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THE REGION CONFIGURATION INDEX

In geographical studies as well as in regional planning appears sometimes the need to compare the nodal regions — i. e. practically to classify them — not only according to their extent but also to their shape and to the position of the corresponding nodes (centres) in the region. The index of capability of the centre to form a region relatively rounded and compact can be called „the index of form" and the capability of the centre to form a region in all directions approximative equably „the index of centrity". The better prospect of common application has as title for both these abilities „the index of configuration".

The given problem can be elaborated from two points of view. In the first place it is possible to treat every region separate their boundaries were individually delimited by lower limit — e. g. by the lower limit of the numbers of commuters, of immigrants, of transport intensity etc. — typical for the corresponding region. The other alternative is to treat the whole system of nodal regions, i. e. the whole regionalization. The boundary lines of nodal regions resemble the watersheds being economicogeographical divides of certain type, e. g. of geography of production, of transport, of population etc. This paper gives preference to the second of the two alternatives mentioned. The author's subdivision of the Czech Socialist Republic based on passenger traffic attractivity was used for he given purpose. This is a very representative economicogeographical criterion of regionalization. The advantage of it — compared with the results of the other economicogeographical regionalizations — is a relatively great density of fixing points for the boundary lines of the regions.

A very exact method of indication of both these indexes supposed measuring in maps, i. e. making good use of curvemeter and planimeter. That would be accomplished — considering the whole territory of the Czech Socialist Republic — at best only for the regions of higher order, i. e. for 12—14 in numbers. As there are only some of these regions delimited, it was necessary to make use of the system of middle order regions, the number of which is in different economicogeographical regionalizations of the Czech Socialist Republic roughly 100—150.

The author tried some time ago a compromising solution of the mattter in a study considering the province (kraj) North Bohemia. He compared the sinuousness of the time accessibility divide lines on the one hand and on the other hand the sinuosity of district borders — of corresponding district centres of course. He compared the lengh of both lines, their different spread, the deviation from their ideal position etc.[1]) Even the application of this method would require — considering the 150 middle order regions of the Czech Socialist Republic — too much time.

During the further tests we cosidered also the accuracy of the data of the position of some bus-stations and the accuracy of maps available and we came to

conclusion, that in fact a classification into 6 degrees is fit for the purpose and that to the aim considered an estimating measurement using compasses and rule is sufficient. In this way the author determined the cofiguration index of 137 commuting regions of the Czech Socialist Republic, which were delimited by M. Macka. A report of this with a cartogram was published by the author in this journal.[2]) With regard to the substantially more sinuous forms of the commuting regions with many enclaves etc., it was necessary to use a more differenciated classification than for the passenger traffic regions.
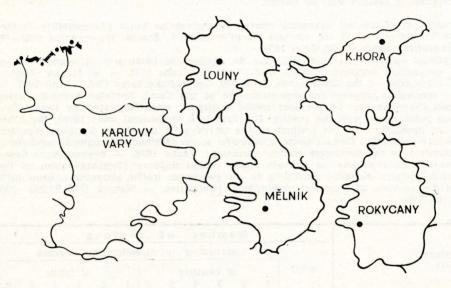
In the reforms of the territory organization more weight was adjudged to the position of the centre inside the administrative region than to the configuration of the region. Observing the position of the centre we have to consider, that the nearer the centre to the boundary line lies, the more disandvantegeous its position is. Theoretically the degree of deviation of the centre from the geometrical centre of the region would be decisive. As a means of device we can use — especially in transitory cases between two classification degrees — a pair of tangential circular lines, the one to the nearest point of the boundaries, the other to the most distant one. The width of the annular space is to be seen to first, but the rang of the boundary line is to be respected too. The most unfavourable is the situation of a regional centre in a bend of a province border line or especially in that of the frontier line, as it is in the case of the town Varnsdorf at the north frontier of Bohemia. Such extreme cases and the regions with the position of their centres very near to the regional boundaries are of course to be included in the lowest, i. e. in the first classification degree. It is roughly the tenfold of the distance between the nearest and the most distant point mentioned which is the limit for this lowest degree. In the sketch enclosed the regions of Kutná Hora and Rokycany are of this degree of centrity.

It must be said, that sometimes the distance between the geometric centre and the regional centre cannot be decisive. The large forest areas and other sparsly inhabited territories of the region ought to be taken into account. In these cases the metric centre must be considered as the centre of the inhabited region. As a rule such consultations with the geographical map make for a more favourable classification degree of centrity.

The index of the form of a region is to be found as the degree of deviation from a circle or from a hexagon. As an elementary means of device we can again use a pair of tangential circular lines. In this case the circles have not their centres in the centre of the region, because the one is in its boundary inscribed and the other circumscribed. Besides the width of the annular space also the shape of the extremities is to be considered. For the lowest first classification degree the regions with disunited parts (enclaves) and wih long polypous extremities are very typical. For the most rounded form was fixed the degree 6, perhaps „too consequently" (see the region of Louny classified with 5 in the sketch enclosed), but in the form classification of regions of the lower order the degree 6 would certainly submit a greater, i. e. more proportional, frequence.

The suitable corrections in accordance with the geographical map are for the degrees of form more problematic than for the degrees of centrity. Such cases can be looked on only as the polypic incision in the region of Mělník (In NWN of the centre of the region. See the sketch enclosed.) It is given by the course of the river Labe. The causes of high sinuosity and high decentrality of centres in the regions are very diverse and it would pass over the frame of this paper to go through. For comparing the different types of regions it must be said that the

greater number of fixing points of the transport geographical regionalization compared with the other economicogeographical regionalizations causes of course a higher sinuosity of the boundary line. E. g. the boundary lines of the regions constructed from the point of view of the geography of industry are more freely interpolated, and therefore more generalized than the transport geographical boundary lines.

1. Five Czech transport geographical regions as example for determining classification degrees (1—6) of the centrity and form of the regions. (Karlovy Vary 4.3, Louny 6 5, Kutná Hora 1.2, Mělník 3.3, Rokycany 1.5).

In concluding, it must be said, that both characteristics had an important function even at elaboration of the regionalization.[3] In the final adjustment of the system of regions the very low values of the index from of the region contributed to the decision to make some corrective changes in the system of centres. In the most part of the cases the corrections were realized by „implantations" of new regions and chiefly subregions. The necessary assumption in this case was, that the complementary centres had their centrality value near to the primary settled lower limit. Also the effort to adapt the system of centres to the system of centres of the total tertial sphere (incl. retail business, culture, sanitation, sport atc.), participates on the final adjustment of the system of regions. By this correction some regions raised their centrity classification degree mostly from 3 to 5, as it is evident from the asymetry of frequency data in the table adjoined. A certain share of regions with an unfavourable position of their centres remained, especially in the neighbourhood of big centres, which seem to attract the smaller centres of their neighbourhood. The sketch adjoined demonstrates as example the region of Rokycany „attracted" by the centre of the province of the West Bohemia Plzeň; but even more „attracted" regional centres are in the vicinity of Praha and Ostrava.

In connection with the problem mentioned it is perhaps suitable to refer to the sharpness of the boundary lines. This index has its significance especially

for the unification (generalization) of boundary lines treated from various economicogeographical aspects (retail, transport, production atc.). The author pointed to the realization of this problem in his paper written on the occasion of the International Geographical Congress of New Delhi (1968).[4] Even if the sharpness (distinctness) of the boundary lines were in the mentioned questionable parts of the regionalization network classified in 3 degrees only, the balance of the corresponding factors will be easier.

1) Předěly dosažitelnosti okresních center Severočeského kraje [Accessibility divides of district centres in the province North Bohemia.] Studia Geographica 8:70—78, Geografický ústav ČSAV. Brno 1969.
2) Členitost spádových oblastí dojížďky do zaměstnání [Sinuosity of boundary lines of commuting regions]. Sborník ČSZ 77:88—92. Praha 1972. -- M. Macka: Regions of commuting of the Czech lands. 1:750 000. Geografický ústav ČSAV. Brno 1967.
3) An economico-geographical regionalization of the Czech Socialist Republic, based upon the attraction of personal public transport, was elaborated by the author. Two publications give the results. The first is a methodical one (1978), the other is an application of the method to the territory of the Czech Socialist republic: Metody oblastního členění podle dopravního spádu [Methods of regional subdivision according to the passenger traffic attraction). Praha 1978. — Regionalizace České socialistické republiky na základě spádu osobní dopravy (Regionalization of the Czech Socialist Republic according to the passenger traffic attraction). Brno 1979.
4) On the problem of transport-geographical boundaries. — Sborník ČSZ 73:254—260 Praha 1968.

Province (kraj)	total	Number of regions											
		according to classification degrees											
		of centrity						of forms					
		1	2	3	4	5	6	1	2	3	4	5	6
Middle Bohemia	21	2	5	1	2	9	2	1	2	4	6	7	1
South Bohemia	14	0	0	1	1	9	3	1	0	3	7	3	0
West Bohemia	13	2	0	1	3	7	0	0	2	6	1	4	0
North Bohemia	22	5	1	2	3	8	3	0	3	2	10	7	0
East Bohemia	31	1	2	4	4	18	2	0	1	10	11	9	0
South Moravia	22	1	6	1	5	7	2	0	0	8	9	5	0
North Moravia	26	2	2	4	8	9	1	1	1	11	9	4	0
Czech Socialist Republic	149	13	16	14	26	67	13	3	9	44	53	39	1

Résumé

UKAZATEL KONFIGURACE OBLASTI

V ekonomicko-geografických rozborech i v plánovací praxi se občas jeví potřeba porovnat nebo i roztřídit nodální oblasti určitého typu nejen podle relativní velikosti, ale i podle členitosti jejich tvaru a podle polohy centra uvnitř oblasti. Schopnost vytvořit oblast relativně celistvou lze nazývat „ukazatelem tvaru oblasti" a schopnost vytvořit oblast rozkládající se od centra do všech stran relativně rovnoměrně „ukazatelem středovosti". Příznivější vyhlídku na obecné uplatnění má však jako označení souhrnné charakteristiky „ukazatel konfigurace oblasti".

Tvar oblasti lze chápat jednak individuálně na základě zdůvodněné hraniční hodnoty, jednak podle postavení oblasti v celé regionální soustavě téhož řádu; v tom případě je směrodatný průběh předělových čar (produkce, dopravy, služeb ap.). Tento druhý typ je podstatou ekonomicko-geografické regionalizace a již proto je metodicky nepoměrně významnější.

Jako podkladu tu bylo použito autorova oblastního členění České socialistické republiky založeného na spádu osobní veřejné dopravy, jemuž lze přiznat z ekonomicko-geografického hlediska značnou reprezentativní hodnotu. Hlavní jeho výhodou je — ve srovnání s výsledky oblastních členění podle jiných ekonomicko-geografických kritérií — podstatně větší hustota upínacích bodů určujících zmíněné předělové čáry, tj. oblastní hranice.

Přísně exaktní postup při kvantitativním určování obou charakteristik předpokládá kartometrická měření, tj. použití křivkoměru a planimetru. S ohledem na přesnost pramenných podkladů i požadovanou detailnost výsledků je však nejúčelnějším řešením klasifikace do šesti stupňů. K dosažení tohoto cíle se vystačí s jednoduchou empirickou metodou, totiž měřením v podstatě odhadovým toliko s použitím kružítka a pravítka.

Ukazatel tvaru sleduje především stupeň zaokrouhlení, teoreticky tedy stupeň odchylky od ideálního tvaru kruhu. Jako elementární pomůcky lze použít dvojice kružnic, z níž by jedna byla oblasti vepsána, druhá opsána. Poloha centra je přirozeně tím nevhodnější, čím více je centrum vysunuto k okraji oblasti. Pomůckou je opět dvojice kružnic, v tomto případě ovšem se středem v oblastním centru. O stupeň odchylky od polohy geometrického centra jde spíše jen teoreticky. V některých případech rozsáhlé lesní komplexy a jiné velmi řídce zalidněné areály si vynucují, abychom se řídili spíše polohou těžiště osídlení.

Oběma charakteristikám musel být přiznán vliv již v rámci samotné ekonomicko-geografické regionalizace České socialistické republiky, totiž při závěrečném slaďování regionalizací z různých odvětvových hledisek, zvláště však regionalizace podle dopravního spádu s regionalizací podle služeb, jejímž autorem byl M. Blažek. Nízké hodnoty obou ukazatelů přispěly v nejednom případě k rozhodnutí o dodatečných změnách v obou soustavách center. Tyto konečné úpravy se dotkly asi 5 % z celkového počtu 120 oblastí — resp. 150 oblastí a podoblastí.

Připojená tabulka udává, kolik ze 149 oblastí (bez Prahy) je klasifikováno stupni 1—6 ukazatele středovosti a ukazatele tvaru oblastí, a to podle krajů České socialistické republiky. V titulu kartografického náčrtu jsou uvedeny hodnoty zmíněných ukazatelů.