical analysis

Canonical analysis may be alternative for regression analysis a method of the analysis of interrelations between socio-economic characteristics and electoral support of individual parties and electoral options. By using canonical analysis it is possible to identify a statistical relationship between a group of dependent variables (electoral options, in the discussed case) and the structure of independent variables (socio-economic characteristics).

The following are the nature of canonical analysis:

- (1) to find canonical variables uncorrelated with each other and accounting for every now and again new specific part of variance in two sets;
- (2) to calculate factor loadings defining the correlation of every variable with a canonical variable;
- (3) to calculate separate variance, and then redundancy, which informs what part of mean variance of one set is accounted for by a given canonical variable by means of variables of the other set of data (Stanisz 2000).

Four limitations of this method, however, exists.

Multicollinearity is the first of them. Variables in the two sets should not be collinear, for it would result in information redundancy that makes it impossible to proceed canonical analysis, which results in irreversibility of the correlation matrix.

Detached points are the second limitation. Canonical analysis, similarly to regression analysis, is very sensitive for those points, which can deform results of the analysis considerably.

The number of variables is the third limitation. Advisably, in order to obtain reliable results of canonical analysis, 20 times more elements of the sample group (i.e. analysed objects) should be taken than analysed variables. Therefore, if 15 variables are analysed, a sample group of at least 300 elements should be to dispose, advisably, however, much larger.

The significance of canonical variables is the fourth limitation. Their significance is assessed on the base of χ^2 test that indicates, which canonical variables are statistically significant (Stanisz 2000).

Examples of the application of canonical analysis to parliamentary elections were provided by E. Kabath and Z. Rykiel (Kabath, Rykiel, 2003), and Igor Kavet-

skyy (2010). Electoral options and groups of characteristics of the options were presented within the canonical analysis. The analysis evidenced a high applicability to the identification of interrelationships between results of individual parties (and candidates) and socio-economic characteristics, and indicated a decided superiority over regression analysis (Rykiel 2004).

The application of canonical analysis in electoral geography (Kabath 2002) brought a new quality, if not a methodological turning-point, to the statistical approach. This method allowed to combine four important elements: (1) the foundation of the selection of input variables on theories of voting behaviour; (2) the analysis of dependence of the electoral results on socio-economic characteristics of areas; (3) an identification of electoral options; (4) a quantification of the role of the historical heritage in the contemporary voting behaviour (Kabath, Rykiel, 2003), which was discussed in more details further on; and (5) the analysis of the changeability, or rather stability, of the electoral space (Kavetsky 2010). In the latter case, multidimensional characteristics of voting behaviour in two consecutive elections were interrelated. The set of the respective variables from the earlier election was taken as a set of explaining variables and the set from the further election – as a set of explained variables.

3.4. Principal component analysis

Similarly to the two methods discussed above, important questions related to a proper model building may be identified in case of principal component analysis. It especially applies to:

- (1) the essentially proper selection of input variables;
- (2) collinearity of the variables;
- (3) the relation between the number of analysed characteristics and that of observation units, the desirable relation being not less than 4:1 (Cattell 1952).

Besides, some other questions can be identified that are related not to the proper application of the model but rather to a choice of alternative modes of the analytical procedure. These are choices of:

- (1) principal component analysis as one factorial model (Rummel 1970);

- (2) correlation or covariance matrix as a base of the transformation of the data set (Rykiel 1978a, Kavetsky 2010);
- (3) a method of rotations of the components.

E. Kabath and Z. Rykiel attempted to identify electoral options, which illustrated not only the areas of support of parties and candidates for President but also their mutual competitiveness (Kabath, Rykiel, 2003). In this way a well grounded opinion was weakened about the general competitiveness of right- and left-wing parties in Poland's political, or at least electoral, space. The empirical analysis indicated two main axes of the polarisation of the space. The first one describes the polarisation between right- and left-wing areas while the other reveals that between areas dominated by basically liberal and peasant parties, respectively. Individual right-wing parties compete thus in the right-wing areas, and the left-wing parties in the left-wing areas. The competition can therefore be observed within rather than between those areas. This is to say that parties with similar and not different programmes compete in the given areas (Rykiel 2004). These results of principal component analyses are convergent with sociological and political investigations.

4. Electoral system

4.1. Elections versus electoral system

Election is defined as a formal expression of preferences of the governed, which are then aggregated and transformed in a common decision of who will govern (Harrop, Miller, 1987). The choice made by voters is purely formal, it therefore should not be overestimated (Zybertowicz 2002), especially in case of the distribution of mandates in legislatures.

Hardly any information can be deduced from voting papers and ballot-boxes about preferences of the majority and minority; what can be deduced, is merely the information which party or candidate is recognised by the majority and minority as the smallest evil. Electoral results can, therefore, provide only a general orientation in voters' preferences rather than reliable information about the preferences. The information is, however, arrogantly interpreted by politicians, and political scientists in cases, and this results in misunderstandings, sometimes painful for politicians. As an example of the arrogance, the results of the first free post-Round-Table-Talks parlia-

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mentary election of 1991 can be taken; the third most popular party, the Christian-National Union (ZChN), which won only 9% of votes and 11% of mandates in Sejm, joined the governmental coalition and forced some restrictive acts in symbolic and moral matters.

Two examples of the, mentioned above, misunderstandings on the Polish political scene in the early transformation period can be pointed to. First, the Round Table Talks Contract parliamentary election of 4 June 1989, in which Solidarity won all the contracted mandates to Sejm and 99% of mandates to Senate, was interpreted as a total rejection of 'real socialism', even though voters were not asked if they were for communism or against it, but only if they wish to have a free elected Senate and 35% of mandates for the opposition in Sejm, under constitutionally guaranteed leading role of the (communist) Polish United Workers' Party (PZPR). Secondly, the general election of 19 September 1993, in which both post-communist and post-Solidarity left-wing parties won, was interpreted as a voters' strong attachment to leftist values (Rykiel 2004).

In fact, it is the electoral system that is essential. Two basic types of the system are represented by majoritarian and proportional, the classification of the systems is, however, much more complex (Rykiel 2004). Six main questions, important for the structure of the political scene, can be distinguished, viz.:

- (1) types of the electoral systems or voting formula (majoritarian or proportional);
- (2) modifications of the proportionality of the voting formula (barrier thresholds);
- (3) methods of the conversion of votes to mandates in the proportional formula;
- (4) one- or multi-mandate electoral districts;
- (5) the size of electoral districts;
- (6) the shape and limits of electoral districts.

Four results of the application of a given electoral systems can be identified (Kabath 2002):

- (1) the deformation effect, i.e. an overrepresentation in Parliament, in relation to the results of voting, of some parties at the expense of others;

- (2) a reduction of the number of parties on the political scene by their elimination from legislatures or inducement to contract electoral or political coalitions;
- (3) the establishment in Parliament of a political system that does not reflect the de facto electoral preferences;
- (4) a purely formal influence of citizens on the structure of Parliament and thus also the fortune of the state.

The electoral system adopted in Poland in 1991 was arithmetically 'fair', because it gave opportunities for representation in Sejm to the 24 parties that gained a high enough electoral support to obtain at least one mandate. The application of a five-percent barrier threshold in the electoral law of 1993 induced a mechanism of a deformation of the structure of the political spectrum in Sejm in relation to the proportion of votes gained by individual parties. The deformation of the voters' will in 1993 was illustrated by the fact that as many as 34.5% of the voters had no elected representatives in Sejm (Kabath 2002).

The extent and size of the deformation can be quantified by deformation index (DI), accounted as the quotient of the percentage of mandates gained by a given party and the percentage of valid votes gained. The higher the index over unit, the larger overrepresentation; the lower the index under unit, the larger underrepresentation of the party (Gebethner 1995, Kabath 2002).

In 1993, the Polish Peasant Party (PSL) granted 86% more mandates than votes, and the Democratic Left Alliance (SLD) 82% more, and the two parties contracted a governmental coalition. In 1997, the Movement for Poland's Reconstruction (ROP) gained, on the contrary, only 23% of the number of mandates that would have expected from the proportion of votes gained (Kabath 2002).

4.2. Electoral manipulations

Electoral manipulations, or engineering, consists in changes in the rules of representation of individual areas in elected offices, especially legislatures. The changes are legal, even though immoral. They are aimed at a reinforcement of the established parties, especially the ruling party, a reduction of the political role of opposition parties, and especially new political movements, the pattern referred to

as a 'concretisation' of the political scene. In majoritarian systems, apportionment and gerrymandering are the two best known forms of electoral manipulations (Harrop, Miller, 1987).

The idea of apportionment is that small electoral districts are delimited in the areas of high electoral support for the ruling party and large district in the areas of low support. Gerrymandering, in turn, groundlessly referred to in some sociological works as 'electoral geography', is an art of the maximisation of voting effectiveness for a given party. This procedure stems from various constitutional regulations, in which a necessity of equal representation of citizens in elected offices is stressed, and this also applies to the preservation of a similar number of voters per one representative. For instance, the 'U. S. Constitution requires that every ten years a national census be taken and the results of that census be used to reapportion representatives in Congress among the states according to population. After reapportionment, each state must perform redistricting, the process of re-drawing the election district boundary lines for each type of state or federal office [...] so that all districts for the same type of office have nearly identical voter population. [...] The purpose of reapportionment and redistricting is to preserve the one voter - one vote fairness principle' (Robbins 2007: no pagination).

Technically the reapportionment prevents manipulations with the districts size, it, however, enables 'graphic' manipulations to increase the chances of the ruling party, to decrease the chances of opposition parties and, especially, of independent candidates. As a result, electoral districts of groundlessly odd shapes are delimited, known not only in the United States, where the very term *gerrymander* was proposed for Gerry² + salamander (Robbins 2007), but also in Northern Ireland, the interwar central Poland, where individual ethnic Polish villages were amalgamated in small ethnic Jewish towns in order to avoid Jewish majorities in local elections (Rykiel 2004), and other places.

'The gerrymander is a form of election fraud that misuses redistricting to violate the one voter - one vote fairness principle that redistricting is intended to pre-

² Elbridge Gerry - a co-signatory of the Declaration of Independence of the United States of America, governor of the State of Massachusetts, 1810-1812, when gerrymandering appeared, and Vice-President of the United States, 1813-1814.

serve. Gerrymandering is the process where the majority party draws an election district map with district boundary lines that give itself an unfair and undeserved numerical vote advantage during each election. This numerical advantage is obtained by maximis[ing] the number of districts with a majority of voters from the [ruling] party' (Robbins 2007: no pagination).

In Poland, according to the current regulations, no equal territorial representation of voters is required. Rather contrary, a territorial stability of electoral districts is guaranteed.

The best known forms of electoral manipulations in proportional electoral systems include manipulating the thresholds and size of districts, as well as contracting electoral coalitions. The manipulating the thresholds consists in the fact that, apart from open barrier thresholds, also applicable to the current Polish electoral regulations, hidden thresholds can be used in form of the number of mandates per district. For instance, in a three-mandate district, a party that gains less than 25% of votes has no chances for a mandate in the legislature (Harrop, Miller, 1987). Contracting electoral coalitions, aimed merely at getting at Parliament rather than combining a parliamentary club, is another form of electoral manipulation. A legal allowance of such a possibility in Poland in 2007 did not, however, brought about the expected results, not only electoral, but even political.

Generally, electoral manipulations or even frauds may be recognised as a 'natural' (Kavetsky 2010: 28), or at least unavoidable, component of a given political culture and socio-economic situation.

4.3. Voting participation

Voting participation is a measure of citizens' political activity and an externalisation of their attitudes toward the composition of legislatures and appointment of elected offices. High voting absenteeism is underlain by a considerable structural disorientation of the electorate. People disabled socially, including those of low education level, or economically are resistant to the formative electoral decisions, especially within an obscure and incomprehensible political pattern, including the existence of a great number of political parties (Duda 1997).

To voting participation, not only voting absenteeism, but also voting obstruc-

tion can be contrasted. The latest of the three, which consists in giving invalid votes, could hardly be explained by any single reason. Virtually, social or political disability seems the most obvious reason of giving invalid votes, a conscious contest of the existing electoral rules, political pattern, if not political order (Kavetsky 2010) provides, however, an alternative explanation. Those giving invalid votes could therefore be categorised as the Party of the Unreasonable or the Party of Contest, respectively.

In this context, voting absenteeism could be considered a symptom of voting participation (a negative participation) and thus be related to the general number of authorised voters rather than to valid votes given, as published officially (Kavetsky 2010).

On the structural disorientation, a situational disorientation is superimposed, caused by contradict influences of individual parties, especially during an electoral campaign. In established democracies a competition is limited programmatically, for the principles of the social and economic order are not contested and the number of significant political subjects is very limited (Duda 1997).

In Poland, the most stable electoral participation level is characteristic of the areas with the highest percentage of active voters. The historical conditioning of the voting behaviour was discussed in literature (Matykowski, Tobolska, 1994a; Matykowski 1998; Rykiel 1995; Kowalski 2000; Kabath 2002). An important role is attributed to ethnic peculiarities and the nineteenth-century territorial divides, the latter factor should not be, however, overestimated (Kabath, Rykiel, 2003).

The correlation of the voting participation level with the support of political parties in Poland indicated that a high increase of a support of the right-wing and central-right parties is highly correlated with a high voting participation. The opposite relation was observed in case of the left-wing parties, i.e. an increase of the support was correlated with low voting participation (Kavetsky 2010). The correlations should, however, be interpreted carefully because they are best represented mathematically by polynomials of the fifth degree (Kabath 2002).

5. Orientations, preferences, and options

5.1. Ideological orientations and electoral preferences

Electoral preferences are based on ideological orientations. The latter are relatively structured and stable sets of convictions referring to public questions, and are even deeper rooted – on the level of values (Ziółkowski 1990). Ideological orientations are constructed on the base of the declared relation of respondents to several theses referring to questions that engage the public opinion. The orientations are understood historically – as proper to a concrete place and time (Duda 1997). In Poland, however, the orientations are slightly related to the development level of preferences. The possession of a relatively compact set of views of public questions is not reflected in a higher determination in political sympathies. A given ideological orientation does not result in a greater electoral maturity of its proponents and thus higher voting participation and support, either. The ideological orientations have, on the contrary, their reflection in sympathies and antipathies to individual parties (Duda 1997).

Stable established political preferences and greater ability to participate in significant political procedures are characteristic of the higher educated and well-to-do people. In industrial towns of Poland, electoral preferences are, therefore, hardly specified, and apply to every third inhabitant (Duda 1997).

5.2. Electoral options

The notion of electoral options means a choice by the electorate between basic alternative political programmes presented by individual parties. The electoral options indicate, therefore, a competitiveness of individual parties and candidates. In multi-party systems the voter, however, rarely makes a choice between opposite political programmes while more often (s)he chooses between alternative parties or candidates with similar programmes (Kabath 2002). This fact weakens the well grounded opinion about the basic competitiveness between right- and left-wing parties.

The empirical analysis indicated that Poland's political space is polarised between the right-wing areas in the south-eastern half of the country and the left-wing areas in the north-western half. In the former, individual right-wing parties compete

with each other while in the latter areas left-wing parties do. This is to say that the political competition between the left and the right operates merely on the national scale, while it is not reflected territorially. Political choices are, therefore, made within those areas rather than between them. The competition is thus one between parties with similar rather than different programmes. This fact was evidenced by identifying electoral options by questionnaire inquiries, principal component analysis, and canonical analysis (Kabath 2002).

Every electoral option is, by definition, a competitive pattern. Territorially, however, a differentiation between the competitive and complementary options is reasonable (Kabath 2002). A negative correlation between the electoral support level for individual parties is characteristic of the former option, and a positive correlation – of the latter option. In case of the competitive, or eliminating (Kavetsky 2010), option, an increase of the support for one party in a given area is, therefore, correlated with a decrease of the support of another party while in cases of the complementary option an increase of the support of one party is correlated with an increase of the other.

Generally, competitive options prevailed in Polish electoral space. This applied to the contrast between the left- and right-wing parties, and between liberal and peasant parties. Two main peasant parties – the Polish Peasant Party (PSL) and the Self-Defence (Samoobrona) – indicated the most clear complementary option. Of liberal, centre-oriented, parties the highest potential of positive associations, and thus also of coalition attractiveness, was characteristic (Kavetsky 2010).

Two main dimensions differentiate the Polish political scene, i.e. economic and axiological (Kavetsky 2010) or the interest axis and value axis. The former represents a contrast between pro-market and state-interventionist parties, and the latter – between liberal and conservative (Kabath, Sobczak, 1998a, 1998b) or cosmopolitan and traditionalist (Kavetsky 2010) parties. Four basic political orientations can thus be identified, viz. (1) liberal/ pro-market, (2) liberal/ interventionist, (3) conservative/ pro-market, and (4) conservative/ interventionist (Kabath, Sobczak, 1998a, 1998b; Kavetsky 2010). Besides, other divides can be identified, especially referring to national values (Kabath 2002).

The areas of the liberal/ pro-market orientation are basically superimposed on

those of the liberal/interventionist orientation and are concentrated in western Poland. The former orientation is also observed in highly urbanised areas. The conservative orientation, on the contrary, is concentrated in south-eastern and eastern Poland (Rykiel 2004).

6. Historical heritage and territorial divides in electoral behaviour

The influence of the historical past on the spatial differentiation of voting behaviour in Poland has frequently been stressed. This included analyses of the historical and cultural, if not civilisation, sources of spatial differences of political activities and electoral preferences of the Polish (Raciborski 1997; Zarycki 1997, 1998, 1999, 2000b, 2000c, 2002a, 2002b, 2003, 2007a, 2007b; Kowalski 2000, 2003, 2004; Kowalski, Śleszyński 2000; Bartkowski 2003; Skwierzyński 2008). Electoral space was frequently considered as social space in those analyses, and 'space', presumably physical, perceived as a 'causal factor' of voting behaviour (Kavetsky 2010: 12).

The considered spatial differentiation applied to hardly any other question than the political division of the contemporary Polish territory in the early twentieth century (Kowalski 2000) when a Polish state did not exist. Individual sectors of partitioned Poland were then categorised as regional political structures with their regional modes of production (Kavetsky 2010) or even historical cultural regions (Kavetsky 2010), even though they are composed of rather than constitute individual regions (Rykiel 2000).

Other authors paid attention to a civilisation dissimilarity of the territories granted to Poland in 1945 (Hryniewicz, Jałowicki, 1997), referred to as re-gained areas in Polish political discourse. Generally therefore, four civilisation zones can be identified within Poland, i.e. post-Russian, post-Austrian, post-Prussian, and re-gained (Rykiel 2000).

Three main approaches to the analysis of the spatial differentiation of voting behaviour were applied in this context. The first of them referred to the historical differentiations and was limited to a general description of the development level of civil society in individual civilisation zones (Kowalski 2000). It was assumed that the political attitudes that developed throughout the nineteenth century, i.e. during the industrial and national revolutions, and capitalist development in Central Europe,

still apply because they are highly responsible for the development and spatial differentiation of social capital, and thus also civic activity, in Poland (Hryniewicz, Jałowicki, 1997). The second approach neglected the influence of the historical past, and maintained that voting behaviour was merely explained by the current social and economic situation. In this approach, statistical analyses were applied in order to identify relationships between electoral support and socio-economic characteristics of areas (Parysek et al., 1991a). In the third approach, represented in journalism, mental associations and stereotypes were taken as an explanatory framework, and general territorial trends of support of the dominant parties were interpreted in terms of sharp and unequivocal divides of the political space (Janicki, Władyka, 2005).

The application of canonical analysis (Kabath 2002) enabled to reconcile two views, i.e. (1) that voting behaviour can be explained by the influence of the historical factor, and (2) that the contemporary electoral space reflects the current socio-economic situation; in was also indicated (3) that statistical methods are not limited to analyses of socio-economic characteristics. Voting support of individual parties on the communal level was taken as a set of dependent variables while the share of individual civilisation zones in communes was included in the set of independent variables; because in most cases individual communes were totally included in only one civilisation zone, few cells in the observation matrix included values different from either unit or zero.

The quantification of the influence of the out-dated territorial divides on voting behaviour was an, unchallenged until now, innovation of this approach. The analysis on the national scale indicated that merely 11% of the variance of voting behaviour in 1993 was accounted for by the historical divides. In cases of some regions the influence might have been stronger; in the then Katowice voivodeship it equalled to 30% (Kabath 2002). In this way, those results demythologised the role of the historical heritage in the contemporary voting behaviour, as it was evidenced that only one ninth of the voting behaviour in Poland might have been explained by this heritage, the Katowice voivodeship reaching the one third level. The figures are not high, they can, however, be compared with the explanatory power of regression models, which, as indicated above, happen to be empty (Kabath, Rykiel, 2003), i.e. purely formal.

It is worth noting, however, that the analysed herein role of the historical heritage in voting behaviour is in fact an analysis of the role of the particular territorial divisions. The significance of the division in four civilisation zones can thus be easily confronted with the significance of other territorial divisions: physical, cultural, economic, or geometric. It must be, therefore, remembered that statistical analyses are based on correlations rather than causal relations.

Interestingly in this context, the re-gained areas, as one of the four civilisation zones of Poland, were usually, including the above discussed analysis, defined in political terms, following the 1914 and 1938 political borders. In fact, however, a stability of human settlement (Kavetsky 2010) or, more generally, of territorial social systems is even more important than the stability of political divides. The general idea of the 're-gained' areas is that they cover territories re-gained for the Polish state in 1945. More importantly, the change in the political appurtenance was accompanied by a population resettlement, a process that discontinued the stability of the territorial social systems. The process of the population resettlement was, however, not uniform in the territory in question because those parts of the politically re-gained areas that had been settled by Polish speaking regional communities, intended for easy sentimental re-Polonisation, were not submitted to the resettlement project, and this decision resulted in a preservation of local social systems in places. On the other hand, some Ukrainian/Ruthenian speaking communities in politically not re-gained south-eastern Poland were settled out, giving place for a new settlement. Generally therefore, areas next to the 1938 Poland's western border, including extensive part of what in now the Opole voivodeship, can be included to the areas re-gained politically but not socially while the south-western outskirts of Poland covers areas regained socially even though not politically.

7. Conclusions

Because science is a whole, interdisciplinary divisions are of minor importance. It is from this statement that a necessity of interdisciplinary approaches arises. Electoral geography cannot thus be reduced either to presentations of raw data, including maps, or to local case studies based on standard methods, including simple statistical techniques. Mechanisms for the development of and change in political scene

and space should be emphasised instead. Apart from so far analysed geography of voting and electoral support, questions of geography of representation and power seem interesting to analyse, even though poorly represented in literature. It is interesting to note in this context that outcomes of the world electoral geography have yet slightly been represented in Polish geographical literature.

The stability and changeability of the Polish political scene and space is another interesting topic. The considerable changeability of the set of political parties seems merely an external form of the phenomenon underlain by a relative stability of voting behaviour and, especially, electoral preferences and ideological options of the electorate (Rykiel 2004, Kavetsky 2010). The stability is expressed by a relatively slow changing identities of political parties despite the spectacular changes in their names and membership of their leaderships. The stability is reflected not only in the declared and implemented political programmes but also in the scope and extent of the voting support (Rykiel 2004). It is related to the fact that axiological and economic orientations of the electorate are very stable. Interestingly however, while the economic orientation is generally stressed in geographical investigations, a superiority of the axiological orientation is evidenced in political science (Kavetsky 2010).

The stability of the Polish political scene is reinforced by the fact that the period of the transformation elections ended in 1995 (Kavetsky 2010). The political stability, which includes both political attitudes and the forms of their expression, is responsible for a spatial order. The stability of political space can be attributed to patterns and institutions of long duration (Zarycki, Nowak, 2000). Two complementary spatial patterns can be identified, i.e. (1) the zoned pattern of heterogeneous territorial entities, referred to the civilisation zones, and (2) the non-zoned pattern of isolated large cities and urban agglomerations. Of the urbanised areas electoral universalism is characteristic, which is, however, regionally embedded (Kavetsky 2010), following the rule of the regional scale of the Polish urban agglomerations (Rykiel 1978b).

The general spatial pattern of electoral behaviour is one result of the nationalisation of political life in Poland, in which regional political differences are losing its importance. So are the division in the four civilisation zones. Even though the former political borders are still recognisable, the factors of their existence disappeared, and

thus the role of the contextual factors of electoral behaviour increases.

Few attention was so far paid to two important phenomena, i.e. (1) the relatively stable intended voting absenteeism, which can be analysed in terms of the, largest on the Polish political scene, the Non-Voters Party, and (2) invalid votes. The latter may superficially be categorised as the, considerable on the scene, Party of the Unreasonable, i.e. of the politically disabled who give invalid votes unconsciously. More reasonably, however, the invalid votes can be interpreted in terms of the electoral obstruction of the existent political order (Kavetsky 2010) or the Party of Contest. On the other hand, the electoral absenteeism, as a symptom of the electoral participation, should be referred to the number of authorised voters rather than of the valid votes given.

Electoral preferences depend on more general views of public questions and thus are not formed by incidental circumstances. Even during dramatic changes in a political system a certain stability of political preferences is maintained. Against information from post-voting television shows, a flow of the electorate between individual parties is occasional. All parties lose some of their original supporters, usually, however, by a demobilisation rather than a conversion of their sympathy for other parties. New supporters are gained among individuals with undeveloped preferences (Duda 1997). Analyses of the flow of the electorate by exit pool inquiries, very popular in the media, are invalid methodologically because they ignore the supporters of the, largest in Poland, Non-Voters Party.

8. References

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