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SOME PROBLEMS OF INDUSTRIAL MAPS IN NATIONAL ATLASES

The 17th International Geographic Congress defined as one of the principal tasks of the world geography of the present day the publication of national atlases. In Czechoslovakia a national atlas was published as early as in the thirties and was highly appreciated by the public. (Atlas of the Czechoslovak Republic, Chief Editor J. Pantoflíček; published by the Czech Academy of Sciences and Arts, Prague 1935). Important political and economic changes as well as great development of scientific thinking have made, however, the first atlas rather obsolete and made it necessary to publish a new atlas, which will be ready for publication approximately by the year 1965.

The general conception of the atlas, which was very thoroughly discussed, has now been definitely determined and work has started on about one fifth of the total number of maps which are to be included in the national atlas. The atlas of the Czechoslovak Republic fulfills to a maximum extent the requirement stipulated by the Commission for National Atlases of the International Geographic Union, viz. the requirement of the maximum possible uniformity of national atlases. (See K. A. Salishtchev: Plenary meeting of the Commission for National Atlases of the International Geographic Union in Moscow, Izvestia Akademii nauk SSSR, seria geografitcheskaya, No. 6/1958). Prior to the determination of the general conception of the atlas other national atlases were evaluated, particularly atlases of the Scandinavian countries and the prepared Polish national atlas. The internal proportions of the Czechoslovak national atlas are nearest those of the Belgian national atlas. The method is based on Soviet experience, adapted to the needs of Czechoslovak geography with the purpose of enabling the new national atlas of the Czechoslovak Republic to show all results of the building-up of the Czechoslovak economy and their location. Further the atlas will give a general idea of the degree of transformation of natural conditions and the development of economy in the individual regions of the country. These contents must be purposefully set into the international political frame, which will portray also the relations of the Czechoslovak Republic with other countries.

The atlas will contain 80 plates sized 864×488 mm. The number of the individual maps has not yet been definitely determined; the final arrangement will result from detailed work on the individual problems. It is presumed that the maximum number will not exceed two hundred maps with uniform scales of 1 : 1 million, 1 : 2 million, 1 : 3 million and 1 : 5 million. Only general maps of the individual regions will be made to a scale of 1 : 0.5 million; the plates which will contain these maps will be folded to fit the general size of the atlas.

The atlas will be supplemented with explanatory texts in several languages, its whole contents being divided into seven parts. The first part will contain an introductory, detailed topographic map, a map of the present state and of the development of the territorial division of the country, examples of historical maps and historical-geographical representation of the development of the Czech State (six plates in total). The largest, second part of the atlas will consist of maps showing the physical geographic conditions of Czechoslovakia, which will consist of twenty-eight plates (geophysical conditions of the territory of the

Czechoslovak Republic — three plates, geology — two plates, morphology — six plates, pedology — two plates, climatology — seven plates, hydrology and hydrography — three plates, biogeography inc. economic evaluation of biogeographic conditions — five plates).

The third part will deal with the territorial division of the population and seats and will contain ten plates. (A map of the population density and specific population density, a map of nationalities, a map of profession, a map of population increase and a map of types of seats with selected examples of characteristic plans.)

The fourth part of the atlas will contain data pertaining to the location of production, arranged on twenty-five plates, of which ten plates will deal with industry, ten plates with agriculture and five plates with transport. Apart from general maps of the individual territories there will also be maps giving pictures of the individual industrial and other productive branches. The basic data will be supplemented also with data about the physical volumes of production of the respective production branches, which will often be represented by cartograms or cartodiagrams. An indispensable part of the production of maps will be the representation of changes in the territorial division of industry, agriculture and transport as compared with the pre-war years.

The fifth part is somewhat different from the usual method of compilation of national atlases. It is called "Standard of Life" and will contain four plates which will give an idea of the territorial division of consumption all cultural, and distributive institutions and of the changes which it has undergone since the pre-war period. Maps of this type are usually included into sections containing maps giving the characteristics of populations and their seats. We have considered it necessary, however, to separate the two types of maps, devoting the maps contained in the „population" part to population as such and dealing with the standard of life after the production has been dealt with, since it is production which creates prerequisites for a certain state of the standard of life.

In the sixth part the general characteristics of the ten Czechoslovak regions will be given on five plates of a uniform scale (one page being devoted to every region). This new treatment of maps and scales is enabled by the fact that the regions newly created in 1960 are approximately equal in area.

General maps contained in the seventh part of the atlas will contain all important data, gained from the preceding maps by means of suitable generalization. They will include, above all, the economic conditions of the country in their relation to the respective natural conditions. The compilation of these maps will present extraordinary difficulties and the fact must be mentioned that their general conception, has not been sufficiently cleared up yet. The atlas, the first plate of which will show the position of Czechoslovakia in the world and in Europe, will be concluded with a final plate which will illustrate the international connections of Czechoslovakia with other countries, particularly those pertaining to its foreign trade. In a general survey comparison will be made of various stages of its import, export (and their structure), naval trade and tourism. With regard to the number of plates the atlas will contain 9 % of maps of a general character, 35 % of physical geographic maps, 17 % of demographic maps, 34 % of economic maps and 5 % of maps reserved for the regional characteristics of the individual parts of the Czechoslovak Republic.

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During the preparation of the individual plates and maps a number of problems necessarily arises, among which a group apart is formed by the problems of the compilation of economic maps, particularly industrial maps, in which — with regard to the economic character of our country — the general focal point of the contents of the national atlas should lie.

The preparation of industrial maps was based on a critical appraisal of analogous maps contained in the national atlas published in 1935. In this publication the representation of data pertaining to industry was limited in the majority of cases to statistical cartograms, giving no opportunity of mutual comparison, based on an arbitrary, mutually incomparable classification scale.

The basic problem of the work on the compilation of industrial maps and, in a way, also other economic maps, is determination of the basic data network for the marking of industries. The geographic unit is the concentration of population based on the concentration of production into the individual seats. Such geographic units, however, do not often coincide with the administrative and statistical units, which are communities. Materials containing basic data in the Czechoslovak statistics are divided either in accordance with industrial works, or in accordance with the above mentioned administrative units of communities. Industrial works and their inclusion into certain seats should be characterized by industrial maps. The number of cases when industrial works are not connected with any seat at all is negligible, since such cases are entirely exceptional and unimportant. The grouping of administrative communities or their division into independent geographic units of the seat is, particularly in Central Europe, very complicated. In spite of this fact we want the division of industry to be registered in accordance with geographic units. Such units are groups of communities or their parts which are constructionally connected and have an identical economic function. A simple, but generally exact index of this common function is the structure of the population with regard to its appertaining to the main groups of professions. On the basis of such a simple and purposeful method it is possible to simplify the network of basic data, eliminating simultaneously such cases as are geographically obviously incorrect, as — for example — is the case when industrial works are built outside the administrative boundaries of some towns, thus giving the impression — when regarded formally — that the towns are without any industry at all, etc. Another, though minor, problem of the determination of a uniform network of basic data is the fact that — particularly in the case of large industrial centres — there occur extensive agglomerations. The problems then lies in the necessity of micro-geological treatment of such agglomerations, i. e. the representation of industry within the boundaries of such agglomerations. We are of the opinion that it would be desirable to supplement industrial maps with a representation of the territorial division of industrial works within such units, while in general maps such territorial division would be registered in one administrative unit only. The registration of the territorial division of industry with regard to the agglomeration of seats is of economic and geographic value also because it differentiates markedly the main centres of concentration of industry, which are of decisive importance for the respective representation.

Comparability of maps of an economic geographical character, i. e. in our case of industrial maps, on an international scale, depends also on the determination of uniform principles for the determination of basic territorial units, which form the basis of the representation of the territorial division of industry.

Such determination is connected with a number of hitherto discussed, but not yet solved problems of the geography of the seats; we are of the opinion that our two simple and easily attainable criteria could be used generally, thus enabling a relatively easy formation of a uniform network even on an international scale. It would just be necessary to attain uniformity of the indices of adition (constructional connection) and that of quantitative indices characterizing identical structures of the population with regard to their professions.

Another important problem is that of classification of industry with regard to its individual branches and fields. Geographers are dependent on the respective statistics which use in different countries different methods of classification, depending either on tradition or on the economic needs of the respective country. Some experiments were carried out with a so-called „geographic classification". They were, however, predestined to failure since they were based, in their elementary evaluation, on statistical classification and particularly because the versatility of economic geographic relations allowed great arbitrariness in the grouping of the individual types of industry into higher groups. The group of industries consisting of, for example, ore mining, metallurgy and engineering, can be considered as a group consisting of ore mining plus metallurgy, with engineering set independently apart, or it is possible to group metallurgy with engineering, with ore mining set apart, etc. Should we open a discussion the purpose of which would be unification of criteria, we would most probably not obtain any results. In the individual countries industrial production is considerably specified and has a number of characteristic specific features which greatly differ from one another. On the other hand, the principle of international comparability of national atlases requires that such uniform classification of industries should be attained. In our opinion it is possible only, if the national classification is simple and general and if the system of classification enables regional specific features to be taken into account by means of further classification within the general groups to satisfy the requirements and needs of the individual countries and their respective geographies. We submit, therefore, a suggestion that national atlases of the individual countries be classified in accordance with the following groups and branches: power industry, ore mining and metallurgy, engineering, chemical industry (incl. chemical treatment of fuels), wood working industry (incl. chemical working of wood), stone and earth industry (incl. the production of glass, ceramics and building materials), textile, clothing and leather working industries and finally the foodstuffs industry incl. the production of confectionery. The suggested simple classification corresponds, on the whole, to current practise, being based on the economic classification of industries which is uniformly utilized in all socialist countries. This classification is in accordence with the classification used by statisticians, dealt with unification of classification in internationale scale.

The third problem of industrial maps is the measuring of the capacity of industry in its territorial division and the problem how to ensure mutual comparability of data based on this basic index. It would certainly be beyond the possibilities of unification of national atlases as well as beyond the range of purposefulness of such unification to endeavour to determine capacity classes. The problem lies rather in the necessity to ensure mutual comparability with regard to the type of indices. It is generally known that most frequently it is possible to use the scale of the number of employees, or the physical volume of production, or the monetary value of production. It would be superfluous to enumerate

the individual advantages and disadvantages of the individual indices. Of great importance is the endeavour to use a combined representation, i. e. express the capacity of industry in the individual localities by means of both the number of employed people and the volume of values created by the industry in the respective locality. The international comparability of these indices, however, is greatly complicated by differences in productivity of work, different methods of measurements of values and, naturally, also by the character of statistical basic data. Should we intend to approach, as much as possible, the idea of mutual comparability of national atlases, it would again be necessary to choose the simplest way possible. Such comparison is afforded only by measurements of the extent of production with the number of products, which applies, of course, only to the very simplest products, such as are represented in the economy of the majority of countries. It would be worth consideration for the 19th International Congress to determine those branches of production which could become uniform indices, thus enabling mutual comparison of various national atlases. Examples of such uniform indices would be the volume of production of raw steel in tons, crude oil output in tons, etc. Should it not be feasible to determine such uniform indices, it would be desirable to agree at least that industrial maps should record, among other things, also the capacity of industry in the respective locality with the number of its employees. Taking into account the different value of productivity of work in various countries it would be possible to effect at least indirect comparison. In the Czechoslovak national atlas the importance of the number of employees in the respective industry as a quantitative index is stressed, because it affords a possibility of mutual comparison of the individual industrial branches within the boundaries of the country in a better and more easily attainable way than the index of value.

The most complicated problem, which has been hitherto clarified in the smallest extent, is the cartographic representation of economic geographic relations. We do not understand economic geography only as the branch of geography dealing solely with the territorial division of industry and other economic branches, but also with the mutual connections between the conditions of such a division and the thus divided industrial works and their connection with consumption. It is natural that such complicated relations cannot be recorded, in the first place, in maps of a relatively small scale, such as the maps of national atlases. On the other hand, we would like to go further that the standard cartograms in the Czechoslovak national atlas of 1935 which were limited solely to the marking of localities and determination of the size of the localized phenomena. A solution could be seen if the individual maps would contain, where necessary, the representation of natural or economic conditions relevant to the respective industrial branch, thus indicating the mutual connections. The principal difficulty of this method lies, however, in the fact that there is always a number of such conditions, so that — contrary to the relatively poor statistic cartograms — such a method would result in considerably complicated and uninstructive maps. The decision to select only certain conditions involves serious dangers. The Finnish national atlas of 1935 contains, for example, a very instructive map combining the division of the population with the division of vegetation on the territory of Finland. It would be possible to use an analogous method in the case of industrial maps. However, there is a danger of vulgarization and subjective selection of conditions pertinent for important connections, leaving aside the fact that some connections cannot be even recorded

on a large scale. This is particularly the case of connections between production and supply on the one hand and consumption on the other hand. Soviet economic geographic atlases of the individual regions have solved the problems of mutual connections by means of supplementing the individual maps with schematic diagrams of production connections. Such a method, however, can be used only for the representation of really basic connections of territorial production units. At the same time we are of the opinion that it can be applied in a more de tailed way only in countries with a planned and severely registered economy.

We have tried to show the complexity of cartographic representation of territorial connection in industry and are of the opinion that a satisfactory solution cannot be attained. In the Czechoslovak national atlas, however, we shall endeavour to record at least some connections, using the method of a drawn base which will indicate the connections. Thus, for instance, the maps of the chemical industry will be supplemented with the river network with possible indication of flow capacities, the engineering industry maps will be supplemented with representation of great concentrations of population, thus pointing to the connection between the territorial division of the engineering industry and large towns, etc. Another aid, which will show the mutual production connections will be a schematic representation of the organization of the individual industrial branches, which will not only show the type of organization, but also the mutual connections of the individual works. Such schematic maps will be of the supplementary maps of the respective plates. However, we are fully aware that such representation of organizational connections is possible only in countries with a nationalized industry and centrally planned economy.

The state of work on national atlases and the used methods of work in the individual countries are different. We are aware of the pretentiousness of some of our suggestions, not with regard to the amount of work involved, but rather with regard to their general idea of the necessity of comparability of particularly production maps. If we choose the simplest possible methods, we can attain good results. The individual national atlases which will be mutually comparable will enable perspectively the preparation of works of international importance, which will particularly enable mutual comparison of the economies of the individual countries, this being the contribution of geographers and cartographers to the international peaceful coexistence.

NĚKTERÉ OTÁZKY PRŮMYSLOVÝCH MAP V NÁRODNÍCH ATLASECH

V Československu se podle intencí mezinárodního zeměpisného kongresu připravuje nový Národní atlas, který má být zpracován do roku 1965. Má nahradit Atlas republiky Československé z roku 1935. S využitím mezinárodních zkušeností bude mít atlas 80 listů formátu 864 × 488 mm. Předběžně se předpokládá asi 200 map s unifikovanými měřítky 1 : 1, 1 : 2, 1 : 3, 1 : 4, 1 : 5 mil. Kromě textových částí bude mít sedm částí: Úvod (poloha, podrobná místopisná mapa, mapy historické a historicko-zeměpisné), fyzicko-zeměpisné podmínky, obyvatelstvo a sídla, výroba, životní úroveň (kulturní, zdravotní atd. zařízení), oblasti ČSR a závěr (mezinárodní obchod a styky se světem), celkem 9 % map obecného významu, 35 % fyzicko-zeměpisných a 17 % demografických a sídelních, 34 % hospodářských a 5 % oblastních charakteristik.

Při přípravě jednotlivých listů přistupuje řada problémů, zejména při zpracování map průmyslových, které vzhledem k charakteru československého hospodářství by měly tvořit obsahové těžiště atlasu. Při přípravě průmyslových map se vychází z kritiky obdobných map v atlase z roku 1935. Jako výchozí problémy se jeví: stanovení podkladové sítě pro rozmístění průmyslu. Tato síť se má skládat ze zeměpisných jednotek, tj. z koncentrací obyvatelstva a výroby, které nemají tvořit administrativně statistické jednotky obcí. Nejúčelnější se jeví spojování a rozdě-

lování administrativních jednotek podle územní souvislosti (spojení zastavěného území) a funkční jednoty, kterou lze nejsnáze měřit podle struktury obyvatelstva podle povolání. Při spojování vzniknou velké aglomerace, které vyžadují vnitřní zeměpisné zpracování také v atlase. Druhý problém je třídění podle odvětví. Jednotná mezinárodní klasifikace je možná jedině tehdy, bude-li jednoduchá. Navrhuje se: energetický, rudný a metalurgický, strojírenský, chemický, dřevařský průmysl, průmysl kamene a zemin, textilní a kožedělný, potravinářský průmysl. Velikost rozmístěného průmyslu je možno měřit několika způsoby; z hlediska mezinárodní srovnatelnosti je žádoucí zavést společné ukazatele podle fyzického objemu výroby v jednotlivých lokalitách. Znázorňování hospodářsko-zeměpisných svazků je značně složité a nutno v národních atlasech na ně rezignovat. Náhradou jsou doplňková schemata o organizaci a vzájemných výrobních souvislostech nebo doplňování průmyslových map vhodně vybraným podkreslením těch zeměpisných skutečností, které mají výrazný vztah k sledovanému rozmístění.

Vedoucí myšlenka musí být úsilí po dosažitelném sjednocení náplně národních atlasů jako příspěvek zeměpisců k mezinárodnímu mírovému soužití.

НЕКОТОРЫЕ ВОПРОСЫ КАРТ ПРОМЫШЛЕННОСТИ В НАЦИОНАЛЬНЫХ АТЛАСАХ

В Чехословакии на основании директив международного географического конгресса подготавливается новый Национальный атлас, который должен быть закончен до 1965 г. Этот атлас заменит Атлас Чехословацкой республики 1935 г. Атлас будет содержать 80 листов размером 864 × 488 мм. Предварительно в атласе предполагается около 200 карт в унифицированном масштабе 1 : 1 1 : 2, 1 : 3, 1 : 4, 1 : 5 мил. Кроме текстовой части, атлас будет содержат семь разделов; введение (положение, подробная топографическая карта, исторические и историко-географические карты); физико-географические условия; население и населённые пункты; производство; жизненный уровень (культурные, медицинские и др. учреждения); области ЧСР и заключение (внешняя торговля и связи с иностранными государствами) — в целом 9 % карт общего характера, 35 % физико-географических карт, 17 % карт населения и нас. пунктов, 34 % экономических и 5 % областных карт из общего количества.

В процессе подготовки отдельных листов атласа составители встретились с рядом проблем. Это касается, прежде всего карт промышленности, которые, учитывая характер хозяйства ЧСР, должны создавать главную часть атласа. При создании этих карт исходили из критического анализа соответствующих карт промышленности, имеющихся в атласе 1935 года. Основная проблема заключается в выборе основы для размещения промышленности. Эта основа образовывается из географических единиц, т. е. представляет собой концентрацию населения и производства, причем эти единицы не являются административно-статистическими единицами. Наиболее целесообразным является соединение или расчленение административных единиц на основе принципа территориальной связанности (соединение площадей застройки) и единства функций, которое наглядно представлено профессиональным составом населения. В процессе объединения возникнут крупные агломерации, которые необходимо охарактеризовать в атласе.

Вторая проблема заключается в классификации промышленности по отраслям. Принятие единой международной классификации возможно лишь в случае её несложности. Предлагается следующее разделение промышленности на: металлургическую, рудную, машиностроительную, химическую, деревообрабатывающю, текстильную и кожевенную, пищевую и промышленость строительных материалов. Размер размещаемых промышленных предприятий можно отображать различными способами; учитывая требование международной унификации, следовало бы ввести общие показатели, исходя из физического объема производства в отдельных центрах.

Отображение экономико-географических связей представляет большие трудности, поэтому в национальных атласах этому должно быть уделено особое внимание. В качестве замены возможно использование схем, показывающих организацию и взаимосвязи производства а также дополнение карт промышленности правильно выбранными географическими явлениями, которые имеют прямое отношение к размещению. Руководящей мыслью при создании атласа должно быть стремление к достижению единства содержания национальных атласов.