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ON THE DYNAMICS OF PASSENGER TRAFFIC DIVIDES

The method of passenger traffic divides provides one of the few possibilities of delimiting nodal regions as lines and not only as transitional zones. In addition to it, the passenger traffic divides can be applied in many other ways, that is, even practically (in planning and the like). As established in the author's contribution to the 21st International Congress of IGU (1968), they can also be differentiated qualitatively, namely classified according to sharpness (significance). At the European Conference of IGU in Budapest (1971) the author reported on the subdivision of the Czech Socialist Republic by this method into 120 regions and 30 subregions. The object of this contribution is to point out the significance and theoretical as well as practical applicability of the results of ascertaining the motions of the passenger traffic divides.

Passenger traffic divides are classified into several methodically different types. We distinguish time-accessibility divides, intensity divides (frequency divides), transport cost divides (mainly the costs of fare), route distance divides (in individual transport) in qualitatively considered routes, tracks and lines, in a broader sense we speak about commuting-divides to work, schools, actually, as optimal goal, about the overall motions of the inhabitants, then migration flows etc. In this article attention will be focused on the most used type, since the characteristics of all the categories would exceed its scope. The construction of individual types and their applicability is closely dealt with in the prepared publication of the author „The Methods of Regional Subdivision according to Transport Attractivity", which is an attemp at laying foundations to the system of traffic divides. For two reasons only one more type will be briefly mentioned here i. e. the time-divide.

The time-accessibility divides are the oldest type of transport geographic divides as they started from the long tradition of isochronic cartography. From the point of view of quantification of economico-geographic disciplines, they can be regarded as real „elite", since in their case it is possible to build on the reality of the continuity of space distribution of points, which enables the maximum use of the great possibilities of statistic surface. All the other types of divides can be derived only from false isolines, which are often worked with — in some cases with greater, in others with lower approximation — as if they were genuine isolines. In constructing divides, however, it is not necessary to draw the whole isoline systems. It is sufficient to limit oneself to the zone in which

the divide apparently occurs. It represents the saving of 3/4 of work and the fact that both attractions can be ascertained simultaneously represents further economization.

At present, speed is from the given point of view of relatively greater importance in individual transport than in public transport, where, to a certain extent, it is replaced by the frequency of communications. However, the aplicability of the speed index in individual transport is diminished by the great differences in speed that can be achieved by various types of passenger motorcars.

At the present time the time accessibility index is applied only very rarely in the delimitation of regional boundaries and perhaps only in some monographs of small units can the evaluation of the development of these „isochronic divides" be found. The main cause is great laboriousness which will not be overcome until more progress is made in cybernetic mechanisms, above all until a mechanism capable of „reading" time — tables is invented. Therefore we limit ourselves here to one example of the dynamics of this type of divide, to its motion between the towns in North Bohemia Ústí n. L. and Děčín in the decade 1957—1967 (Fig. 1). It is conditioned by the essence of isochrones itself, that this type of divide tends to form enclaves more than other types.
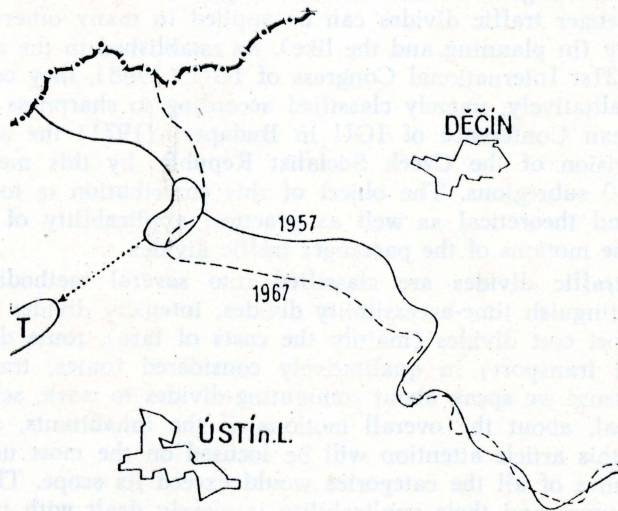

Fig. 1. The motion of a time accessibility divide
(T — Teplice; a promontory and an enclave of the region)

The frequency divides take the decisive place at the present time. For large centres only, and moreover often approximatively, total transport frequency can be used according on the basis of to road traffic counts. (As stated by the author in the above mentioned articles, the most systematic attempt along this line comes from the geographers at the University in Pisa). Thus, the divides of the traffic of public transport have been used more frequently, which should be more appropriately called „travel occasion divides", if in the future the author's suggestion is applied, to take into account also travels with changes.

Each subdivision of the nodal (functional) type must necessarily be preceded by a choice of regional centres, mostly distinguishing centres in a narrower sense

and regional subcentres. As a rule, this selection is not final. The delimitation of boundaries often demands corrections, particularly from the viewpoint of space proportionality and the shape of regions. The above authors proceeded differently in the selection of centres. Green consistently followed his narrow definition of bus transport centres without taking into account the travel occasions offered by railway. Lluch considered railways at least in the cases of immediate proximity of a bus network, especially railway terminals and the like, stressing the number of transport lines, i. e. „the branching" of the respective communication centre. These pronounced differences manifested themselves in different results as regards the variability of the network of centres. In south England Green found an increase of the number of regional centres by 19 for the period 1950—1965 (increase 27 and decrease 8). Also Godlund's representations indicate an increase of the number of regions. On the contrary, in his work Lluch came to the conclusion that there the process of settlement concentration led to decreasing their number. Compared with 59 regions in the year 1938, he determined only 52 in 1968 (increase 8, but decrease 15).

The author of this contribution dealt with the classification of towns from the point of view of the development of transport centrality in the region of central and northern Bohemia. The results were published in the form of an article that appeared in the issue of this journal devoted to the XXIInd International Congress of IGU (Montreal 1972). The contribution follows the development in the decade 1958—1968 in all the towns in the region under consideration classifying
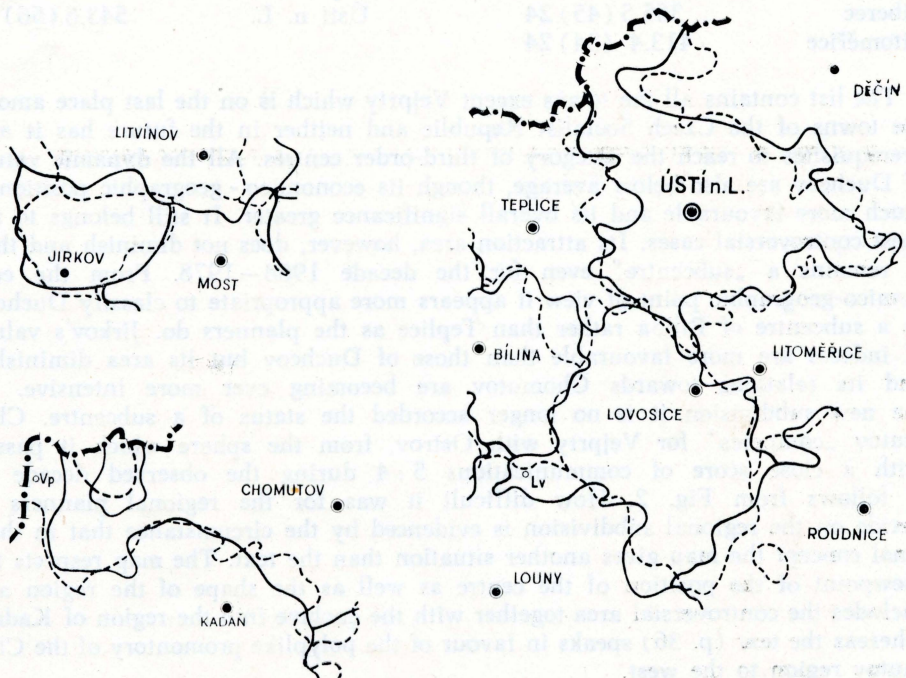

Fig. 2. The dynamics of the frequency divides in the decade 1958—1968
(Examples from NW Bohemia. — Lv — Libčeves, Vp — Vejprty)

them into grades. It does not yet take into account the configuration indeces, i. e. the shape of the region and the situation of the centre (compared with the geometric centre of the region). Another defining criterion is the developing tendency as regards the size of the respective attraction region.

Due to shortage of time it was not possible to follow the motion of frequency divides over all the area of central and northern Bohemia but over about a third of their territory. Therefore also the data on transport centrality will be given for 15 centres only that are mentioned in the text and that appear in the attached map outlines, representing typical examples of the divides motions. The numerical diagram gives grades 1—6 in the following order: 1. the increase of the number of travel occasions, 2. the growth of the turnover of railway freight transport (loading and unloading at stations) and 3. the growth of the intensity of road transport. Apart from these three characteristics taken from the quoted article by this author on the development of transport centrality (incl. air and water transport, in parentheses, however, distinguished only according to the situation in the railway and road network) 5. the central position of the centre in the region and 6. the subdivision of the area of the region.

Bílina	514.4 (43) 45	Litvínov	215.3 (24) 33
Děčín	445.6 (65) 55	Louny	513.4 (34) 65
Duchcov	312.3 (33) 22	Lovosice	464.5 (45) 23
Chomutov	545.6 (65) 54	Most·	565.4 (54) 55
Jirkov	412.3 (14) 33	Roudnice	423.3 (43) 54
Kadaň	603.3 (13) 55	Teplice	415.5 (45) 54
Liberec	365.5 (45) 24	Ústí n. L.	543.6 (56) 64
Litoměřice	413.4 (34) 24		

The list contains all the towns except Vejprty which is on the last place among the towns of the Czech Socialist Republic and neither in the future has it any prerequisites to reach the category of third-order centres. All the dynamic values of Duchcov are also below average, though its economico - geographic position is much more favourable and its overall significance greater. It still belongs to the most controversial cases. Its attraction area, however, does not diminish and thus it remains a „subcentre" even for the decade 1968—1978. From the economico-geographic point of view it appears more appropriate to classify Duchcov as a subcentre of Bílina rather than Teplice as the planners do. Jirkov's values of indeces are more favourable than those of Duchcov but its area diminishes and its relations towards Chomutov are becoming ever more intensive. In the new subdivision it is no longer accorded the status of a subcentre. Chomutov „competes" for Vejprty with Ostrov, from the sphere which it passed with a close score of communications 5 : 4 during the observed decade as it follows from Fig. 2. How difficult it was for the regional planners to decide on the regional subdivision is evidenced by the circumstance that in their final concept the map gives another situation than the text. The map respects the viewpoint of the position of the centre as well as the shape of the region and includes the controversial area together with the enclave into the region of Kadaň, whereas the text (p. 36) speaks in favour of the polyplike promontory of the Chomutov region to the west.

The area in Fig. 2 round the centre village Libčeves between Bílina and Louny is an example of the differences between the economico - geographical concept and that of planners. The original variant of the planners' subdivision included

this area into the Most region, though its divide is about as far from there as is the divide Louny — Lovosice. From map outline 2C it follows that the traffic divide included it originally into the promontory of the Lovosice region, but in the year 1968 already into the Louny region, though closely.
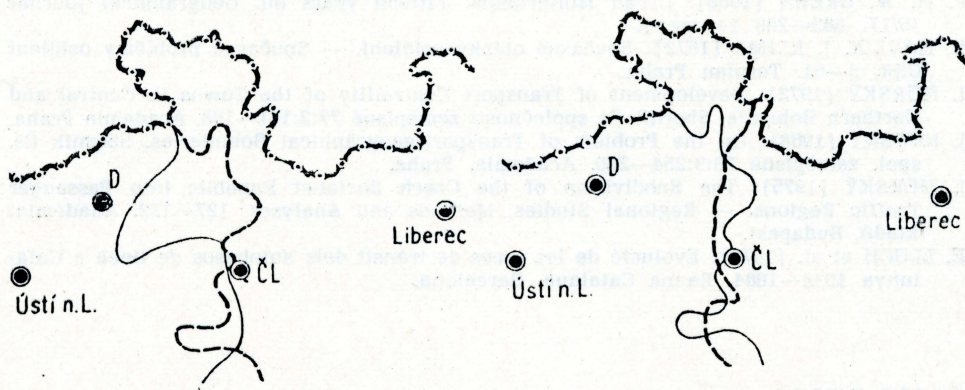

Fig. 3. The motion of frequency divide (Ústí n. L. — Liberec in the periods 1890—1914 and 1914—1968. — (D — Děčín, ČL — Česká Lípa)

The motion of the divide can be regarded totally (absolutely) or partially (relatively) from the position of the centres. In the former case it is the question of the motion of all the divides delimiting the attraction region of the corresponding centre. If their motion occurs entirely in a centring manner, it may, together with other negative indeces contribute to eliminating the centre from the respective category. As an example we have introduced Jirkov. which, owing to intensified transport and other relations towards Chomutov is no longer a regional subcentre of a medium type, but at best one of the centres of a double nucleus region Chomutov-Jirkov, of course a subordinate one.

The other form of applying the motion of divides concerns the motion of individual divides as an index of competition of two corresponding neighbouring centres. Such striking shifts are apparent in the outlines of Fig. 2: the shifts of the divides Terezín — Ústí n. L. and Litoměřice — Ústí n. L. in favour of Ústí, the divide Teplice — Bílina in favour of Teplice, the divide Most — Litvínov in favour of Most etc. The losses and gains are roughly compensated, e. g. in the divide Ústí n. L. — Děčín.

As evidenced by Fig. 3 the motion of an individual divide, particularly with higher centres, can be traced back to the year 1890. This actual example shows the steady recession of the divide between the spheres of influence of the one-time metropolis of northern Bohemia Liberec in favour of the present district town Ústí. An equal contribution to this fact was made by a more favourable transport position and a more favourable position near important sources of energy and industrial raw material, namely at the edge of the North Bohemian lignite basin. With larger centres it would be possible to follow this phenomenon even in the period 1850 — 1890 without substantially deviating from the procedure in method. Of greater importance than these retrospects are of course short-term observations since ascertaining the overall trend in the motion of the divides may contribute to the prognosis of the further development of economico-geographical regions.

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ЙОСЕФ ГУРСКИ

К ВОПРОСУ ДИНАМИКИ ПРЕДЕЛОВ ПАССАЖИРСКОГО ТРАНСПОРТА

Метод пределов пассажирского транспорта представляет одну из немногих возможностей выделить нодальные регионы границами, а не только как пояса. Кроме того пределы пассажирского транспорта имеют и разнообразное иное применение, в том числе практическое (в планировании и т. д.). В статье к 21 Международному конгрессу МГС (1968) автором указывалось на возможность их качественной дифференциации, т. е. классификации в зависимости от остроты (выразительности). О делении Чешской социалистической республики этим методом на 120 регионов и 30 подрегионов автор докладывал на Европейской конференции МГС в Будапеште (1971). В данной статье речь идёт как о теоретическом, так и практическом значении результатов определения изменений пределов пассажирского транспорта.

Пределы пассажирского транспорта подразделяются на несколько методически отличных типов. Различаем пределы досягаемости по времени, интенсивности (фреквенции), транспортным затратам (прежде всего стоимости поезда), либо протяженности более качественных трасс. В статье кратко характеризуются пределы досягаемости по времени, к которым в полной мере применимы принципы статистической поверхности, и подробнее рассматривается вопрос выделения региональных центров. (Связано со статьей автора о развитии транспортной центральности в средней и северной Чехии в период 1958 - 1968, которая была опубликована в номере этого журнала, посвященном XXII Международному конгресу МГС в 1972 г.)

Динамику пределов фреквенции пассажирского транспорта не было возможности проследить на всей территории средней и северной Чехии из-за недостатка времени. Это было сделано примерно для третьей части территории. Рис. 1 иллюстрирует изменения предела досягаемости по времени, два последующие - изменения пределов интенсивности. Рис. 3 свидетельствует о том, что эту динамику можно проследить - главным образом для центров более высокого ранга - начиная с 1890 г. Этот пример позволяет следовать соперничество двух региональных центров в борьбе за сферу влияния, которая определяется транспортным притяжением. Бывшая метрополия северной Чехии Либерец уступает свои позиции в этой борьбе нынешнему центру края Усти-на-Лабе. Этому способствовало не только более выгодное транспортное положение последнего (с учетом водного транспорта на Лабе), но и близость буроугольного бассейна как одного из двух главных энергетических центров народного хозяйства всей ЧССР. Однако большее значение по сравнению с ретроспективой имеют наблюдения краткосрочные, т. е. определение тенденций в изменении пределов может быть полезным при прогнозировании дальнейшего развития экономико-географических районов.