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CENTENARY OF THE CZECH GEOGRAPHICAL SOCIETY 1894 - 1994

This year may undoubtedly be designated as important in the history of the Czech geography. It is mainly due to the fact that hundred years ago, the Czech Society of Earth Science was founded, but also to the decision of the International Geographical Union, taken on its World Congres in 1988 in Australia, to organize its regional conference in Prague exactly on the occasion of this centenary. These two important events will inscribe the year 1994 significantly into the history of the Czech geography. This number of Sborník, too, is dedicated to them.

Efforts of Czech geographers, and not only those from universities, to associate, had a long and deep tradition. Already in the seventhies of the 19th century, Czech natural scientists, and of course geographers as well, were associated in the Club of Natural Science (founded in 1870). Similarly in the Club of History (founded in 1872), geographers, mainly the younger ones, established a special Section of Earth Science unifying "sometimes more than 60 members" (J. Metelka, 1895), mainly secondary school teachers.

Since the beginning, the history of the Society was very closely tied with the life at the Charles University where the position of geography was rather complicated in the second half of the 19th century. In 1856, an important event is to be noted at the Faculty of Arts: the first second habilitation in geography, Jan Kašpar Palacký being the first docent (associate professor) of geography. It did not however signify a satisfactory position of the branch which would implicate constitution of a Chair of Geography or of an institute. Doc. Palacký, covering the majority of lectures in geography, was devoted mainly to regional and physical geography. But since 1866, his lectures were getting scarse and the first docent in geography, probably also because of his personal disagreements with the Faculty, began to pay more attention to his political activities (he was Imperial Council Deputy in Vienna).

The seventies are characterized by an intensification of efforts to divide the University to a Czech and a German part. In that situation, J. K. Palacký recommenced with his lectures hoping to be nominated professor of geography. Unfortunately, neither the Faculty direction, nor the commission charged to choose candidates, did not opt for J. K. Palacký and so it happened that Dionýs Grün, native from Přerov, was in 1872 nominated the first extraordinary professor of geography. He entered in function only in 1875, his inauguration lecture presented on 1st of May was dedicated to the geography as an autonomous science (Die Geographie als selbständige Wissenschaft), theme topical even nowadays. This first professor of geography, since 1876 ordinary, concerned his attention mainly to regional and physical geography, as well as to the history of geography.

In 1882, the University is divided according to national principle and the Institute of Geography in Ovocný trh together with Professor Grün had become the part of the German University. This enabled J. K. Palacký to become in 1885 extraordinary and in 1892 ordinary professor of geography - in 61 years of age. Even when geography had not an independant institute, it was significant that, from the point of view of number of students, it was one of the most popular study branch at the Faculty. In average, 150 to 160 students were inscribed at the Faculty of Arts, 45 to 50 out of which opting for geography lectures. This fact might lead us to make comparisons with the present state.

In that time, the Czech geography had another important centre outside the Charles University. Since 1851, Karel Kořistka, professor of mathematics and practical geometry, had been lecturing at the Prague Technical University. He was an excellent geographer and cartographer and its work influenced also number of further generations of Czech geographers and cartographers.

The third place, where geography was cultivated at the turn of the 19th and 20th century, was the Faculty of Law, where some disciplines of economy, statistics and political science, related to geography, were developed. For that reason, some geographers attended lectures not only at the Faculty of Arts, but also at the Faculty of Law (V. Dvorský).

In these conditions - after constitution of the Czech University, with the existence of the Institute of Geography at the Faculty of Arts and with high numbers of students of geography - efforts to create an independent scientific society culminated. At the beginning of 1894, a preparatory committee was constituted in which a great deal of work was done by Dr. Jindřich Metelka and Dr. Josef Frejlach. After approbation of statutes by the Royal and Imperial Vice-Regency of the Kingdom of Bohemia (the whole approbation procedure did not last more than three weeks), the constituting plenary session was convocated into Měšťanská Beseda in Prague for the 1st of May 1894. The session was chaired by the "Nestor" of Czech geographers, Court Councillor Prof. Dr. Karel Knight Kořistka. "Everyone of the emerite leading geographers was present, and also the middle and young professional generation was richly represented" (Metelka, 1895).

The plenary session approved statutes and elected the first committee with professor of geology J. N. Woldřich on its head. Prof. Dr. F. Augustin and F. Sobek, secondary school head-master, were nominated vice-presidents, Dr. J. Metelka and Dr. J. Frejlach secretaries, Director J. Kořenský became librarian and adj. H. Kollmann registrar. Already in the moment of the Society constitution, it was decided to publish a geographical journal called Sborník. Even when this intention was carried out only a year later (in 1895), it was brought to life again by J. Metelka and J. Frejlach, whose initiative, industry and devotion were also at the origine of the Society of Earth Science and of its Sborník.

The further development of the Society was complicated, there were numerous obstacles, but also bright sides, for instance regular congresses presenting geographical knowledge of that time and tracing its further development. This centenary history is presented in a more detailed way by a publication written and published at the occasion of this year's centenary (Trávníček D., 1994).

The today's Czech Geographical Society claims all the positive that had been done in the past century. The importance of the present period is nevertheless evident. Deep transformations of the Czech society going on since November 1989 are reflected also in the activities of scientific societies. The former state subventions have been cut away, partly replaced by project and grant backing, but after forty years, the Czech Geographical Society has become again an independant scientific society. It means that its affairs are settled through democratic mechanisms.

A qualitative change in the centenary history occurred in 1992 when a publishing house of the Czech Geographical Society was constituted by fusion of three subjects (Czech Geographical Society, Travel Agency of Czech Geographers of Dr. V. Jahn and Terra firm), since 1993 only two sbujects have remained when Terra activities were getting more and more distant from the initial intentions. The aim of this publishing house is publication of high-level and modern secondary school geography textbooks and other teaching materials (excercise-books, blind maps) for teaching geography at elementary and secondary schools. The Czech Geographical Society intelectual power has got a new development axis in view to present the Society among geography teachers. It is a new, and we hope also purposeful, activity which would, besides the traditional

forms as lectures, seminars, excursions, conferences, etc., significantly mark the Society activities in the period to come.

During a relatively very short period of this publishing house existence, in total 15 titles in more then 150,000 copies were published. Even more important than these quantitative data are positive reactions of teachers appreciating books published by the Czech Geographical Society Publishing House. In the same time, the publishing house ensures publication of both geographical journals which are now being published in the Czech Republic, that is the nearly centenary Sborník of the Czech Geographical Society and the young and vigorous Geografické rozhledy (Geographical Overview) aimed at a larger geographical public.

This year will certainly bring an opportunity, even on the international scale, to evaluate the past century development of the modern geography in the Czech Republic. The narrow links between the Czech Geographical Society and the existence, development or stagnation of geography at Czech universities, from the oldest one to those founded in past years, as well as at elementary and secondary schools, in project making, research and decision making institutes and institutions, will reflect in these evaluations a century of efforts and hard work for the development of the Czech geography. Keyworks in this development, as National Atlases 1936 and 1966, as well as errors and mistakes accompanying the centenary existence of the Society will be reminded.

We believe nevertheless that in the second, just beginning, century of its existence, the Czech Geographical Society will find sufficiently of internal force and energy to constitute a purposeful geographical community associating Czech geographers to realize aims traced before more than hundred years and remaining topical even now.

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Václav Gardavský

SBORNÍK ČESKÉ GEOGRAFICKÉ SPOLEČNOSTI
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STO LET ČESKÉ GEOGRAFICKÉ SPOLEČNOSTI 1894 - 1994

Letošní rok můžeme nepochybně právem označit jako významný v dějinách české geografie. Je tomu tak především proto, že před sto lety byla založena Česká společnost zeměvědná, ale i proto, že International Geographical Union na světovém kongresu 1988 v Austrálii rozhodla pořádat v Praze, právě v roce tohoto jubilea, regionální konferenci. Jsou to dvě významné události, které zapíší rok 1994 výrazným písmem do dějin české geografie. Také toto číslo Sborníku je jim věnované.

Snahy českých geografů, zdaleka nejen univerzitních, po sdružování, měly své starší a hlubší kořeny. Už v sedmdesátých letech minulého století se čeští přírodovědci a samozřejmě i geografové, sdružovali v Klubu přírodovědeckém (zal. 1870). Podobně i v mladším Klubu historickém (zal. 1872) si zejména mladí geografové vytvořili zvláštní odbor zeměpisný, který míval „leckdy více než 60 členů" (J. Metelka, 1895), převážně kandidátů středoškolské profesury.

Od prvopočátku však byly dějiny Společnosti velmi těsně spojené s děním na Univerzitě Karlově, kde se geografie ve druhé polovině 19. století nacházela v dosti složitém postavení. Na filozofické fakultě sice už v roce 1856 dochází k významné události, jíž byla první habilitace v oboru geografie, když prvním docentem se stává Jan Kašpar Palacký. Neznamenalo to však ještě rovnoprávné postavení oboru, které by přineslo vytvoření geografické katedry či ústavu v tehdejším pojetí. Doc. Palacký, který zajišťoval většinu geografických přednášek na univerzitě, se věnoval hlavně regionální a fyzické geografii. Avšak už roku 1866 jeho přednášky začínají ustávat a první docent geografie, patrně i pro osobní spory, které měl s fakultou, se začíná více věnovat politické práci (poslanec říšské rady ve Vídni).

Sedmdesátá léta však přinášejí obrat v tom, že na univerzitě sílí snahy po rozdělení univerzity na část českou a německou. V této situaci J. K. Palacký obnovuje své přednášky s nadějí, že získá už připravovanou profesuru geografie. Žel ani vedení fakulty ani komise, která měla kandidáta profesury vybrat, s J. K. Palackým nepočítali. A tak se stalo, že prvním, mimořádným profesorem geografie byl jmenován v roce 1872 přerovský rodák Dionýs Grün. Své profesorské funkce se ujímá až v roce 1875, kdy 1. května přednáší inaugurační přednášku na téma Die Geographie als selbständige Wissenschaft, téma nepochybně i dnes velmi aktuální. Tento první profesor geografie (od roku 1876 řádný) na pražské univerzitě se věnoval zejména regionální a fyzické geografii i dějinám geografie.

V roce 1882 dochází k rozdělení univerzity podle národnostního klíče a geografický ústav na Ovocném trhu i s prof. Grünem se stávají součástí univerzity německé. To umožnilo J. K. Palackému státi se roku 1885 mimořádným a od roku 1892 řádným profesorem geografie - v 61 letech svého věku. Za významné lze pokládat, že i když geografie neměla samostatný ústav, patřila k nejsilnějším oborům z hlediska počtu studentů. V průměru bývalo na filozofické fakultě zapsáno 150 - 160 studentů, z toho geografii zapisovalo 45 - 50 studentů. I při tomto zjištění nás mohou oprávněně napadat paralely se současností.

Česká geografie té doby však měla ještě jedno významné, i když mimouniverzitní středisko. Od roku 1851 působil na pražské technice profesor matematiky a praktické

geometrie Karel Kořistka. Byl vynikajícím geografem a kartografem, jehož dílo ovlivnilo i řadu dalších generací českých geografů a kartografů.

Třetím místem, kde na přelomu století byly pěstovány geografické disciplíny, byla právnická fakulta. Zde byly rozvíjeny zejména některé obory ekonomické, statistické i státovědné, velmi blízké geografii. Proto také mnozí geografové zapisovali své přednášky nejen na filozofické, ale i právnické fakultě (V. Dvorský).

V těchto podmínkách - po vzniku české univerzity, při existenci geografického ústavu na filozofické fakultě a stále s vysokými počty posluchačů geografie - vyvrcholilo úsilí o založení samostatné vědecké společnosti. Počátkem roku 1894 vznikl přípravný komitét, v němž zřejmě rozhodující práce vykonali dr. Jindřich Metelka a dr. Josef Frejlach. Po schválení stanov c. k. Místodržitelstvím království českého (celá procedura schvalování trvala pouhé tři týdny), byla svolána na 1. května 1894 do pražské Měšťanské besedy ustavující valná hromada. Celé jednání řídil tehdejší nestor českých geografů, dvorní rada prof. dr. Karel rytíř Kořistka. „Nechyběl tu ze zasloužilých předních zástupců geografie nikdo, a také střední a mladá generace odborná byla hojně zastoupena" (Metelka, 1895).

Valná hromada přijala schválené stanovy a zvolila první výbor, do jehož čela byl postaven profesor geologie J. N. Woldřich. Místopředsedy se stali prof. dr. F. Augustin, ředitel gymnázia F. Sobek, tajemníky dr. J. Metelka a dr. J. Frejlach, knihovníkem ředitel J. Kořenský a zapisovatelem adj. H. Kollmann. Už při ustavení Společnosti bylo rozhodnuto vydávat Sborník zeměvědný. I když tento záměr byl realizován až v příštím roce (1895), vidíme u jeho zrodu opět J. Metelku a J. Frejlacha, díky jejichž iniciativě a pracovitosti i obětavosti vznikla Společnost zeměvědná a potom i její Sborník.

Další vývoj Společnosti byl složitý, měl mnohá úskalí, ale samozřejmě i světlé stránky - např. pravidelné sjezdy, které bilancovaly dosavadní poznání v geografii i naznačovaly další jeho směry. Podrobněji se těmito stoletými dějinami zabývá publikace, která byla sepsána a vydána k letošnímu výročí (Trávníček D., 1994) a na níž zde zájemce odkazujeme.

Dnešní Česká geografická společnost se přihlašuje ke všemu pozitivnímu, co bylo v uplynulém století vykonáno. Je však zřejmé, že současné období je opět jedním z významných, nodálních historických mezníků. Hluboké proměny české společnosti, které probíhají od listopadu 1989, mají své reflexe i v činnosti vědeckých společností. Někdejší státní dotování činnosti bylo skončeno, zčásti nahraženo projektovou a grantovou aktivitou, avšak po čtyřiceti letech se Česká geografická společnost tím stala skutečně nezávislou vědeckou společností. Znamená to, že rozhoduje o svých záležitostech sama,prostřednictvím spolkových demokratických mechanizmů. Ke kvalitativní změně ve stoleté historii došlo v roce 1992, kdy bylo založeno Nakladatelství České geografické společnosti. Vzniklo sdružením tří subjektů (kromě ČGS ještě Cestovní kancelář českých zeměpisců dr. V. Jahna a firma Terra), od roku 1993 zůstaly jen dva, když činnost Terry se začínala vzdalovat původním záměrům. Cílem tohoto nakladatelství se stalo vydávání kvalitních, moderních středoškolských učebnic geografie i dalších pomůcek (pracovní sešity, slepé mapy) pro výuku zeměpisu na základních a středních školách. Intelektuální potenciál, který Česká geografická společnost má, tak získal další, novou rozvojovou osu, která již dnes prezentuje Společnost v početných řadách učitelů zeměpisu. Je to nová a soudíme, že smysluplná aktivita, která vedle tradičních forem - přednášek, seminářů, exkurzí, konferencí apod. - může významně charakterizovat činnost Společnosti v příštím období.

Za relativně velmi krátkou dobu existence tohoto nakladatelství bylo vydáno 15 titulů v celkovém nákladu přes 150 000 výtisků. Avšak za významnější než tyto kvantitativní údaje lze pokládat velmi příznivé reakce pedagogické veřejnosti, která tituly vydávané v Nakladatelství České geografické společnosti přijímá velmi pozitivně. Za důležité však také pokládáme, že naše nakladatelství převzalo do své péče i vydávání obou geografic-

kých časopisů, které v současnosti v České republice vycházejí - téměř stoletý Sborník České geografické společnosti a mladé, průbojné Geografické rozhledy určené širší geografické veřejnosti.

Letošní rok bude jistě příležitostí, ostatně i mezinárodní, ke zhodnocení uplynulého století ve vývoji moderní geografie v České republice. Těsná spojitost existence České geografické společnosti s bytím a rozvojem či stagnací geografie na českých univerzitách - od té nejstarší až po ty, které v minulých letech vznikly - i na školách základních a středních, v projektových, výzkumných i decizních ústavech a institucích, bude v těchto hodnoceních odrážet století snah i úporné práce na vývoji české geografie. Budou zhodnocena díla, která tvořila milníky na této vývojové řadě (např. Národní atlasy 1936 a 1966), stejně jako připomenuty chyby a omyly, které stoletou cestu Společnosti provázely.

Nicméně věříme, že i ve druhém - právě začínajícím - století svého bytí najde Česká geografická společnost dostatek vnitřní síly i energie k tomu, aby vytvářela smysluplnou geografickou komunitu, která bude sdružovat české geografy k plnění cílů, které byly vytčeny už před sto lety a na nichž ani nyní není třeba nic zásadního měnit.

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VÁCLAV GARDAVSKÝ

GEOPOLITICAL DEVELOPMENT OF THE CZECH STATE

V. Gardavský: *Geopolitical Development of the Czech State.* - Sborník ČGS, 99, 2, pp. 71 - 78 (1994). - The paper deals about the development of the Czech state since its beginning up to now. This development is connected to the development of Central Europe and Europe. Stress is put upon the influence of the geopolitical position of the Czech Republic and upon its millenary state continuity. This investigation enables to demonstrate exposure of the Czech state for the next century.
KEY WORDS: Central Europe - Czech state - geopolicy.

Since a millenary, the Czech State has been figuring, in different territorial extent and in different degree of dependence, on the political map of Europe. Its geopolitical position is frequently, in geographical as well as in politological publications, described for instance as heart of Europe, bridge between East and West, etc. These comparisons usually did not take into account the function and therefore geography can accept them only as characterising its central position in the peninsular Europe (that is situated westwards the line Dniestr - Nemen). The connecting line between the most northern part of the Adriatic Sea coast and the Baltic Sea coast near the Oder estuary has its centre in Central Bohemia. This inland state central position between seas can be considered as a certain advantage. As Europe is a small continent, this position is associated to an extraordinary economic and cultural development.

The Czech state, and by that also the Czech national individuality, is territorially based on two, immediately neighbouring orographic entities - the Czech Massif and Western Carpathians. The neighbourhood of these entities is all the nearer as the pression of the younger one of them has caused a South-East directed lowering of the Czech Massif and consequently to the depression of the Vienna Bassin, the majority of Carpathians water flows are south-eastward directed. By these processes, the Morava river drainage area has become a region connecting the Herzynian Czech Massif and the Alpine Western Carpathians, and in the same time egalizing differences between them.

The connecting function of the Morava has in the same time a larger, even international significance. This most northern Danubian river together with the most southern headland of North-European continental ice-covering characterize and limit one of the most important depressions of the major European water shed, the Moravian Gate. As this Moravian line is roughly the prolongation of the eastern margin of the Alps, since premieval times, the main communication between the Adriatic and Baltic Seas has been running this way. And exactly on this important European communication, the first state formations on our territory were formed in the 7th and the 9th century, and that the empire of Samo and Great Moravia.

The international, and by that also the geopolitical significance of the Moravian Way, is largely stressed by the fact, that it crosses, in a flat and fertile landscape, the Danube Way of the same importance. Since primieval times, the Danube has connected European inland with East Mediterranean. During centuries, cultural, religious, economic and other impulsions were coming by this way to barbarian Europe from Eastern Mediterranean which cultural and economic supremacy was shining far beyond its bor-

ders. And when later similar centres had arisen in Western Europe, it was again the Danubian Way which was the most natural communication, as it passes from the sub-alpine couloir almost imperceptibly into the Rhine drainage area. The Danubian Way was in the same time the way of retardation, it enabled for instance expansion of Osman Turks whose penetration had been stopped exactly on the Danube-Morava crossing.

There is another belt of an easy East-West communication stressing the international significance of the Moravian Way and by that characterizing the geopolitical position of the Czech state. It is a narrow belt of loess sediments adjacent to the northern extremity of the Czech-German Highlands and of the Carpathians and representing the most useful heritage of the pleistocene glacial period. This belt of a relatively dry and scarcely wooded land linking up to the South-Russian forest-steppe zone had become a natural communication way for primeval and historic migrations toward east. It was probably by this way that the oldest components of the Czech state population were coming and constituting the population basis for the local population ontogenesis. Naturally also destructive invasions of Central-Asian nomads were penetrating by this way. In the same time, this periglacial belt of the easy East-West communication increases the significance of the Moravian Line as it represents its easiest and shortest communication with the Danubian Way.

In the 11th century, the Czech state loses the Lower Morava region and by that also its geographic base on the Danube. In the same time, the Czech state loses the immediate connexion with the most important region of Slovakia, with its economic and population basis in the Danubian Basin. The centre of the Czech state - its metropolis succeeded to hold up definitely in the protected position of the Upper Elbe region, and only after the World War I (1918) and after the break-up of the Austria-Hungarian monarchy, the newly constituted Czechoslovak state regains its position on the Danube. From the historical point of view, after a short historic period, the Czech state, as consequence of the decomposition of the Czechoslovak Federation (1st of January 1993), loses this base once more.

During the last millenary, the geopolitical position of the Czech state was always extremely difficult. Since the beginning of its existence, the Czech countries had been always in the centre of an active interest of the most powerful European states. Already at the beginning of the Central-European history, our countries were situated at the Roman Empire border and became object of its organisation (Markomannia project). They were also scene of long lasting struggles between the Roman Empire and North-European German tribes. In the first state formation, Great Moravia Empire, there was conflict of interests between the Byzantine Empire and its most powerful Western partner, the Frank Empire. In the moment extremely important for the world history, the Czech countries were supporting the heavy burden of a double great powers conflict, that is Turkish wars and the Thirty Years' War. It were exactly only these countries to support such a burden, and consequences of that time's economic impoverishment and of disturbances in population evolution had been accompanying the Czech society till the 19th century. Even if closing of the Thirty Years' War by the Westphalian Peace Treaty (1648) did not seem very lucky, mainly because these agreements simply confirmed political and religious frontiers settled down by the war, to the Czech countries, they brought a possibility of a normal development, even when marked by a long period of war troubles.

The great part of the state boundary of the today's Czech state follows historical boundary of the former state formations. Only a small part was newly traced after the World War I and tracing of the eastern boundary of the Czech Republic is object of negociations with Slovakia. The oldest part of this state boundary is one of the oldest state boundaries on the European continent. It had been constituted by the belt of mountain forests, by a desert boundary belt which was remaining uninhabited between lower situated regions where the state power was getting organized. Such primary, natural

boundary is formed by border mountain ranges from the Šumava and Bohemian Forest to the Orlické Mountains and Hrubý Jeseník. These mountain ranges have been forming the legitime state boundary uninterruptedly for a millenary, with the exception of the Lusatian Mountains and the Upper Ohře drainage area. Very old is also the boundary with Austria in place since nine centuries already.

The Czech Republic state boundary was based above all at the Paris peace treaties, namely the Versailles Treaty of June 28, 1919 with Germany and the St. Germain Treaty of September 10, 1919 with Austria. The frontier contention between the newly constituted Czechoslovakia and Poland was decided arbitrary by an embassadors conference in Paris on July 28, 1920.

Geopolitic entities of the Czech state, characterized in the previous paragraphs, had been influencing its development during the whole history, but in the 20th century, it was in an extremely dramatical way. The previous century, mainly thanks to the settlement on the Vienna Congress (1814-1845) can be characterized as a period of "fragile peace". The aim of this settlement was to restore, if possible, the system of big and small monarchies existing before the French Revolution as the only basis of legitime and permanent frontiers in Europe. This geopolitical settlement proved to be right as the following Pan-European war broke out only after 99 years.

Leading personalities of Czech political and intellectual life, for instance historian František Palacký, journalist and writer K. Havlíček, and number of others, were convinced that only a democratic and federalized Austria may guarantee the Czech national identity. The concept of Central Europe was explained as a territory "pinched" between Germany and Russia. In the same time, Czech politicians, but also some geographers, considered Russia as counterbalance of German political and cultural hegemony. But outbreaking of Polish insurrections in the years 1831 and 1863 had darkened the image the Czechs had painted of Russia. Nodal from the geopolitical point of view can be considered the year 1867 when, after the so-called Austria-Hungarian settlement (Ausgleich), the Empire had changed to a dualistic Austria-Hungarian monarchy. Czech were left out of this settlement, although a part of their political representation aimed to establish triple federation. After that year, there is a renaissance of Slave ideas aiming to constitute a Slave federation with Russia as leading empire, but in the same time, there were crystallizing, even if mainly on academical level, ideas on constitution of an independent Czech state. The second half of the 19th century can probably be considered as exposition of geopolitical development of the Czech state in the following century.

After fourteen short years on the beginning of the 20th century, the World War I, which in its results brought deep geopolitical changes on the whole European continent and naturally also on the scale of the Czech state, had broken down. During one year, three leading monarchies of Central and Eastern Europe disappeared and in the end of 1918, there was no hope left to restore any of them. Liquidation of these ruling families untied unions of heterogenous nationalities. According to the last Austro-Hungarian census, the Habsburg state included a dozen of nationalities: 12 millions of Germans, 10 millions od Hungarians, 8.5 millions of Czechs, 1.3 million of Slovaks, 5 millions of Poles, 4 millions of Ruthenians, 3.3 millions of Rumanians, 5.7 millions of Serbs and Croatians and 0.8 million of Romansch and Italians. Disintegration of Austria-Hungarian monarchy and constitution of successing states was nevertheless disintegration not only of a supranational state, but also of pluralistic culture, and in a large extent, it was announcing a European crisis.

The first modern Czechoslovak state, created more by the will of great powers than by that of the local population, included three unhomogenous parts which, after 1918, attempted to pursue common development. Differences between Czech countries on one hand, and Slovakia and Ruthenia on the other hand, were abysmal not only in the

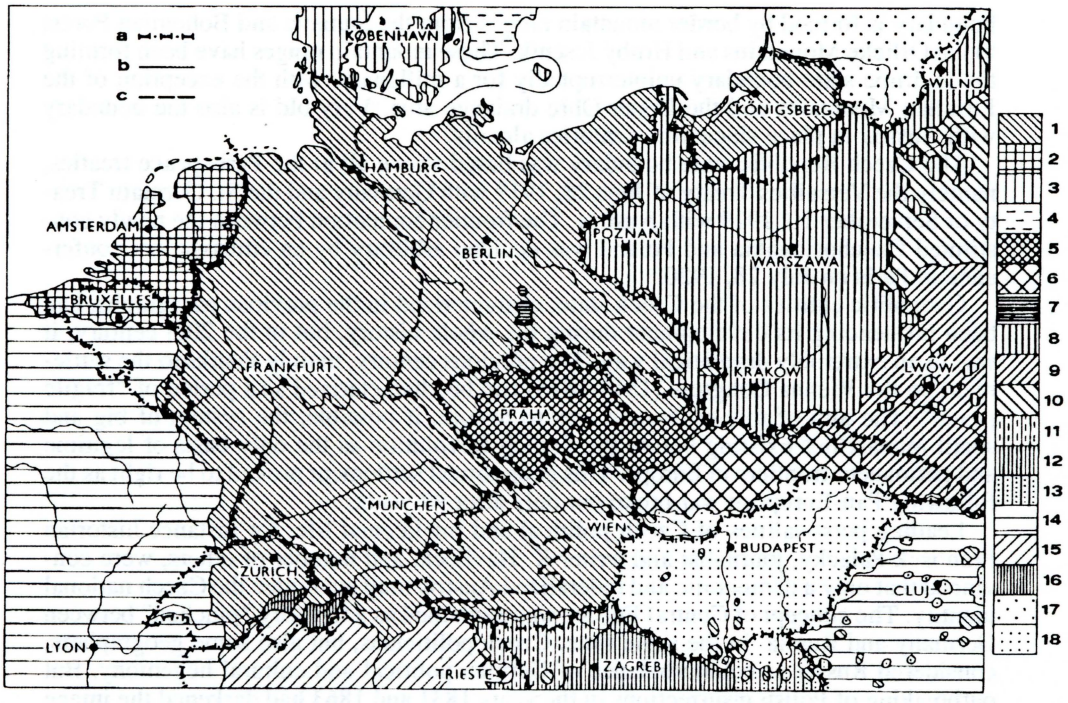

Fig. 1 - Nationality map of Central Europe according to language principle in 1938. a - state boundary, b - language boundary, c - western boundary of the limit Slave penetration. Language-national regions: 1 - German, 2 - Netherlandish, 3 - Danish, 4 - Swedish, 5 - Czech, 6 - Slovak, 7 - Upper and Lower Lusatian, 8 - Polish, 9 - Ukrainish, 10 - Bielorussian, 12 - Croatian, 13 - Serb, 14 - French, 15 - Italian, 16 - Romansch, 17 - Lithuanian, 18 - Hungarian. (V. Král, 1994.)

ern part of the state had been living its own state life. The connoisseur and keen observer of the development in the Central-European area, H. Seton Watson (1945), could legitimately state that the new states created after 1918 unified Eastern regions (Russian, Turkish) to the Western ones (Austrian). Some of them, as Hungary and Bulgaria, were actively struggling against boundaries settled by the Versailles Treaty. Czechoslovakia, Poland, and especially Yugoslavia, were ethnically so diversified as their imperialistic predecessors, but with one major difference: they had no supranational ideology which would allow to the national minorities, constituting an important part of their population, to feel integrated, or at least not too alienated, in the new state. National minorities of the first Czechoslovak Republic, mainly the German and the Hungarian ones, but also the Polish one, are, by their attitude towards the newly constituted state, verifying this opinion. In the same time it must be stated that the Slovakian population did not accept the rather artificial theory about the existence of the Czechoslovak nationality constructed especially to counterbalance the strong German minority, and its majority did not identify themselves to the new state.

The newly constituted state had to solve number of extremely difficult problems. First of all, its territory of a significantly West-East orientation was 900 km long. In the same time the Czech countries, turned in the previous period especially towards the monarchy metropolis of Vienna, had their transport infrastructure orientated mainly in the North-South direction and the only West-East oriented railway ended in the North-East extremity of Moravia. Industry which was there much more developed than in the other parts of the state territory lost its markets and had to transform its territorial, as well as

commodity structure. Nevertheles in spite of all these problems, the first Republic was developing in intentions of a democratic, pluralistic state. The Czechoslovakia's geopolitical paradox which has shown up again after 1989 is the time shift between the acceptance of Western civilization, political ideas and institutions and reality of its economic and social development, as well as its ethnical composition.

It was not only in the period between the two world wars when the Czechoslovakia's evolution was going on in a narrow connexion with the Central-European area. Although the geopolitical delimitation of this area might seem difficult, it undoubtedly really exists. Recently, this conception has been pregnantly defined for instance by V. Král (1994) stating quite correctly that during the last half century, mainly thanks to the "iron curtain", this conception has practically totally disappeared from literature. According to this author, the Central Europe is defined as the region of Central-European lowlands from Calais to Gdansk, then of the Central European herzynian mountains from the Western Ardennes and the Vosges to the Little Poland and the Lublin mountains and finally the Alpes-Carpathians mountainous system with intermountainous basins and large depressions. The in this way delimitated Central Europe is above all a region of linguistic, cultural, religious and economic contacts between German and Slave nations.

During all the period between the two wars, the Central European states were being exhausted by permanent contentions concerning mainly boundaries and their course and national minorities. Hungary declared its territorial exigencies towards all of its neighbours, Poland was arguing with Czechoslovakia about Těšín region and with Latvia about Wilno. Those contentions were lead also in the period of evident jeopardy by Nazi Germany. The Western powers had resignated to their role and the United States had started to practice isolationism policy. It seemed that Great Britain was more alarmed by the dominating position of France than by the Nazi menace. France was giving to Czechoslovakia, as well as to other Central European countries, different, but uncertain promises. This geopolitical phase characterized as "policy of friendly indifference" (J. Rupnik, 1992) was creating, in a constantly more evident way, conditions in which the main powers wishing revision of the Versailles Treaty, that is the Nazi Germany and the Soviet Union, could more and more forcibly present their competitive claims to spheres of political and ideological impact. This development lead then not only to the World War II, but also to the definitive end of the first Czechoslovak Republic constituted only some twenty years ago.

The end of the World War II had number of consequences for the Czechoslovak state. Important from the geopolitical point of view was the fact that this Republic, after secession of Ruthenia, had become directly adjacent to the Soviet Union whose army had liberated, according to the allies agreements, the majority of the state territory. Even if the post-war development should be guaranteed by treaties of victorious powers signed in Jalta, their flagrant violation going even to their ignoring by the Stalinist Soviet Union, lead to a division of Europe and, in the atmosphere of sharpening tension, to the creation of "iron curtain". The states between Germany and Soviet Russia had been separated by a military, ideological and economic line, but historically and culturally, they were always remaining the "heart of Europe". The Czechoslovak Republic, whose length had got reduced to 700 km, had in spite of that transferred its geographical centre from the eastern slopes of the external Carpathian curve to the point by Rychtářov, Vyškov district, in the Central Moravia.

The system of Soviet type was imposed to the Czechoslovak state from without, and in addition, it was a system derived from specifically Russian conditions and traditions and grafted by force to a society with absolutely different culture and traditions. From the geographical point of view, there had arisen a paradoxal situation when maybe for the first time in the modern history, the periphery of the Soviet empire was considering

its centre not only as an aggressor, but in the same time as being from the cultural point of view totally strange and on a lower level. Nevertheless the forced incorporation of Czechoslovakia into the Eastern bloc had fatal consequences for the cultural, religious and economic future of the state. This proces might be pertinently characterized by quantitative data about a heavy denaturation of all the environmental components and by its consequences on the life of the local population.

In the fifty year period, European bipolarity stressed basic characters accompanying the geopolitical development of the Czech state since its most ancient history. It is a marked development duality between authoritarianism and democracy, between West and East. Another trait is the political discontinuity of the geopolitical development which had been always dependent on the political orientation and interests of powers in the Central-European region.

If the first great "geopolitical big bang" of the 20th century was the break-up of the Austrian-Hungarian monarchy, at least the same importance had the disintegration of the Soviet empire on the beginning of the nineties. Transformations on the political map of Europe going on during this last decade, are, by their extent and significance, comparable to transformations going on in 1918 and in 1945. The end of the artificial division of our continent does not mean that some old frontiers might not be restituted again or some new ones might not appear. Central-European states, and naturally also the Czech Republic, have got rid of the Soviet supremacy, but up to now, they are unable and non prepared to join the European Union. In this process between efforts and possibilities of integration, a new form of Czech state, probably exposure for the 21st century, is begin-

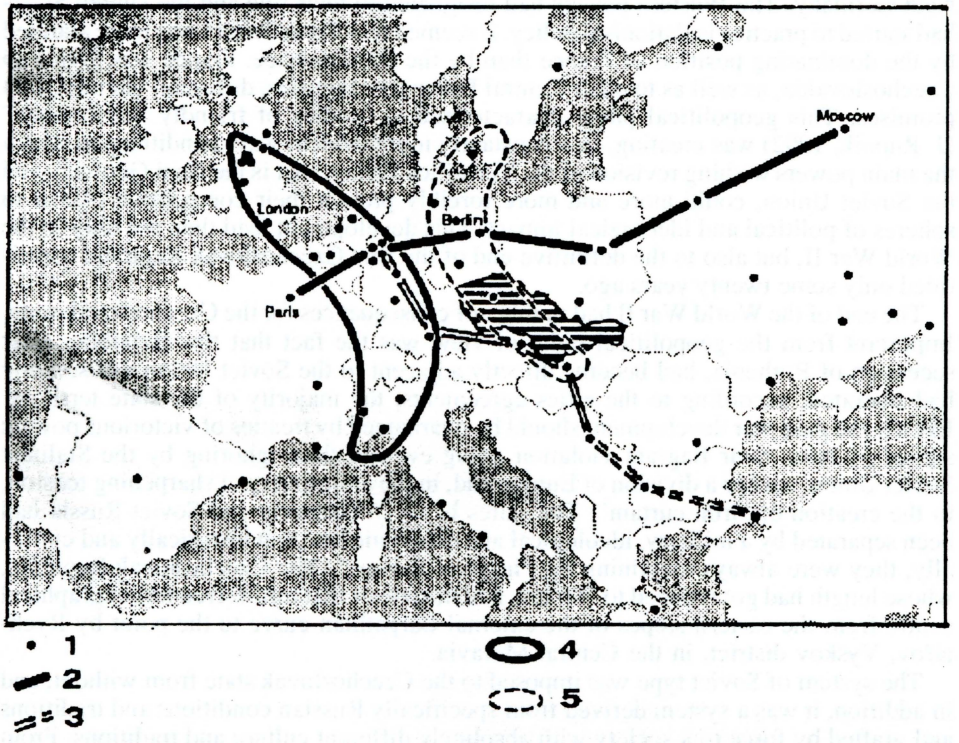

Fig. 2 - Main traits of the geopolitical and geoeconomic structure of Europe. 1 - agglomerations with more than one million of inhabitants, 2 - main geopolitical axis, 3 - secondary geopolitical axis, 4 - main geoeconomic axis, 5 - possible secondary geoeconomic axis. (P. Dostál, M. Hampl, 1992.)

ning to crystallize. The Central-European states are becoming at the end of century a sort of geopolitical laboratory, where parallel dying away of both concurrent alliances may be observed.

Disintegration of the Czechoslovak federation (January 1, 1993), which is a sensitive part of today's European geopolitical motion and agitation, had returned the Czech state on the political card of Europe. Debates and controversies about causes and consequences of this disintegration will undoubtedly continue. It can be considered as paradoxal that both successing states have the same aim, reunification, but within the European Union. The geographical centre of the Czech state moved westwards and is now situated in Central Bohemia, north-westwards from Ledeč nad Sázavou, in the cadaster of Čihošť. This quantitative index is showing the shift of the Republic towards West.

The territorial basis of the Czech Republic is even in the end of century in a region, considered as especially exposed from the point of view of European continent. Besides the geoeconomic and the geopolitical axes running from South-East England to Northern Italy and having a very ancient basis in the development of Europe, some authors (for instance Hampl, Dostál, 1992) mention another European development axis. Its course is orientated from Copenhagen via Berlin, Prague, Vienna and Budapest. This axis could become a good basis for reconstruction of a great part of Central and maybe also of Eastern Europe. Besides the settlement intensity accompanying this axis, its geopolitical and development prerequisites are intensified by the cultural and social level of population, as well as by its economic, cultural, religious and political tradition. The position of the Czech state on this development geoeconomic axis might be understood as an important geopolitical prerequisite for its future development.

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Shrnutí

GEOPOLITICKÝ VÝVOJ ČESKÉHO STÁTU

Český stát patří mezi nejstarší státní útvary v Evropě, na politické mapě kontinentu figuruje po celé tisíciletí. Je charakterizována územní základna, vytvořená těsným kontaktem mezi Českým masivem a Západními Karpatami. Významnou spojovací funkci mezi nimi má povodí Moravy. Tato územní základna má dobré možnosti komunikace s evropskými kulturami, náboženskými i hospodářskými centry.

Český stát byl svou geografickou polohou v celé své historii předmětem aktivního zájmu nejmocnějších evropských států. Jeho státní hranice přejímají z větší části hranice starších státních útvarů a jen z menší části byly vytvořeny po první světové válce. Východní hranice, která je rovněž historicky daná, je v detailech upřesňována v současné době.

Základní geopolitické charakteristiky ovlivňovaly vývoj českého státu v průběhu celých dějin. Neobyčejně dramaticky se však projevily ve 20. století. První moderní československý stát vznikl rozhodnutím velmocí v roce 1918. Skládal se ze tří nestejnorodých částí, z nichž jen západní část republiky žila po tisíciletí vlastním státním životem. Takto vzniklý stát neměl (jako jeho předchůdce) nadnárodní ideologii, která by národnostním menšinám umožnila identifikovat se v něm. Geopolitickým paradoxem Československa (projevil se opět výrazně po roce 1989) je časový posun mezi přijetím civilizace, politických idejí a institucí západu a realitou ekonomického a sociálního rozvoje i etnickou skladbou společnosti.

Po druhé světové válce byly státy mezi Německem a Ruskem odděleny vojenským, ideologickým i ekonomickým předělem, avšak historicky a kulturně zůstávaly stále "srdcem Evropy". Takto vzniklá evropská bipolarita dala v padesátileté periodě vyniknout základním rysům, které vyznačují vývoj českého státu od jeho nejstarších dějin. Jde o výraznou vývojovou dualitu mezi autoritářstvím a demokracií, mezi západem a východem. Druhým rysem je politická diskontinuita geopolitického vývoje, který byl vždy závislý na politické orientaci a zájmech velmocí ve středoevropské oblasti.

Státy střední Evropy, samozřejmě i Česká republika, se sice zbavily sovětské nadvlády, ale jsou zatím neschopné a nepřipravené připojit se k Evropské unii. V tomto procesu mezi snahou a možnostmi k integraci začíná krystalizovat nová geopolitická poloha českého státu.

Obr. 1 - Národnostní mapa střední Evropy na základě jazykového principu (stav v r. 1938). a - státní hranice, b - jazykové hranice, c - západní hranice nejzazšího proniknutí Slovanů. Jazykově-národnostní oblasti: 1 - německá, 2 - nizozemská, 3 - dánská, 4 - švédská, 5 - česká, 6 - slovenská, 7 - horno- a dolnolužická, 8 - polská, 9 - ukrajinská, 10 - běloruská, 11 - slovinská, 12 - chorvatská, 13 - srbská, 14 - francouzská, 15 - italská, 16 - rétorománská, 17 - litevská, 18 - maďarská. (Podle V. Krále, 1994.)

Obr. 2 - Hlavní rysy geopolitické a geoekonomické struktury Evropy. 1 - milionové aglomerace, 2 - hlavní geopolitická osa, 3 - vedlejší geopolitická osa, 4 - hlavní geoekonomická osa, 5 - potenciální sekundární geoekonomická osa. (P. Dostál, M. Hampl, 1992.)

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LEOŠ JELEČEK

ECONOMIC-POLITICAL DEVELOPMENT AND ENVIRONMENTAL CHANGES IN FORMER CZECHOSLOVAKIA 1948-1989

L. Jeleček: *Economic-Political Development and Environmental Changes in Former Czechoslovakia 1948-1989.* - Sborník ČGS, 99, 2, pp. 79 - 92 (1994). - This paper outlines the recent state of environment in former Czechoslovakia on the background of some historico-geographical features. Special attention is devoted to the period 1948-1989. Main trends in unfavorable environmental changes, their political, social, and economic causes, connections and consequences are discussed. Some possible solution of the recent environmental situation are indicated.
KEY WORDS: Czechoslovakia - environmental changes - period 1948-1989.

1. Introduction

One of the most polluted area in Europe covers north-western part of the Czech Republic, former East Germany, and southern Poland - see figure No. 1. Former Czechoslovakia was the largest producer of nitrogen oxides in relation to GNP in the world. As regards sulphur dioxide, in 1988 it occupied second place after East Germany (State of the World, p. 96). Measured by total amount of sulphur dioxide emissions, Czechoslovakia occupied the 6th place. Out of Western European countries, only Great Britain and Spain - with much larger economic bases - were "more ahead" (State of the Environment...). Deep concern with environmental issues was among motivations which led to substantial changes of the social-political system in Central Europe - and to the breakup of Communism in the former Soviet Block.

In this article, which is based on previously published papers (Jeleček 1988, 1993), I will attempt to describe the recent state of environment in Czechoslovakia, especially in the Czech Republic, and to indicate some causes of its unfavorable development.

Table 1
Main geographical features of Czechoslovakia (1989)

Country	Area km²	Popul. (mil.)	Popul. density (inhab./km²)	% of total territ. AL	ARL	F
Czechoslovakia	127,900	15.6	122	52.7	37.1	36.1
Czech Republic	78,864	10.4	132	54.5	41.0	33.3
Slovak Republic	49,036	5.3	108	50.0	30.8	40.5

Source: Statistická ročenka ČSFR 1992
Abbrevations: AL = agricultural land; ARL = arable land; F = forests

On January 1, 1993, Czechoslovakia - after almost 75 years of existence - was divided to two independent states: Czech Republic (often abbreviated as "CR", or referred to as

"Czech Lands", especially in historical context) and Slovak Republic ("SR", or "Slovakia"). I will examine the territory of Czechoslovakia on whole: this state existed until 1992 as one political entity and its territory still creates a specific unit due to common history of both parts. A short historical introduction is essential; without knowledge of this history, contemporary situation can not be thoroughly explained and it would be more difficult to forecast future trends.

2. Some Historico-Geographical Features of the Development of Czechoslovakia

Since the beginning of Industrial Revolution in the first half of the 19th century substantial changes of landscape and environment have been caused by the processes of industrialization, urbanization and - as regards agricultural regions - also by agricultural revolution. New territorial distribution of industry, population, and transport connections emerged during the second half of the 19th century, together with creation of basic features of industrial regions and productional agricultural regions. Czech Lands ranked among the most industrialized part of the Hapsburg Monarchy.

These basic features were partly changed due to the new geopolitical and geoeconomic position of Czechoslovakia between 1918 and 1938, especially in relation to the breakup of the Hapsburg Monarchy and its large and custom-free markets. The role of heavy industry was much emphasized and industrialization of Slovakia began. Large-scale extraction of black coal (with major deposits being in northern Moravia) and especially of brown coal of relatively poor quality typified that period. This coal has low fuel efficiency (about 12.5 MJ per kg) and quite a high content of sulphure (on average 1.5 to 2.35 %, but in some localities as much as 8-11% of sulphur). Rich deposits of this coal are found mostly in north-western Bohemia, at the foot of the Ore Mountains (Krušné hory).

In the beginning of the period of industrialization most of industry was concentrated in northern Bohemia, close to mountain ranges containing rich sources of water energy and timber. From the environmental point of view it is important that new power plants were located (and old plants reconstructed and extended) in early industrial regions together with the heavy industry. Czechoslovak economy began to be much dependent on the coal industry; on the other hand, light industry gradually lost its former importance. Iron and steel metallurgy, heavy engineering and chemical industry became leading branches. This shift towards heavy industry was accelerated in 1920s and 1930s under the threat of Nazi Germany. A lot of new investments (mostly military production) were geared to central Slovakia, which was originally much an agricultural country.

After 1948, the large shift of economic structure towards heavy industry became more pronounced and led to a fast and essential restructuring of the entire economy with deep social, economic and environmental consequences. The economic structure was thoroughly transformed in 1950s and 1960s. High demand of natural resources, raw materials and energy became the most typical features. It was necessary to import many raw materials, mainly from the Soviet Union. The above mentioned character of Czechoslovak economy was also affected by a relatively low degree of technological development (caused, among others, also by the existence of the "Iron Curtain"), and enhanced by the high specific consumption of material and energy per one unit of production and by lower quality of products. These circumstances have contributed significantly to increased environmental deterioration, especially in 1970s.

Table 2
Development of Czechoslovak economy - basic indicators 1937 (1950) - 1989 (1937 or 1950 = 100)

Indicator	1937	1950	1960	1970	1980	1989
Population	117	100	111	116	124	125
Increase of social product [1])	-	100	212	351	558	651
Productional consumption (PC)	-	100	217	383	610	709
Share of PC on social prod.	-	47	53	57	61	63
Industrial production	100	142	402	719	1249	1551
	-	100	282	505	877	1089
Manufacture of:						
means of production	100	146	477	888	1598	2001
	-	100	328	618	1096	1400
consumer goods	100	140	328	552	901	1113
	-	100	234	393	642	804
Increase of output						
energy	-	100	289	577	981	1227
fuels	-	100	222	282	481	453
black metallurgy	-	100	317	515	764	828
engineering and metal ind.	-	100	457	973	2013	2893
chemical,rubber,asbest ind.	-	100	424	1129	2400	3002
glass,china,ceram.ind.	-	100	234	448	796	1050
ready made cloths ind.	-	100	212	342	523	639
textile industry	-	100	191	281	445	531
foodstuff industry	-	100	180	253	364	414
Gross agricultural production	100	85	96	117	143	166
	-	100	113	138	169	196
Agricultural land	100	97	94	92	88	87
	-	100	97	92	91	90
Arable land	100	90	92	89	88	87
	-	100	101	98	94	93
Fertiliser use per hectar	100	215	521	1392	2005	1724
	-	100	242	647	931	801
Logging in total	100	118	119	146	185	170
	-	100	101	124	157	144

[1]) social product approximately equals GNP
Source: Statistická ročenka...1991, p. 34-39.

Table No 2 shows, for instance, the high share of productional consumption in social product. Important differences between the rapid growth of output of means of production and the production of consumer goods, between the sharp increase of energy output and metallurgy on the one side and much slower growth of textile, foodstuff, and glass industries on the other side are clerly revealed, too.

3. Recent State of Environment and Major Trends in between 1948 - 1989

It is difficult to describe basic trends in environmental changes during the Communist era in Czechoslovakia due to the lack of long-term data. Some information was published in English (see references). It was almost impossible to collect and examine reliable long-term data, since many pollutants were not recorded in a systematic way and in many cases there are no available data at all.

Environmental deterioration in Czechoslovakia has many different faces. The most important features are listed as follows:

- airborne pollution, acid rains and forest degradation;
- pollution of rivers and groundwater pollution and man-induced changes of the natural water circulation;
- pollution of agricultural land (mainly arable land) and consequent degradation; soil erosion;
- biodiversity threatening and man-induced changes of bio-geochemical circulation;
- irreversible losses of land due to mining, construction and waste disposal;
- (last, but not least) negative impacts on the health of population.

3.1. Air Pollution

Air pollution has become the greatest environmental issue, especially in the Czech Republic. Many related problems are derived from this type of pollution. International comparison gives a comprehensive picture. The sulphur dioxide emissions have decreased in the course of 1980s in almost all European countries. In western countries, the average decrease in between 1980-1988 was 50 %; in Czechoslovakia, however, only 9.7 %. Sulphuric emissions have in the same period increased only in former East Germany and Poland (23.3 % and 2.0 % respectively).

Table 3
Specific emissions of SO_2 and NO_x in selected countries, period 1980-1987 (in tons/km²)

Country	SO_2 1980	SO_2 1987	Index 1987/1980	NO_x 1980	NO_x 1987	Index 1987/1980
Czechoslovakia	24.2	22.7	94	9.4	8.8 [1]	94
W. Germany	12.9	8.2	64	12.5	11.7	94
E. Germany	46.3	46.3	100	-	8.8 [2]	-
Poland	13.1	14.5	111	-	4.8 [3]	-
Hungary	17.6	15.3	87	-	3.2 [2]	-
Austria	4.2	1.8	43	2.6	2.6	100
Belgium	25.8	15.7	61	13.6	12.4	91
U.K.	19.1	15.0	79	7.8	7.5	96
U.S.A.	2.5	2.2	88	2.2	2.1 [1]	95

1 = 1983 data; 2 = 1986 data; 3 = unofficial data
Source: National Report..., p. 86.

Most of air pollution in Czechoslovakia was until the end of 1940s confined to mining and industrial regions. Since 1950s, however, more and more areas became affected. All forms of pollution showed steady increase until mid 1980s. Only relatively recently there has been observed some improvements, as indicated in table No. 4. First, the long-term increase of airborne pollutants was primarilly caused by extraordinarilly high level of SO_2 emissions which belong among the most poisonous pollutants. There has been a sharp increase of sulphuric emissions until the end of 1960s. The total amount of SO_2 increased in the period 1950-1985 from 900 to 2,783 thousand tons (in 1950-1970 by 1,550 thousand tons, 1970-1985 by only ca 330 thousand tons) - see table No 4. In the year 1989 the total amount of SO_2 emissions was slightly lower, i. e. 2,563 thous. tons. (National Report..., p.84).

Milder winters, industrial stagnation and governmental environmental schemes contributed to a slow decrease of some of the above mentioned features. This tendency continued after 1989 due to decrease of industrial production approximately by 25 % within the period 1989 - 1992, which resulted in first desirable structural changes of Czechoslovak economy. In between 1989 and 1992 the coal extraction decreased by ca 25 % (only 19.5 mil. tons of black coal and 68 mil. tons of brown coal was mined).

Table No. 4 shows the recent positive environmental development and much better environmental situation in Slovak Republic.

Table 4
Specific emissions of main pollutants in Czechoslovakia (tons/km^2) in period 1985-1989 (1991)

Year	Pollutant				
	Dust	SO_2	NO_x	CO	C_xH_x
			Czechoslovakia		
1985	10.7	21.8	7.8	9.7	1.5
1988	9.0	20.9	8.2	8.5	1.6
1990	7.3	19.1	7.7	10.0	2.4
			Czech Republic		
1985	12.9	27.4	10.1	11.4	1.7
1987	12.1	27.4	10.4	9.4	1.8
1989	8.5	25.2	11.7	11.2	2.9
1991	7.5	22.5	9.2	14.0	2.9
			Slovak Republic		
1985	7.3	12.7	4.0	6.9	1.2
1987	7.1	12.4	3.9	7.0	1.3
1989	6.5	11.5	4.1	11.1	1.4

Source: National Report, p. 84; Životní prostředí ..., p. 88 (data for CR in 1991).

Among the most important sources of SO_2 emissions are power plants and heating stations, which mostly burn low-quality brown coal and oil, both with high content of sulphur. These sources account for 75-80 % of SO_2. Considerable pollution comes from local heating, which affects mostly historical town centers, family housing districts and villages (7 %). Technological processes (11 %) and exhaust gases from vehicles (3 %) belong also to important sources of pollution (National Report...).

Some positive environmental trends, which occurred in the second half of 1980s in Czechoslovakia, resulted from lower consumption of coal rather than from desulphurization schemes. Originally there was no desulphurization equipment in Czechoslovak plants, in the time being, some is being introduced. Such equipment is quite costly, accounting for 1/3 - 1/2 of the total price of a power plant, and reduces significantly only sulphuric emissions. In most industrial processes, however, desulphurization of waste gases is insufficient. Output of sulphuric emissions reaches in industrial regions and in some cities and towns extremely high levels. In the year 1990 this was 109.8 tons/km^2 in the North Bohemian Region, 16.9 in North Moravian Region, 84.8 tons/km^2 in Prague and 17.8 in Central Bohemian Region. In South Bohemia region the pollution reached only 5.5 tons/km^2. (Environmental Year-Book...).

Also in the case of air pollution from NO_x, the highest levels are found in the North Bohemian Region (41 ton/km^2 annually) and in Prague (79.3). These areas - together with the Ostrava region, which is located close to the Polish industrial region Katowice - are extremely deteriorated. These regions belong among economically most important Czechoslovak districts already since the early phase of industrialization.

What generates important problems in industrial and urban areas is widespread smog. Unfavourable landscape morphology sometimes greatly contributes to the presence of smog, too. In some parts of Northern Bohemia, for instance, and in the Prague Basin (intersected by the deep valley of Vltava River), the daily concentrations of SO_2 exceeded during January 1982 and February 1987 many times the hygienic limits. In the north Bohemian town Chomutov sulphuric concentrations exceed maximal limits on average 120 days a year.

The territory of Slovakia is affected by air pollution much less than the Czech Republic, since there are only few coal-fired plants. In 1989, Slovakia produced approximately 27 % of all Czechoslovak electricity. Nevertheless, high concentrations of harmful substances were observed, too, particularly in deep and narrow valleys and in basins where a substantial part of population - and industry - are concentrated.

Emissions of solid materials, particularly fly ash and aerosols, increased from 800,000 tons in 1950 to 1.372 million in 1985. This amount then decreased to 991,000 tons (1989). Czechoslovakia produced about 7,000 tons of chlorinated fluorocarbons every year. With the generated amount of CO_2 - 60 million tons per year - the Czechoslovakia's share on the total volume of global emissions was about 1.1 %, while the share on the world population was only 0.25 %.

The high degree of atmospheric pollution was considerably increased by emissions transferred from neighbouring countries, particularly from the former East Germany - see figure No. 1. In Saxony, on the northern slopes of the Ore Mountains (Krušné hory), there is an extensive brown-coal region which has similar character as the North Bohemian Coal Basin. East German brown coal production was in 1980s two times higher (about 200 million tons), with significantly high air pollution - see table No. 3. Similarly dirty industrial region in Polish part of Silesia is separated from the Czech territory only by a low mountain range. 52 % of sulphuric emissions in Giant Mountains (Krkonoše) originated either in Poland or in Germany. However, Czechoslovakia was in the same time a significant exporter of industrial emissions; this "export" (transferred by wind and water) was about 20-60 % higher than the "import". Only East Germany and Hungary "exported" more sulphur to Czechoslovakia than they received.

3.2. Surface Water and Groundwater

Water consumption in Czechoslovakia was extremely high in comparison with another countries. Average specific water consumption in the Czech Republic in the year 1970 was 227 litres/person/day, while in Bavaria only 207 litres. Until 1987 this figure increased up to 290 litres in the Czech Republic; in the same period in Bavaria there was a decrease to 200 litres. The total water consumption in the Czech Republic increased by 47 % in between 1960-1985, in the case of groundwater it increased about five times during the last 40 years. With respect to the location of Czech Republic on main European watershed, these data are warning.

Serious water pollution on the Czech territory is primarilly caused by leaks from plants, agricultural cooperatives (mostly livestock farming), and from human settlements. The great output of waste water is only partially compensated by the construction of sewage plants; so far, even some bigger towns are not equipped with these facilities. Only ca 40 % of waste water in Czechoslovakia was purified in a satisfactory way. In Prague - city with population of 1.25 million - out of more than 600 million litres of waste water which goes to the Vltava River every day, only 65 % is thoroughly purified, and 11 % of waste water is not cleaned at all (Levy 1992, p.14). Important sources of waste water exist also in agriculture: manure, artificial fertilisers, pesticides and soil particles from the land surface. These add approximately 50 % to water contamination. Their impact has increased by about 25 % within the last 10-15 years.

Water quality deteriorated significantly during the last 50 years. In 1940, for instance, 87 % of the total length of the main Czech river Elbe belonged to the water quality class I and II, while in 1980 the same water quality was found in only 3 % of the river course. Hence, out of all examined Czech rivers (7,000 km), only 17 % of the total length was in the best category (I), and 26 % in the worst category (IV). There are considerable problems with the quality of drinking water, both from surface and ground sources. The

average content of nitrates in groundwater has increased between 1960 and 1980 approximately four times in urban areas and more than two times in the countryside.

Giant water reservoirs have often negative impacts on local and regional scale and affect ecological systems. The cascade of three dams Nové Mlýny in south Moravia which caused much damage in valuable mead forests is a typical example. In Slovakia, the water reservoir Gabčíkovo (with important hydroenergetic complex) threatens extensive area with pure groundwater.

3.3. Forests

The extent of forests in Czechoslovakia has increased since 1947 by 8 %, mainly due to afforestation. Both economic and political reasons played role (decrease of agriculture land and depopulation in previously German-settled areas). The most serious environmental problems are:

1) decrease of diversity of species;
2) acidification and poisoning of forests soils and forest damage.

Most of Czech forests are typical secondary forests which have been continuously planted since the 19th century. About 80 % of forests in the Czech Republic are coniferous forests; in Slovakia only 42 %. The share of spruce (which was already in the 19th century considered the economically most important tree) rose from 27 % (1950) to 50 % in the period in 1980s. Such forests are quite vulnerable to acid rain, storms and insecticides. The pH level should reach at least 4.2, but in some mountainous areas (e.g. Ore Mountains, Jizera Mountains, etc.) it is only 2.2. Forest soils in these areas must be supplied with $CaCO_3$, which is mostly done from planes. In 1982, 52.1 % of Czechoslovak forests was significantly damaged (in the Czech Republic 55.7 % and in Slovakia 49 %; Kopačka 1988, p. 338). According to a survey carried out by the UN Economic Commission for Europe in 1988 as much as 70.5 % of Czechoslovak forests were damaged, and of these 5.4 % were already dead (State of the Environment, p. 36). Out of European countries, the share of affected forests was higher only in Poland (79%). Forest deterioration is at the lowest level in France (21%), probably because of the high share of nuclear energy on the total energy output - see table No. 8. On the contrary, Poland has no nuclear power plants at all.

Forests are also seriously endangered by various insects, because trees became due to the pollution weaker and less resistant. In some regions forests are in disasterous conditions: Jizera Mountains are the most striking example. So called "mountain grassland" without any green trees is widely found there.

The state of forests has been worsened by massive-scale logging. In 1950 the output was 12.4 million m^3 of timber and in 1985 it reached maximal level - 19.7 million m^3 (increase by 230 % in the Czech Republic and by 73 % in Slovakia - see table No. 2). This timber was partly exported abroad, even to countries with rich timber resources.

Eight Nationals parks existed in Czechoslovakia in 1991, with a total area of 3,108 km^2. Ironically, the oldest National park in the Czech Republic - Giant Mountains (Krkonoše) - is now much damaged by atmospheric pollution and forests in altitudes over 800 m are practically destroyed.

3.4. Other Environmental Changes (Selection)

Due to limited space only selected environmental problems will be discussed in this chapter. Collectivization of agriculture brought the inevitable integration of holdings, reduced balks and extent of field roads. In 1948 there had been about 1.5 million of farms in Czechoslovakia, with average size 5-10 hectares. In 1986 there were only

1,644 agricultural cooperatives with average size 2, 500 hectares and 253 state farms (located mainly in border regions with infertile soils) with average size 6,000 hectares (State of the Environment).

Introducing of large-scale agricultural machinery led to creation of very large fields which are in many regions neither ecologically, nor economically advantageous. The average size of land plots in Czechoslovakia was only 0.23 hectares in 1948. Until 1979 the same figure rose to approximately 10-15 ha, and in plains and fertile regions existed 100-200 hectares fields. Such giant units often did not correspond with geomorphological character of the Czech landscape and were ecologically unfavorable.

The abolishment of balks considerably decreased their positive function in the landscape, and also increased the threat of erosion. Economic losses through erosion were on the entire Czechoslovak area estimated at 2-3 billions Crowns per year (estimate from early 1980s). The annual soil removal reached 2 millions tons.

In 1989 the average fertiliser use per 1 hectare of agricultural land was in Czechoslovakia 235.5 kg, in West Germany 257.7 kg, in East Germany 292.0 kg, in Poland 192.6 kg, in Hungary 225.2 kg, and in Austria 91.5 kg. In Belgium this amount was 275.9 kg, in the Netherlands 300.7 kg, in France 193.5 kg, in U.K.130.3 kg, and in the U.S.A. only 41.2 kg (Statistická ročenka, p. 683).

Open-cast mining significantly altered the physical appearance of landscape. The bottom of one of open mines near the town Most is below the sea level; an artificial cryptodepression was created. Most coal-fired plants were also located in northern Bohemia and the same was with heavy machinery and chemical plants. A "moon-like landscape" is found in many places.

Almost all residential areas face waste disposal problems. Technology of recycling or reusing of waste materials is not enough developed. Out of the total volume of solid industrial waste only about 38 % is re-used, the rest being stored at dumps. The share of recycled materials is quite low, especially in the case of Czechoslovakia, which had very poor mineral resources.

4. Main Causes of Environment Deterioration

The degree of environmental deterioration in former Czechoslovakia, especially in the Czech republic, is really threatening.

Main reasons, which led to current environmental situation, may be indicated as follows:

1) Former political system;
2) Historical and geographical heritage;
3) Internal economical relations (modes of production).

4.1. Political System

Communist system could not survive due to two basic facts: it did not allow political plurality (similarly to nature, which needs biodiversity to survive) and was not economy viable.

Communist and capitalist systems differed not only in attitude towards ownership and in economic relations, but also in the way of GNP distribution and consumption. Political strategies aimed to maintaining of "social peace", to provide all people with certain income, the policy of zero unemployment (everybody was legally forced to work), absolutely free of charge health care, welfare system which compensated for the lack of some civil rights and liberties - all this was a very expensive policy. The existence of non-efficient plants, factories, agricultural enterprises and cooperatives, which

produced non-competitive goods, did not generate any structural changes in industry and the whole economy. This situation required more financial subsidies than it was economically viable. Huge financial sources were extracted from GNP and therefore could not be invested into much needed technological development. It was a short-sighted strategy. In short perspective, the system worked. In longer perspective, however, the final result was negative. In comparison with developed countries, however, the "wealth of nation" or GNP was relatively decreasing.

Capitalist system in developed countries underwent a very different development. Only economically profitable enterprises could survive under the capitalist system (at the cost of unemployment, and sometimes weaker welfare system). A larger amount of profit could have been invested into technological improvements, structural changes, etc. In the longer perspective this has resulted into the increase of GNP and "wealth of nation". Capitalist system produces more profit, part of which may be used also for ecological investments.

The recent state of environment in the Czech Republic does not correspond with the promises and proclamations made by the Communist régime. Let us now examine some other reasons which led to the current state.

4.2. Historical and Economical Reasons

Until 1948 Czechoslovakia consisted of two parts. Each of them had undergone a very different development. The western part, which became recently the independent

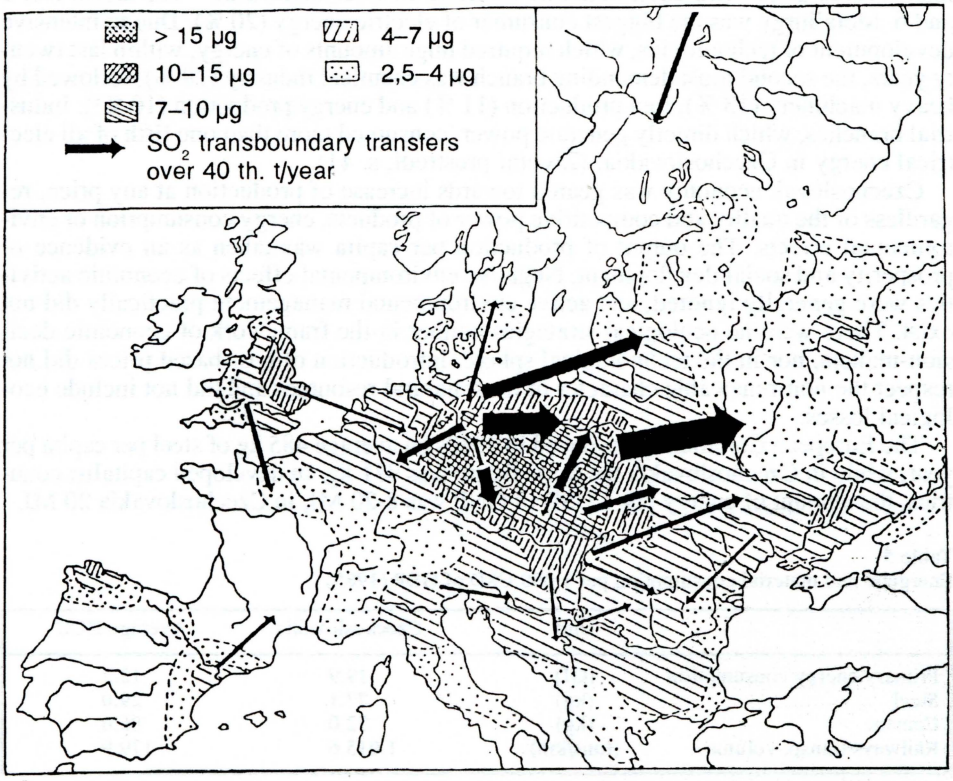

Fig. 1 – Air pollution in Europe 1988. Estimation of average annual concentration of SO_2 in $mg.m^{-3}$. (From Štulc, M., Götz, A., 1994: Krajina a životní prostředí pohledem geografie. Praha, ČEÚ.)

Czech Republic, was relatively developed; the eastern part, Slovakia, was underdeveloped. Since 1945, Czechoslovak governments aimed to fully industrialize Slovakia and to reduce economic and social inequalities. This aim was fulfilled. Unfortunately, industrialization - which involved transformation of agricultural countries and regions into industrialized ones - took in Czechoslovakia a special form of so called "socialist industrialization." This was based on the nationalization of private ownership, which was largely transferred into socialist or "collective" enterprises. Concepts of central planning were introduced in all economic sectors; stress was put on the development of heavy industry.

This form of industrialization was connected with very intensive exploitation of all available human and natural sources and increased the self-sufficiency in the field of energy supply. Power supply was historically based on exploitation of rich domestic coal deposits. Most investments were allocated to heavy industry, which generated a rapid increase of resource demand, high specific consumption per unit of production and technological backwardness behind developed countries. This basic structure was much influenced by exploitation of energy sources, which was characterized by a high share of low quality brown coal, which was - and still is - burned in power plants. Productional consumption, i.e. the part of GNP re-invested into manufacturing of means of production, multiplied 7 times between 1950 and 1989 and its share on the social product (social product approximately equals GDP) output increased from 47 % to 63 % (see Table 2). Thus, almost two thirds of the total production was consumed by itself.

High consumption of electrical energy and the ways of its production belong among main causes of the bad environmental situation in Czechoslovakia - see tables No. 5 and 6. Metallurgy was the biggest consumer of electric energy (20 %). Due to intensive development of technologies, which required huge amounts of energy, within last twenty years, the second most demanding branch was chemical industry (18 %), followed by heavy machinery (13 %), fuel production (11 %) and energy production (10 %!). Industrial branches, which directly generate power, consumed more than one fifth of all electrical energy in Czechoslovakia. (Životní prostředí, s. 41).

Czechoslovak economy was geared towards increase of production at any price, regardless of the quality and competitive power of products, energy consumption or environmental effects. The output of production per capita was taken as an evidence of prosperity and social development. Negative environmental effects of economic activities were generally ignored, and active environmental management practically did not exist. There were no ecological strategies neither in the framework of economic decision-makers, nor in the technological sphere. Introduction of cost-based prices did not respect the non-renewable character of most natural resources and did not include ecological losses.

The European Community produced in 1980s on average 485 kg of steel per capita per year, while in Czechoslovakia the same figure was 971 kg. In developed capitalist countries, the amount of energy per 1 USD of GNP was 8-20 MJ, in Czechoslovakia 20 MJ.

Table 5
Energetic and material consumption per 1,000 USD of GDP (1985)

	Unit	Czechoslovakia	Average DCC
Primary energy consumption	(GJ)	19.9	12.2
Steel	(kg)	77.1	29.0
Cement	(kg)	72.0	86.0
Railways transp. volume	(tons/km)	1,015.6	179.9

Source: Životní prostředí České republiky. Vývoj..., p.117. DCC = developed comparable countries: Austria, Switzerland, Belgium, the Netherlands, Finland, Denmark, Norway, Sweden.

Expensive way of economic development and high levels of energy production are clearly demonstrated by the following comparison:

Table 6
Output of coal and electrical energy per capita (1989)

Country	Coal [1](kg)	Electricity (kWh)
Czechoslovakia	7,630	5,704
West Germany	3,025	7,112
East Germany	18,103	5,472
Austria	294	6,584
Poland	6,590	3,843
Hungary	1,893	2,797
the Netherlands	-	4,926
Belgium	190	6,796
France	204	7,277
U.K.	1,753	5,472
U.S.A.	3,556	11,888

Source: Statistická ročenka...1991, p.661-3
[1] = black and brown coal

Since the starting phase of the Industrial Revolution, coal extraction gradually adopted a decisive role and belonged among relatively progressive and stabilizing economical indicators until 1970s. In 1870, the output of brown coal was only 1.8 mil. tons, in 1900 17.6 mil. tons. About the same amount was extracted in 1937. As regards black coal, figures are as follows: 3.9 mil. tons in 1870, 9.7 mil. t. in 1900, and 16.7 mil. t. in 1937. Coal extraction has much increased after 1945. Since 1955, the output of brown coal rose from 40.8 million tons to 90.9 million tons (1989). 96% of this amount was extracted on the territory of the Czech Republic. The output of black coal increased in between 1955-1989 from 20.6 to 25.1 million tons and was confined only to the Czech territory. (Statistická ročenka).

Under the above mentioned economic conditions it was difficult to start reasonable environmental programmes or ecological investments aimed at technological and environmental improvements. Economic losses due to environmental deterioration were estimated to reach 5-7 % of GNP during 1980s, i.e. approximately 28-39 billions of Czech Crowns per year. Some damages, however, can not be valued only in terms of money. The state budget in the period 1986-1990 allocated on average only 3.5 mld. Crowns per year to ecological investments. This sum covered just 9-12 % of losses in the period 1985-1990. (Kopačka 1988, p. 331). Small increase of ecological investments in the second half of the 1980s was connected with the governmental Environmental Programme, which was approved in 1985. Still, such increase was insufficient.

Table 7
Structural development of primary energy sources in Czechoslovakia 1965-1989 (in %)

	1965	1975	1980	1989
Coal	82.9	66.4	65.7	57.1
Natural gas	1.5	5.5	6.0	13.0
Crude oil	11.7	24.3	25.1	20.2
Other	3.9	3.8	3.2	9.7
TOTAL	100.0	100.0	100.0	100.0

Source: Životní prostředí..., p. 120.

The periodization of economic development in Czechoslovakia in between 1948-1989 with respect to development of the ecological situation and to environmental protection can be characterized as follows:

Period 1948-1960: rapid extensive economic development based on large investments and restructuring of economy; first environmental problems emerged, but only limited action to solve them was taken.

Period 1960-1970: economic crisis 1962-1964, in the second half of 1960s a modest economical revival, attempt to introduce economic reforms in 1968. First signs of serious environmental degradation, yet still mostly of local extent. Large-scale water pollution. First, yet inconsistent attempts to solve environmental problems. First voluntary environmental organizations established.

Period 1971-1989: economic slow-down and exploitation of all available natural resources (mainly in 1970s). Extensive degradation of the environment. Efforts to maintain the achieved standard of living at the expense of environmental deterioration. In the second half of 1980s first legal attempts to solve environmental problems. Signs of modest improvements in selected fields (mainly due to decrease of coal extraction). Attempts to intensify economy, but technological improvements remained scarce (Compare similarly Životní prostředí, 9-10).

5. Conclusion: Possible Solutions

The share of environmentally oriented investments in Czech economy still remains low. There has been some recent increase: 1.47 % per year in the period 1971-1975 and about 2.0 % in between 1986-1990. In developed countries, however, the same figure varies within the range 5-10 %. It is very important to improve what has been spoilt; equally important is to increase the economic efficiency. Not only coal, but also other energetic sources such as natural gas and crude oil belong among non-renewable elements and their deposits are limited. The costly transformation of Czech energetic basis (reduction of coal-fired plants and increase of natural gas and crude oil) is not a long-term solution. A possible alternative might be the search for new sources of energy. A very small step has already been done by introducing of nuclear plants. Deposits of uranium ore, however, are limited, too. Can man rely on energy from thermonuclear fusion in future? And what about solar energy, which seems to be so promising and which has no limits? Technological improvements and economic restructuring should decrease energy demand, too. This could be an elegant solution - yet very expensive. The environmentally most sensitive energy is that energy, which has not been generated. Czech Republic and Slovakia have following possibilities how to improve their environmental situation:

1. to modernize technological processes in all branches of economy and to launch economic restructuring aimed at reduction of energy consumption; 2. to decrease the output of brown coal and power generation in coal-fired plants; 3. to replace coal-fired plants with nuclear power plants (Temelín); in Slovakia it is essential to put into operation the Gabčíkovo hydroenergetic plant and the nuclear power plant Mochovce. 4. to support railway transport instead of road transport, including the complete electrification of railway tracks.

The strongest objections against the Temelín nuclear plant come from Austria, which produces about two thirds of electrical energy in hydroenergetic plants, while Czech Republic much relies on thermal (mostly coal-fired) plants - see table No. 8. Which country is more polluted? On the other hand, the negative Hungarian attitude towards the Gabčíkovo-Nagymaros hydroenergetic system does not correspond with the high share of "dirty energy" generated in Hungary.

Table 8
The share of thermal, hydroenergetic, and nuclear power plants (measured by total capacity of turbines, in %) - 1989

Country	Plants		
	Thermal	Hydroenergetic	Nuclear
Czechoslovakia	68.6	14.2	16.2
West Germany	68.0	6.8	22.5
East Germany	78.2	7.3	7.3
Poland	89.7	6.2	-
Hungary	74.9	0.7	24.3
Austria	31.3	56.9	-
Belgium	46.6	9.1	35.7
the Netherlands	96.7	0.1	2.9
France	21.7	23.8	50.3
U.K. [1]	83.0	6.0	11.0
U.S.A.	71.9	13.2	14.3

Source: Statistická ročenka....1991, p. 662
[1] 1988

This article outlined some basic features. Much more remains to be done: changes in the legal system, more pronounced international cooperation, and ecological education in order to change the general system of values.

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Shrnutí

HOSPODÁŘSKO-POLITICKÝ VÝVOJ A ZMĚNY ŽIVOTNÍHO PROSTŘEDÍ ČESKOSLOVENSKA V LETECH 1948 - 1989

Článek nastiňuje na pozadí některých hlubších historicko-geografických kořenů vývoje Československa v období 1948 - 1989 (část 2) charakter současného stavu jeho životního prostředí, a to především v České republice (3). Charakterizuje hlavní trendy negativních změn životního prostředí (znečištění vzduchu, vodních zdrojů, stav lesů atd.) v jejich srovnání se středoevropskými a některými dalšími vyspělými státy. V dalším výkladu se autor snaží nalézt některé politické, sociální a především ekonomické příčiny tohoto vývoje (4). Mezi ně zařazuje jak systémové vady režimu, vládnoucího ve sledovaném období, které spočívaly v neexistenci diversity jeho politického systému, tak nevýkonné hospodářství, jehož rozvoj byl založen na extenzivním čerpání přírodních a společenských zdrojů. Příčiny nepříznivého stavu našeho životního prostředí nalézá také v širších ekonomických a politických souvislostech tzv. socialistické industrializace a její energetické náročnosti, i v neschopnosti a nemožnosti nastoupit cestu strukturálních přeměn ekonomiky a její "ekologizace". I v této části se vychází také z mezinárodního srovnání. V závěru 4. části je návrh periodizace "hospodářsko-ekologického" vývoje Československa a ochrany jeho životního prostředí. V poslední části jsou naznačena některá možná východiska z naší současné ekologické situace.

Obr. 1 - Průměrné roční koncentrace imisí SO_2 a jejich dálkové přenosy v Evropě (stav v r. 1988).

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ANTONÍN GÖTZ

REGIONAL DIFFERENCES IN TRANSFORMATION OF CZECH AGRICULTURE AFTER 1989

A. Götz: *Regional Differences in Transformation of Czech Agriculture after 1989.* – Sborník ČGS, 99, 2, pp. 93 – 100 (1994). – Two main traits characterize the Czech agriculture after 1989: decrease of agricultural production connected with the fact that a half of active population has left agriculture and then transformation of holder relations with view to property restitution to persons that lost lands and property in the years of collectivization. The article deals with regional differences in the process of both phenomena and tries to explain them.
KEY WORDS: transformation of Czech agriculture – development of agricultural production in the Czech Republic – privatization of the Czech agriculture.

1. Introduction

The year 1989 was a turning point which in the modern history has for the Czech agriculture by its importance no analogy since the time when serfdom has been abolished in the past century. Transformations are going on both in property relations and in agricultural production.

Up to 1989, the former Czechoslovakia was a country with the most socialist agriculture in Central Europe. In the Czech republic, state and cooperative farms worked on 3,166 thousand of hectares, that is 98.4 % of arable land (the total being 3,219 thousand hectares). In the same time, ploughing away of balks and further putting together of plots caused that the area of individual plots overpassed 1 sq. km which menaced the arable layer by erosion. Barns for cattle assembled some 200 heads in average.

Although crop and cattle yields went growing, they did not usually reach the level of developed countries. Besides traditionally exported products, a more important success was reached only in growing rape and in breeding poultry.

Up to the beginning of nineties, Czech farmers were stimulated by the state to produce more and more in all regions and that in spite of the fact that the former Czechoslovakia was self-sufficient in all basic aliments and agricultural products that can be produced in temperate zone, with the exception of sheep wool, sea fish and some components for fodder mixtures. The state planned large exportations to East Europe, mainly to the former Soviet Union. Czechoslovakia was loosing its positions in the traditional export commodities as hop, malt, beer, sugar, and sugar exportations, once very important, had practically ceased.

2. Agricultural productio[n]

The law protecting agricultural land was very strict and it was practically impossible to use agricultural, and especially arable land, for other than agricultural purposes. The state stimulated also farming under bad natural conditions (higher altitude, slopy plots, infertile soils, regions affected by emission of noxious substances, water protection re-

gions, etc.) by providing differential contributions. The state added, to the market production of agricultural enterprises, a bonus growing proportionally to the disfavourable conditions, that in the worst regions reached as much as 94 Kčs per 100 Kčs of market production, in Slovakia even 111 Kčs. If then farmers sold cereals for 100 thousand Kčs (all the cereals were bought by the state), they obtained in the regions with the worst conditions other 94 thousand Kčs from the state because of this differential bonus. Only these bonuses represented annually 8 milliards of subventions. The total annual subventions directed towards the agricultural and alimentary production reached before 1989 about 80 milliards of Kčs. In the same time, the rough agricultural production without subventions was in the whole Czechoslovakia about 120 milliards of Kčs. Although the agriculture was based on large scale production forms (collectivized farms of kolkhoz and sovkhoz type with 5,000 ha of agricultural lands in average), the productivity of labour and the rentability of production in the agriculture were relatively low. It was due to the fact that too many people were active in agriculture. Although "collectivization of production relations" was practiced in the fifties and many people left agriculture for industry, in the eighties, there were always to many people working in agriculture. They were many persons employed in the administrative bodies of cooperative and state farms (each of these collective farms had its "personal department" with agenda covering activities of each worker). Besides, a great number of active population worked in repair service of improductive machinery, in storage and processing of agricultural products, etc.

The Czech farmer feeded thus at the end of eighties some 19 inhabitants (100 in Britain and 97 in Belgium). At present, the number of people working in agriculture decreased to 300 thousand, that is a half of the number of five years ago, and a further reduction up to 250 thousand is planned during the three years to come. It means that one farmer would feed about 40 inhabitants. In the regional perspective, the decrease is adequate to the reduction of the agricultural production. The reduction of the number of farmers is the highest in the western border zone going from Tachov via Ore Mountains to Liberec in the North of Bohemia.In Moravia, the reduction of farming population was very slight, and that not only in lowlands, but also in the mountainous region on the border with Slovakia (the Beskids) where private farmers were most numerous even before 1989. Unfortunately, population active in agriculture is decreasing even in Czech lowlands (Elbe and Ohře Basins) where agriculture should be stabilized.

The transfer of farmers to others sectors should not cause depopulating of villages. The fact that 300 thousand farmers succeeded to find job outside agriculture is an agreable surprise. Former farmers represent only 9 % of unemployed, which witnesses of adaptibility and skill of rural population.

In the last years, agricultural production is constantly decreasing approximately by 7 % a year. In spite of that fact, the Czech agricultural production is excessive and every year there are surpluses of alimentary products that the exportations are not able to pass away, even when the exportations to Western Europe are growing every year.

A differentiation can be expected in the territorial organization of the Czech agriculture. The proper agricultural production will be concentrated, or eventually will increase, only in fertile and rentable regions. On the other side, extensifying of submontainous regions will continue. Farmers in these regions will be stimulated by a sum of 4,000 Kč for each hectare transferred from arable land to meadows and pastures if anyway grassland will be maintained on place for seven years. Heards of cattle bred for meat and not for milk production should pasture on grassland in mountainous regions. In Czech conditions, sheep breeding did not develop in a larger extent in mountains. Wool of races bred in the Czech Republic has a low quality and to be processed, it must be mixed with imported wool.

The attached map shows the decrease of agricultural production according to districts in the years 1989 - 1992. In this period, the agricultural production in the whole state got reduced by 22 % (index 1989 = 100) as shown by the following table.

Table 1: Agricultural production

Year	Gross agricultural production		Production per 1 ha of agricultural land (in Kč)	
	Total	Crop production	Total	Crop production
1980	99,448	38,231	21,867	8,851
1985	104,282	44,705	24,361	10,443
1989	108,633	44,964	25,537	10,506
1990	106,143	44,417	25,993	10,459
1991	96,683	43,072	22,845	10,177
1992	85,008	35,751	20,100	8,453
1993	84,297	38,046	19,682	8,883

Note: 1) The two first columns are given in millions of Kč
2) In constant prices of the year 1989

The map of development of agricultural production per 1 ha (determination of numeric interval was not possible, as the so-called constant prices were newly determined in that period) indicates that limitation of production does not develop regionally in the expected way. In higher altitudes, as it was already said, the production is supposed to decrease because of poor effectiveness of agricultural production after elimination of the mentioned "differential subventions". On the contrary, the production should stabilize in lowlands and in proximity of big agglomerations.

Up to now, the reality is nevertheless different and shows the lack of adaptability to the market demand. The production continues to fall down even in lowlands, as it is evident in the Central-Bohemian part of the Elbe Basin or in the southern part of Moravian lowland of Haná. Agricultural production continues to decrease also in the neighbourhood of the majority of big cities with the exception of Prague, where farming is

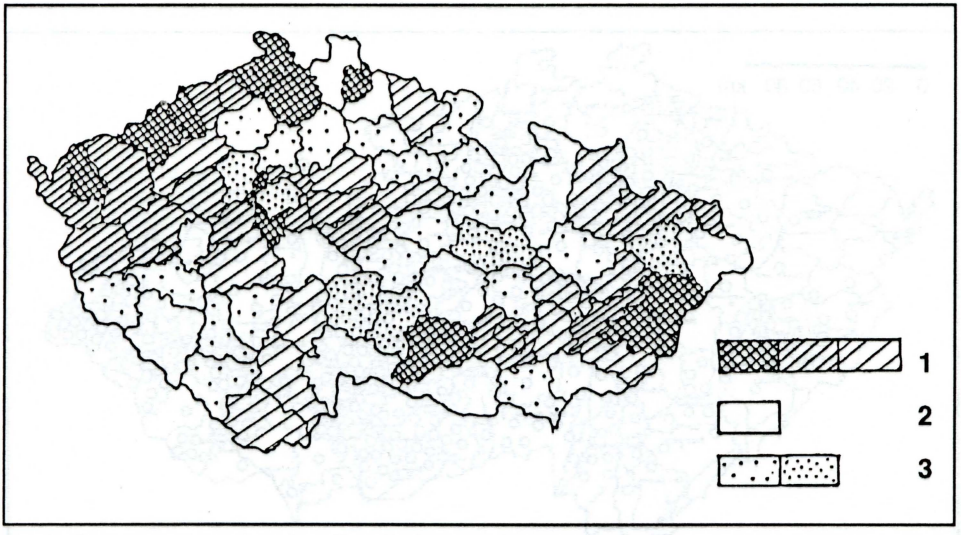

Fig. 1 - Development of agricultural production 1989-1992. 1 - decrease of production, 2 - stagnation, 3 - increase of production.

however only limited. But in densely populated Northern Bohemia, the agricultural production has fallen the most of the whole state territory even if this region is deficient and basic aliments must be imported.

As to the mountainous regions, the agricultural production has got reduced only in the Beskids, but not in the Krkonoše, the Šumava and the Jeseníky. The total regional image of three year development of agricultural production is confused, larger regions of the same trend cannot yet be determined.

Interesting is also a comparison of productivity of labour (1992) measured by the level of agricultural production per one permanent worker in agriculture. It was already said that it is low in comparison with other countries. It is nevertheless sensibly growing every year and it represents now approximately the double of that before 1989. It is the highest in Eastern Bohemia and in Haná Lowland, but low in Western Bohemia, where the farming population is not much numerous but where the agricultural production has decreased even more, disproportionally to the decrease of farming population.

As far as the production structure is concerned, crop production is supposed to develop and cattle breeding is likely to stagnate. Farming near towns was not sufficiently developed. Especially North Bohemian towns and the region of Ostrava are underdeveloped in that sense. In mountainous regions, the role of farming is not to produce but to safeguard cultural state of country landscape. Especially in protected regions, farmers have to protect meadows and pastures from timber flying in, from wetting, etc. The attached map number 5 shows differentiation of regions according to presupposed evolution of farming (development regions, stagnation regions and regions of agricultural production damping).

3. Social relations in agriculture

Before 1989, private farmers were only scarce. They farmed only 1.3 % of arable land. After forced collectivization in the fifties, private farmers were forced by different ways to tranfer their lands, machinery and buildings to state farms of sovkhoz type and to cooperatives of kolkhoz type.

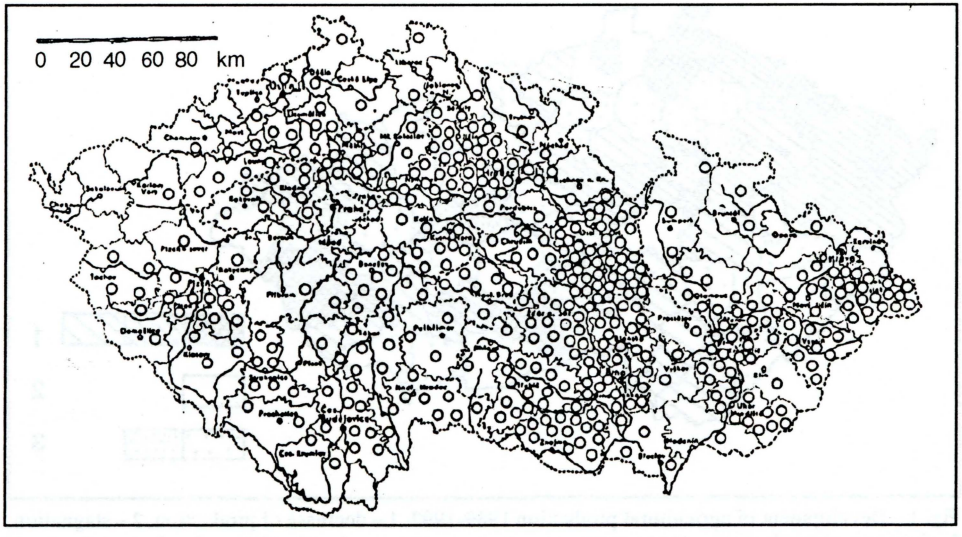

Fig. 2 - Private farming 1993. One dot = 100 private farmers (30.9.1993).

In such coooperatives, they were paid not according to introduced means and capital (soil, stables, cattle, machinery) but only for their work. The introduced capital ceased to be differentiated in relation to the initial holder. This most rigid collectivization of farming has no parallel in other cooperative forms of farming.

The total majority of private farmers worked in disadvantageous mountain regions of Slovakia and in North-Moravian mountains of Beskids where the population is, by its way of life, more tied to near Poland where collectivization was not practiced.

In the end of 1993, private farmers worked already on 17 % of agricultural land. The attached map shows the absolute number of private farmers. Regional differences in private farming are nevertheless considerable and oscillate, according to districts, from practically zero to 50 % part on agricultural land. They are more numerous in Bohemia than in Moravia which is due to a more rapid process of restitution (handing back of property to former holders). There is not much interest in private farming in hilly regions and surprisingly also in some lowlands in Moravian districts with a high fertility of soils (northern part of Haná and Dyje-Svratka Basin). No significant increase is to be expected, especially when the average size of private farms is very small. In the majority of districts, it does not reach 10 ha and only in the region of Břeclav (the most southern lowland Moravian district) it overpasses 30 ha. Responsibles of agriculture consider nevertheless that viable farms should have at least 50 ha of agricultural land.

It is probable that most frequently, land will be farmed by societies created by transformation by former cooperative farms of Soviet kolkhoz type. The majority of them have transformed into cooperatives of holders. Those cooperatives were constituted by tranfer of lands of persons to whom lands and other capital were restituted into transformed cooperatives. Today, this type of cooperatives farm 54 % of agricultural land.

Problematic is transformation of state farms of Soviet sovkhoz type. In border regions, they represent a great part (even 90 %) of soils, as under the former regime

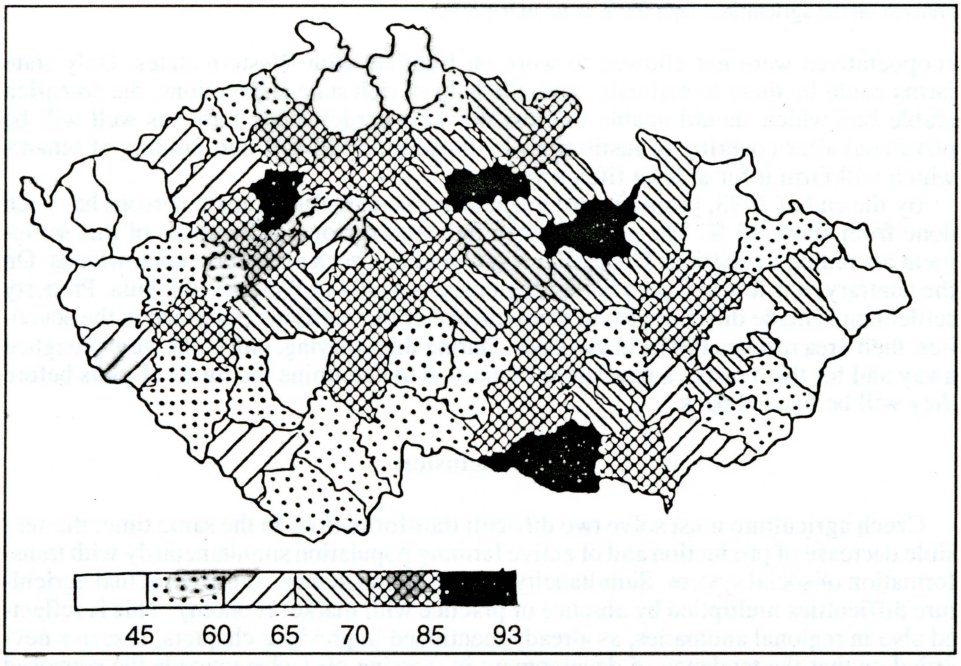

Fig. 3 – Restitution of agricultural land and property 1993. Share of persons legally entitled to regain property, to whom their property has been already passed from cooperatives (in % as to 30.9.1993).

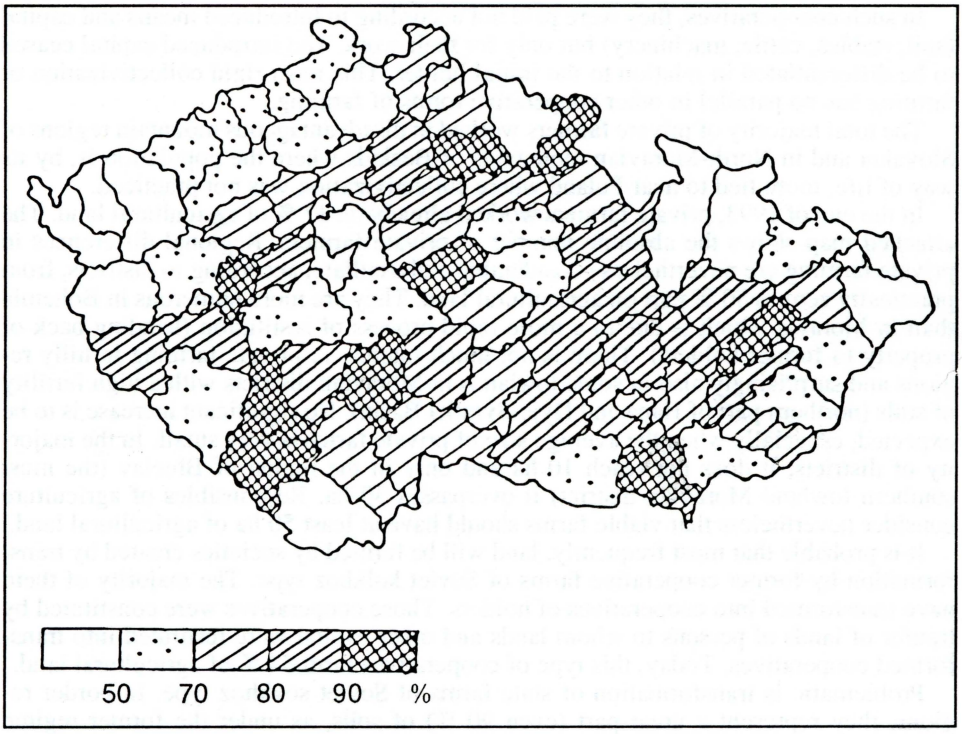

Fig. 4 - Transition of social relation 1993. Share of private farmers and transformed agricultural cooperatives on the agricultural land (in % as to 30.9.1993).

coopoeratives were not allowed to work on frontiers with Western states. Only state farms could be there to maintain, with the help of rich state subventions, the so-called arable line which should unable to cross the state border. State farms as well will be privatized after covering of restitutions by transmitting of soil into holding of tenants which will farm it for at least fifteen years.

By the end of 1993, property settlement of the so-called legitimate persons has been done from about 66 %. The attached map indicates regional differences of this settlement according to districts. Generally, it is higher in Czech and Moravian lowlands. On the contrary, it is low in Czech border regions, especially in Western Bohemia. Property settlement is made difficult also in consequence of plot unifying practiced in the seventies: their area reaches 100 ha in lowlands. During this unifying, plot balks were ploughed away and for that reason, a new survey is needed to determine the limits of plots before they will be handed back.

4. Conclusion

Czech agriculture must solve two difficult transformations in the same time: the sensible decrease of production and of active farming population simultaneously with transformation of social system. Simultaneity of both circumstances causes to actual agriculture difficulties multiplied by absence of practice with market economy. This is reflected also in regional anomalies, as already mentioned in previous chapters. It seems nevertheless that the tendency of development is crossing obstacles towards the supposed stability.

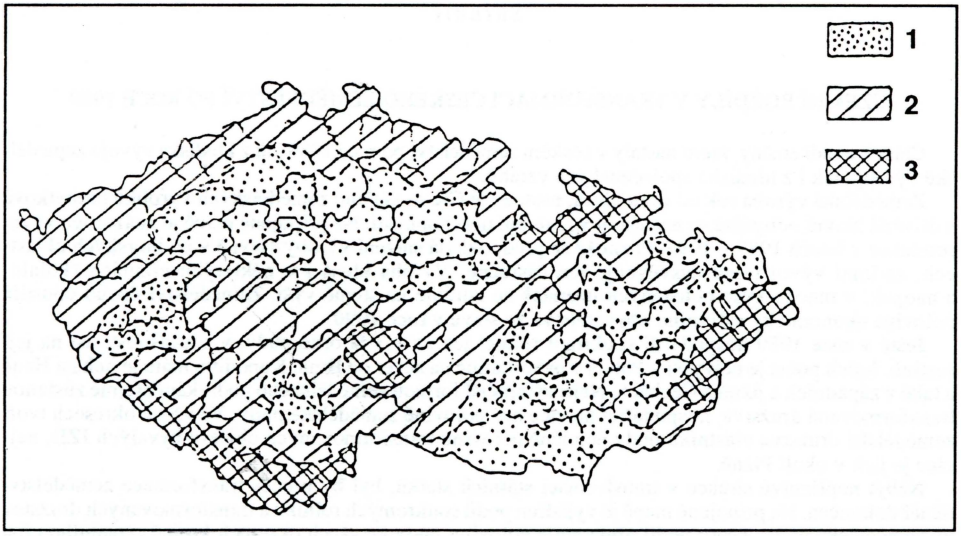

Fig. 5 - Prognosis of agricultural production: 1 - intensive farming in future, 2 - stagnation, 3 - extensification or decrease of production.

However, it is in the first place necessary to maintain farming in the Elbe Basin, in the neighbourhood of Ostrava and Plzeň and in Northern Bohemia at the present level. On the contrary, a sensible reduction of production is to be expected in hilly regions, including Bohemian-Moravian Uplands.

In the European context, no more important changes can be expected. Protectionist policy which would unable importations of cheap fruits and some other crops would meet obstacles from the part of West-European countries, as the Czech Republic wants to quickly adapt itself to the European Union. On the contrary, an increase of exportations can be reached only by an amelioration of quality of Czech traditional export commodities or by gaining new markets in the East.

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ÚZEMNÍ ROZDÍLY V TRANSFORMACI ČESKÉHO ZEMĚDĚLSTVÍ PO ROCE 1989

Článek uvádí změny, které nastaly v českém zemědělství po roce 1989 jak z hlediska vývoje zemědělské výroby, tak i z hlediska společenských vztahů.

Zemědělská výroba rok od roku klesá, protože je ČR ve většině zemědělských výrobků přebytková a dřívější hlavní odbytiště se nacházejí v platební neschopnosti. Na připojené mapě je znázorněn vývoj produkce v letech 1989 - 1993. Přestože se předpokládá snížení výroby hlavně v podhorských oblastech, zatímní vývoj tomu nasvědčuje jen částečně. Výroba klesá i v některých nížinách (Polabí) a naopak, v mnoha výše položených územích se udržuje na stejné výši. Zemědělství dosud opustila polovina ekonomicky aktivního obyvatelstva ze stavu v roce 1990.

Ještě v roce 1989 hospodařili soukromí rolníci jen na 1,3 % orné půdy, v současnosti asi na její šestině. Jejich počet je nejvyšší v Polabí a pahorkatině na sever od Brna. Kupodivu málo je jich na Hané a také v západních a jižních Čechách. Nejrozšířenější formou zemědělského podnikání zřejmě zůstanou transformovaná družstva, hospodařící na více než polovině zemědělské půdy. Ve všech okresech tvoří zemědělská družstva vlastníků půdy nejméně polovinu transformovaných objektů bývalých JZD; nejvíce je jich v okolí Plzně.

Nebýt nepříznivé situace v transformaci státních statků, byl by proces transformace zemědělství téměř dokončen. Na připojené mapě je vyjádřen podíl soukromých rolníků a transformovaných družstev na zemědělské půdě. Tento podíl překračuje polovinu půdy ve všech okresech kromě západního cípu Čech, oblasti Jeseníků, okolí Prahy a individuálně dalších čtyř okresů. Naopak, alespoň z 80 % je transformace provedena na většině plochy jižních Čech, dále v severní části Polabí, na Českomoravské vrchovině a na Hané.

Souběh dvou nepříznivých okolností, a to nutnosti rapidně snížit zemědělskou výrobu a počet zemědělsky aktivního obyvatelstva a přitom se vyrovnat s majetkoprávními otázkami držby půdy, způsobil v zemědělství řadu potíží, zvláště v regionálním pohledu. Nejhorší situace je zřejmě překonána, ale i v budoucnu bude zemědělství druhořadým hospodářským odvětvím.

Obr. 1 - Vývoj zemědělské produkce 1989 - 1992: 1 - pokles produkce, 2 - stagnace, 3 - vzrůst produkce.
Obr. 2 - Počet soukromých zemědělců k 30.9.1993. 1 kroužek = 100 soukromě hospodařících rolníků.
Obr. 3 - Restituce zemědělské půdy a majetku. Podíl oprávněných osob, jejichž majetek byl již předán z družstev (v % k 30.9.1993).
Obr. 4 - Změny sociálních vztahů. Podíl soukromých zemědělců a transformovaných družstev na zemědělské půdě (v % k 30.9.1993).
Obr. 5 - Prognóza zemědělské výroby. 1 - intenzivní zemědělství v budoucnu, 2 - stagnace, 3 - extenzifikace nebo pokles výroby.

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ZDENĚK PAVLÍK

POPULATION TRENDS ON THE TERRITORY OF THE CZECH REPUBLIC

Z. Pavlík: *Population Trends on the Territory of the Czech Republic.* - Sborník ČGS, 99, 2, pp. 101 - 110 (1994). - The process of demographic revolution had specific features on the territory of the Czech Republic. It started in the first half of the 19th century and ended between Two World Wars. The course of this process corresponded with the geographical position of Czech Lands in Europe. The demographic situation after the World War II was affected unfavourably by the political appurtenance of former Czechoslovakia to the Soviet block, especially in the field of mortality.
KEY WORDS: Czech Republic - population - population trends - demographic revolution.

In periods of great political and social changes which started in Europe since the 19th century the population trends can serve as one of their indicators. In the background of changes in the demographic reproduction there is a large and manysided process connected with the last stadium of civilization; it is often named as modernization or global revolution of modern time. While the first concept understands modernization as an uncomplete and continuos process (in spite of the fact that one speaks sometimes about post-modernism), the global revolution has been conceived as a historical process with more or less precisely specified beginning and end. In both cases, however, we see this process as a very complex one which consits of many partial processes mutually interrelated and conditioned. Many questions remain here for further research and many are not satisfactorily answered. What kind of impulses led e.g. to the transition from antemodern societies towards modernization and why this process started in Europe?

In connection with the demographic reproduction, the centre of our interest will be the demographic revolution as a part of the global revolution. The internal conditioning of the demographic reproduction leads to the steady repetition of its character; only fundamental changes in its economic, social, geographic and ecologic environment caused revolutionary changes in the character of demographic reproduction, sometimes named less tellingly as the demographic transition. At the end of demographic revolution the demographic reproduction stabilizes again on the qualitatively new level. Also fundamental changes in other processes with people can be qualified as revolutions - urbanization, extensive migration, the rise of mega-cities and large urban agglomerations, industrialization and many others as partial processes of the global revolution of modern time.

The origin of global revolution can be looked for in the European Renaissance and in the break-up of feudalism, followed by the Enlightenment with its tendency toward individualism, an emphasis on the idea of universal human progress and the free use of reason, and by the National Revival. All these are very complicated processes to be grasped in their complexity. However, it is possible to discern and document the advance of them in Europe from the North-West to the East-South. If we understand the meaning of demographic changes, demographic data can substitute information about more complex social and economic processes.

Position of the Czech Lands in the process of demographic revolution

Demographic revolution has been usually characterized by the dramatic decrease of mortality and fertility levels; it has, however, much profound content than that: it signifies the revolutionary changes in the reproductive behaviour of people which have never occured in the past and will not be repeated in the future. The extensive character of demographic reproduction changed into the intesive one. Demographic data can indicate only the beginning and the end of this process. Therefore crude rates are sufficient for the first look: the crude death rate decreased from levels over 30 per thousand to less than 15, and the crude birth rate from over 40 to less than 20 per thousand.

The above mentioned situation is well documented by data collected in tables 1 and 2. France and Sweden represent countries with the early start of the demographic revolution, Czech Lands (since January lst, 1993, the Czech Republic) are in the middle of this process in Europe, and Hungary, Poland and Romania form the end of the row. There are many specific features which stir up our interest. The mortality situation has been slightly better in Sweden than in France during the whole 19th century. However, the birth control started clearly in France already in 18th century. The end of demographic revolution can be put in-between Two World Wars for France, Sweden and Czech Lands, and only after the World War II for Hungary, Poland and Romania. The rather small difference between mortality and fertility levels in France indicates a small population growth during this process (the French type of demographic revolution) in comparison with Sweden with a cosiderable population growth (the English type of demographic revolution). Czech Lands (CL) have been somewhere in-between.

Table 1 - Crude Death Rate in Selected European Countries

Period	France	Sweden	CL	Poland	Hungary	Romania
1785-1800	-	-	32-33	-	-	-
1801-1830	25-28	24-28	28-38	-	-	-
1831-1870	25-28	20-24	28-31	30-35	-	-
1871-1900	21-24	16-20	26-30	28-31	29-35	28-31
1901-1914	18-19	14-15	20-22	21-24	22-25	25-26
1920-1939	16-17	11-12	13-15	15-18	15-19	19-23
1950-1990	9-11	10-11	10-13	8-11	11-14	9-11

Table 2 - Crude Birth Rate in Selected European Countries

Period	France	Sweden	CL	Poland	Hungary	Romania
1785-1800	37-38	-	43-44	-	-	-
1801-1830	31-32	31-35	40-42	-	-	-
1831-1870	26-29	31-33	38-39	43-44	-	-
1871-1900	22-26	27-31	36-38	42-43	41-47	40-41
1901-1914	20-21	23-26	21-33	37-41	30-36	40-41
1920-1939	15-22	15-18	16-22	27-33	21-28	31-39
1950-1990	15-19	12-15	13-18	17-24	12-19	16-24

The mortality picture can be complemented by data about infant mortality rates and life expectancy. Infant mortality rates were around 250 per thousand the whole 19th century in the Czech Lands, life expectancy 35 years for both sexes in 1869-80 while in France it was already 40 years in the first half of the 19th century. It is not without interest that life expectancy was on the territory of the Czech Lands close to 30 years already in the 9th century; it has changed very little during the past millenium. The

infant mortality rate decreased to 154 per thousand in 1920-24, to 96 in 1935-39, to 47 in 1950-54, to 20 in 1970-74 and to 9 per thousand according to the last available data. Life expectancy increased to almost 60 years by the end of demographic revolution and to 70 years in the beginning of 1960's. It stagnated since at the level of 67 years for men or even decreased in certain years, and it reached 68 years only recently; a steady small growth for women from 73 to 76 years during the same period cannot change the negative evaluation of the mortality situation during the communist era. Czech Lands were not the exception; a similar situation was in other former socialist countries - Hungary and Russia are good examples.

The mortality improvement during the demographic revolution did not occur equably in all regions and in all social strata. Towns and big cities were usually ahead as well as better off groups of population. Similar situation was in the field of fertility. The larger the country the bigger differences could have been expected. The decline of crude birth rate in the first half of the 19th century was due mainly to postponement of mariages and to the increase of the age of primiparae. The decline of the marital fertility started only in its second half. It can be well measured by the Coale's index of marital fertility (Ig) based on inderect standardization. As it can be seen on the Fig. 1, the marital fertility decline started in the Northern Bohemia and in Prague, i.e. in industrial regions with a higher share of urban population; in some of these districts there was predominantly German population with broad links with German regions of Saxony.

The end of the demographic revolution in a broader context of Central and Eastern Europe is clearly demonstrated on the Figures 2, 3 and 4. The Czech Lands together with Germany and Austria belong among countries, where the crude birth rate decreased below 20 in-between Two World Wars. They were followed by the majority of other countries in Eastern Europe after the World War II (Fig. 3) and only in Albania this process did not end yet in 1980's (Fig. 4).

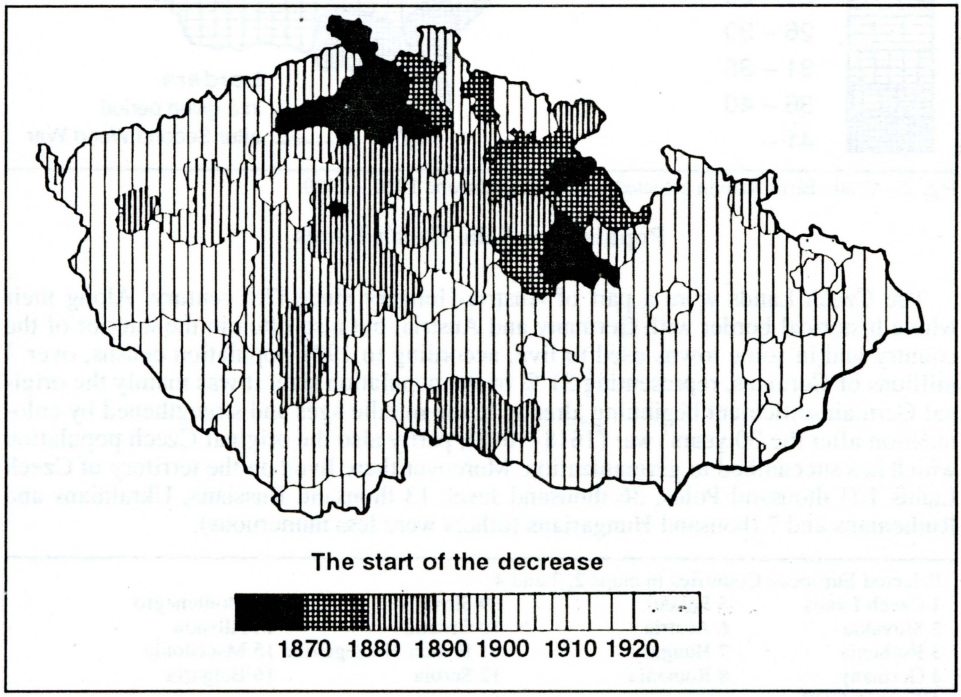

Fig. 1 - Beginning of the marital fertility decrease (Ig) on the territory of the Czech Republic.

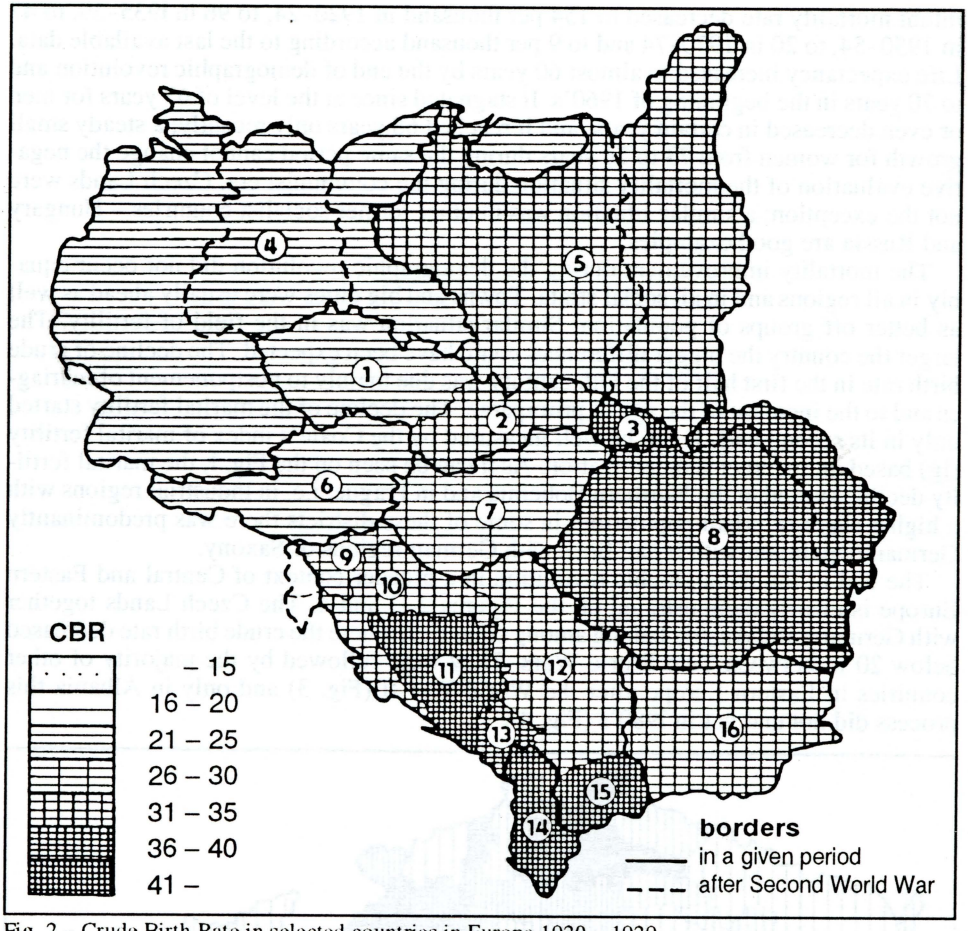

Fig. 2 - Crude Birth Rate in selected countries in Europe 1920 - 1929.

Population of the Czech Lands

The Czech Lands were a part of Austria-Hungary since 17th century. Along their whole historical border with Germany and Austria, but also often in the interior of the country and in some towns used to live, according to 1921 population census, over 3 millions of Germans, representing 31 % of the population size. It was mainly the original German settlement beginning already in the middle ages and strengthened by colonization after the 30 years' war (1618-1648), partly also the original Czech population which has succumbed to germanization. Moreover there lived on the territory of Czech Lands 103 thousand Poles, 36 thousand Jews, 13 thousand Russians, Ukrainians and Ruthenians and 7 thousand Hungarians (others were less numeruous).

Selected European Countries in maps 2, 3 and 4:

1 Czech Lands	5 Poland	9 Slovenia	13 Montenegro
2 Slovakia	6 Austria	10 Croatia	14 Albania
3 Ruthenia	7 Hungary	11 Bosnia-Herzegovina	15 Macedonia
4 Germany	8 Romania	12 Serbia	16 Bulgaria
4'Former GDR			

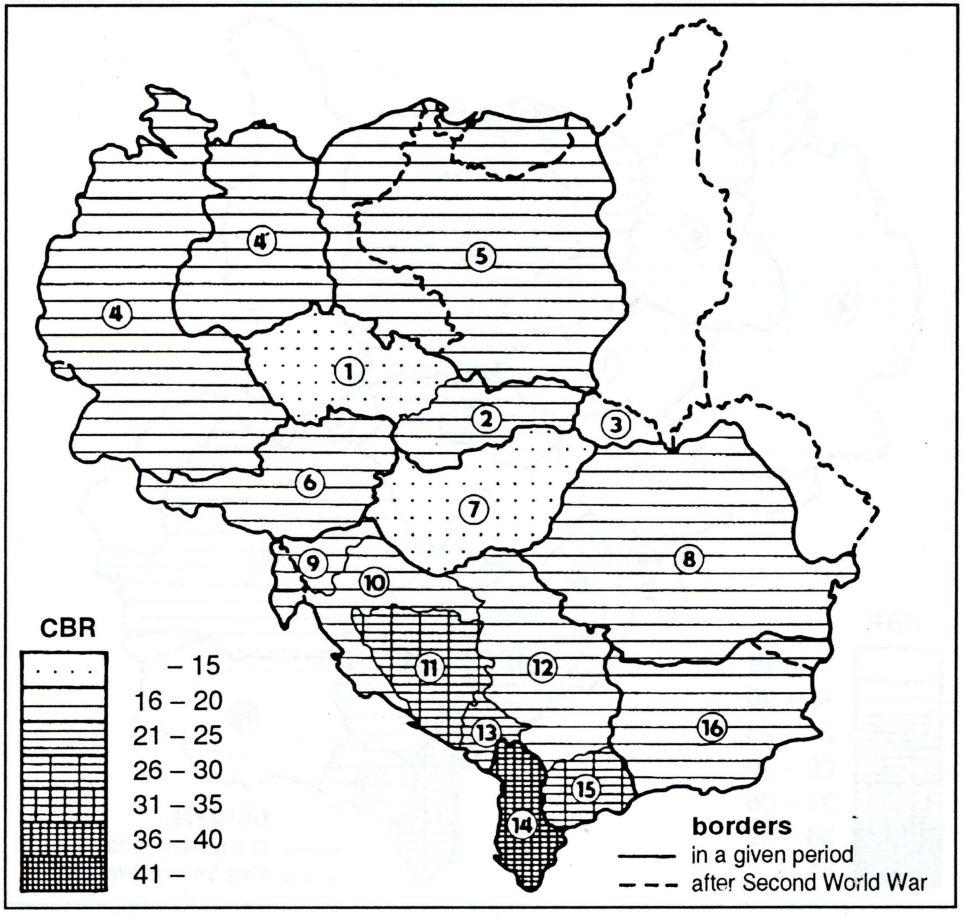

Fig. 3 - Crude Birth Rate in selected countries in Europe 1960 - 1969.

Population of the Czech Lands belongs to those, where significant emigration was taking place already before the year 1880. This year is sometimes considered as a dividing line between the "old" European emigration of 19th century and the "young" emigration from Southern and Eastern Europe. In the period 1900-09 the Czech Lands lost 314 thousand of persons by emigration. In the interwar period the differential method based on the 1921 and 1930 population censuses gives a certain idea about the volume of migration. Bohemia gained 31 thousand during this period, Moravia and Silesia lost 93 thousand the total net migration being the lost of 62 thousand. Part of emigrants from Moravia and Silesia moved to Bohemia.

National structure of the Czech Lands changed considerably after the Second World War. In accordance with the decision of superpowers at the Potsdam conference the majority of German population was transferred out of the country (2 870 thousand including runaways before the organized evacuation); only about 200 thousand Germans had stayed. The war losses were not extremely high on the territory of the Czech Lands in comparison with neighbour countries: there were 55 thousand executed and violently deceased and the majority of Jews perished in concentration camps. After the displacement of Germans the Czech Lands became nationally homogeneous: 94 per cent of inhabitants declared the Czech nationality in 1950 population census; there were 258

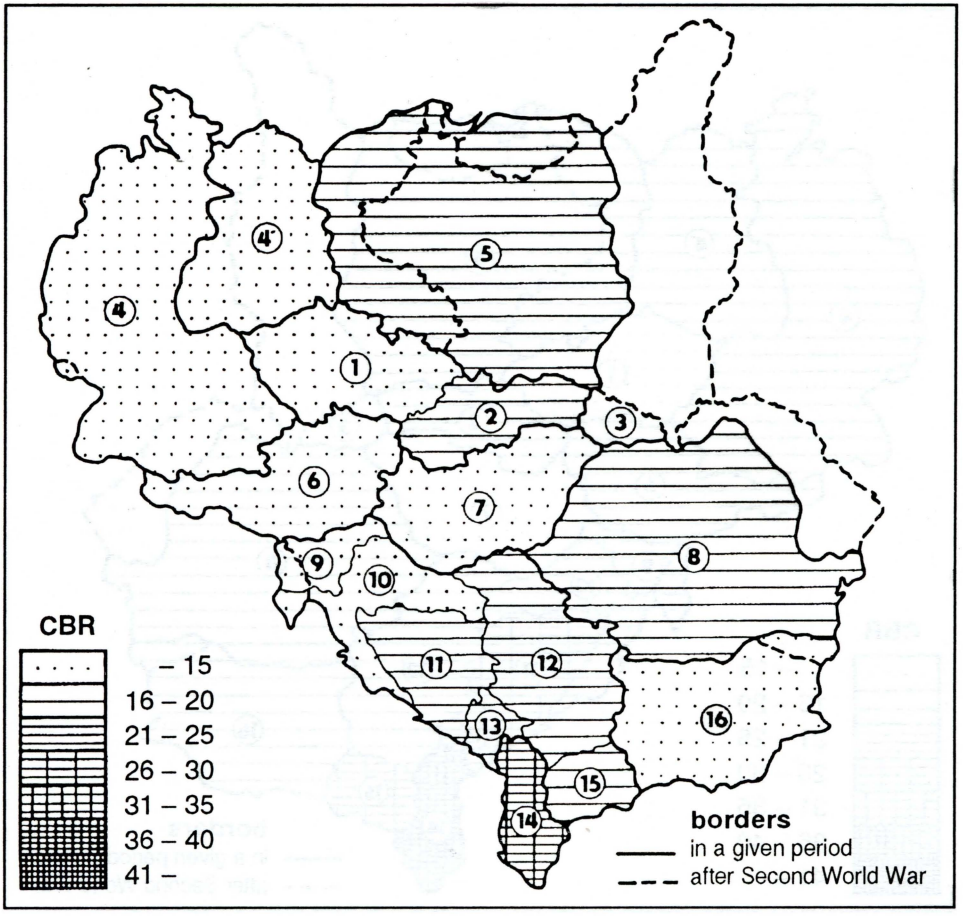

Fig. 4 - Crude Birth Rate in selected countries in Europe 1980 - 1989.

thousand (2.9 %) Slovaks, 160 thousand (1.8 %) Germans and from the rest 71 thousand declared Polish nationality. During the whole period up to 1991 the national structure of the Czech Lands changed very little. Only the number of Slovaks increased by immigration; they came firstly looking for job and they were 359 thousand (3.5 %) in 1980; their number decreased to 315 thousand (3.1 %) in 1991, mainly because a part of them declared Romany nationality (the total number of Romanies in the Czech Lands can be estimated at around 150 thousand).

Table 3 - Population of the Czech Lands in Selected Years

Year	Population in thousand	Census Year	Population in thousand
1840	6 369	1950	8 896
1860	7 256	1961	9 572
1880	8 222	1970	9 808
1900	9 372	1980	10 292
1930	10 678	1991	10 302

Table 4 - Territory and Population of the Czech Lands (population census 15.2.1921)

Land	Population in thousand	Area in sq.km	Density per 1 sq.km
Bohemia	6 671	52 100	128
Moravia	2 663	22 300	119
Silesia	672	4 400	152
Czech Lands	10 006	78 800	127

The steady growth of the Czech Lands' population in 19th and 20th centuries was interrupted only once after the World War II due to the displacement of Germans. The Czech Lands did not reached yet the number of inhabitants they had in 1930's, i.e. 60 years ago (table 3). The Czech Lands were also loosing population by emigration for political reasons after the War. Two emigration waves after 1948 and 1968 meant the loss of 340-370 thousand of people.

Contemporary demographic situation

The history of every population is hidden in its age structure. This holds also for the population of Czech Lands (Fig. 5). The effect of lower intensity of mortality among women in comparison with men can be clearly seen at the top of the age pyramid (1).

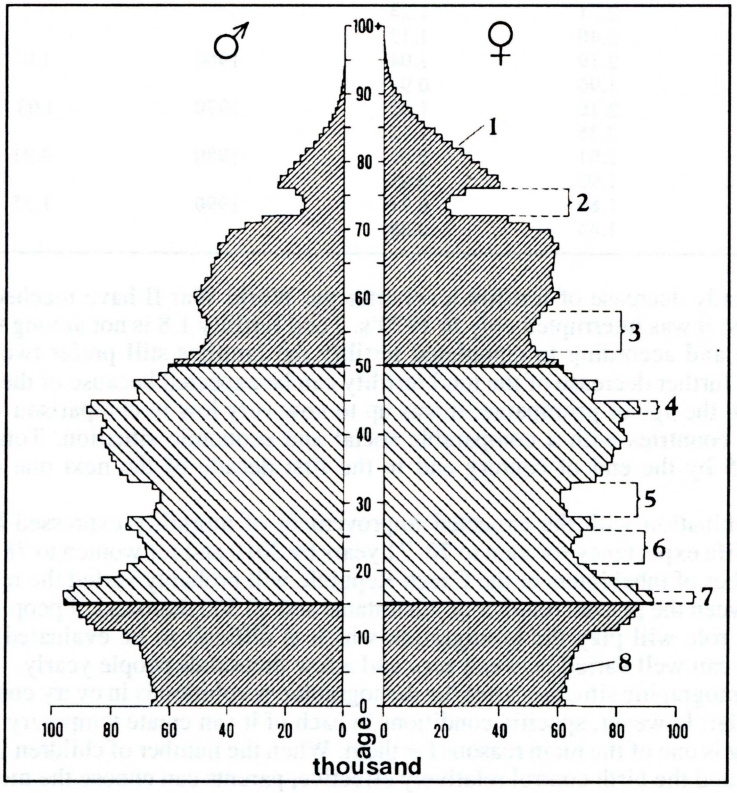

Fig. 5 - Age structure of the Czech Republic (3.3.1991). Explanation of numbers in the text.

There are considerably more women than men already over the age of 60; over the age of 90 there are several times more living women than men. This different sex and age specific mortality has in every society many unfavourable consequences. The population of the Czech Lands was deeply affected by the unborn children during the first World War (2). Such a baby bust was never levelled and it influenced the number of live births 20 years afterwards. In connection with the world economic crisis and the European political instability this led to a new baby bust in 1930's (3). The baby boom after the War lasted only two years and was not extremely high (4); the birth rate was increasing already during the War. A new relatively low numbers of live births came during 1960's following the liberalization of abortions in 1958 (5,6). This could have strenghten the tendency but the real reasons have to be looked elsewhere. Two years with slightly higher numbers of live births in-between is an effect of tightening up the procedural regulations of the abortion law. The increase of the number of live births after 1969 with a peak in 1974-75 can be explained in different ways (7). Rather important population policy measures were accepted but at the same time a certain return to family life was noted after the Soviet invasion to Czechoslovakia. The expectation were lost and the political scene stabilized, although in a negative sense. The steady decline of the number of live birth in 1980's will probably continue in the future (8).

Table 5 - Population reproduction in the years 1950-1991

Period/ Year	Total Fertility	Net Reproduction Rate	Year	Total Abortion Rate
1950-54	2.71	1.24		
1955-59	2.40	1.12		
1960-64	2.19	1.04	1960	1.07
1965-69	1.96	0.92		
1970-74	2.16	1.02	1970	1.03
1975-79	2.35	1.12		
1980-84	2.01	0.95	1980	0.91
1985-89	1.92	0.92		
1990	1.89	0.91	1990	1.55
1991	1.84	0.88		

The steady decrease of fertility level after the World War II have reached recently low values; it was interrupted only in 1970's. Total fertility 1.8 is not among the lowest in Europe and according to completed fertility the families still prefer two children. However, further decrease of the total fertility can be expected because of the supposed increase in the age of primiparae; it was up to now very low in comparison with other European countries with a comparable social and economic situation. Total fertility around 1.5 by the end of century and in the first decade of the next one cannot be excluded.

In combination with the expected improvement of mortality expressed by the increase of life expectancy for men to 70-71 years by 2010 and for women to 78 years, the total number of inhabitants of the Czech Republic will probably varied the next twenty years between the present number of inhabitants and 10 500 thousand of people (a rather important role will play the immigration which is difficult to be evaluated). The net migration can well varied between zero and a few thousands people yearly.

The demographic situation after the demographic revolution is in every country basically similar; however, specific conditions in each of it can create temporary differences. Timing is one of the main reasons for them. When the number of children in families is limited and the birth control relatively effective, parents can choose the most favourable time for the birth of their children and so they can be very much affected by the

overall economic, social and political situation. Also their personal and health situation is changing and this cannot stay without effect on their reproductive behaviour. Economic transformation after the velvet revolution and the renewal of political democracy are very important positive events but they can have negative influence on the family decision to have a child at a given moment.

Conclusion

Population living on the territory of the Czech Lands - presently the Czech Republic - underwent the process of demographic revolution in accordance with its place in Europe. It differs presently together with other former socialist countries from remaining European countries, mainly in the worse mortality situation; its improvement is, however, expected. The total number of inhabitants will probably stabilize at the present level or slightly increase, but even the negative growth after 2000 is not excluded. Net migration can affect the population growth considerably; it is difficult, however, to be predicted with a sufficient reliability.

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Shrnutí

POPULAČNÍ VÝVOJ NA ÚZEMÍ ČESKÉ REPUBLIKY

Demografická reprodukce je poměrně velmi stabilní a biologicky podmíněný proces, který probíhá v ekonomickém, sociálním a politickém okolí. Kdyby nedocházelo ke změnám v tomto okolí, neměnil by se ani proces demografické reprodukce. K takovým změnám však v průběhu posledních několika staletí došlo - nazýváme je modernizací nebo globální revolucí moderní doby - a jejich důsledkem byla i demografická revoluce. Tento proces bývá obvykle charakterizován poklesem úrovní plodnosti a úmrtnosti a prodloužením naděje dožití. Vystiženy vhodnými ukazateli mohou sice vystihnout počátek a konec uvedeného procesu, ale zakrývají jeho hlubší charakter, který tkví v podstatných změnách v demografickém chování populace. Demografická revoluce je též změnou extenzivního typu demografické reprodukce v typ intenzivní.

Průběh demografické revoluce je možno sledovat jako difúzní proces. V Evropě začíná ve Francii a šíří se ze západu a severu na východ a jih. V současné době pouze v Albánii probíhá druhá fáze demografické revoluce, charakterizovaná poklesem úrovně plodnosti, v ostatních evropských zemích ho lze považovat za skončený. Situaci od třicátých let ve změnách v úrovni plodnosti vystihují připojenené mapy 2 - 4.

Počátek poklesu úrovně plodnosti na území České republiky je možno sledovat na mapě 1. Data za celou zemi vždy představují průměr různých regionů, města a venkova, sociálních a profesních skupin. U nás začíná pokles úrovně plodnosti v oblastech Prahy a Liberce. Naopak jižní Čechy a Morava se opožďují.

Na území České republiky žilo podle sčítání lidu v roce 1921 více než 3 mil. Němců, kteří tvořili více než 30 % obyvatelstva. V důsledku odsunu po druhé světové válce jich zůstalo jen asi 200 tis.

a obyvatelstvo české národnosti tvoří nyní 94 % . Menšinou jsou Slováci (3,1 %), Němci, Romové a Poláci.

Demografická historie české populace je dobře patrná z obr. 5. Převaha žen ve vyšších ročnících věkové struktury charakterizuje nadúmrtnost mužů již od 60 let, ale zvláště výrazně ve vyšších věkových skupinách. Nepravidlenosti věkové struktury byly způsobeny dále malým počtem narozených v průběhu první světové války, poklesem úrovně plodnosti ve třicátých letech, jejím vzestupem po druhé světové válce a následnými změnami populačního klimatu koncem šedesátých a v první polovině sedmdesátých let. V současné době zaznamenáváme další pokles úrovně plodnosti. Lze očekávat, že se její úroveň přiblíží situaci v západoevropských zemích. Pokud jde o úroveň úmrtnosti, lze též očekávat její další zlepšování, avšak pravděpodobně velmi pomalé. Vzhledem k tomu, že je obtížné odhadnout saldo mezinárodní migrace, jsou i prognózy budoucího populačního vývoje České republiky méně spolehlivé. Lze očekávat stabilizaci počtu obyvatelstva na současné úrovni, avšak nelze vyloučit ani jeho mírný pokles po roce 2000.

Obr. 1 - Začátek poklesu manželské porodnosti (Ig) na území České republiky.
Obr. 2 až 4 - Hrubá porodnost ve vybraných zemích Evropy v obdobích 1920 - 1929, 1960 - 1969 a 1980 - 1989. CBR - hrubá míra porodnosti. (Zakresleny jsou hranice z meziválečného období i současné.)
Obr. 5 - Věková struktura obyvatelstva České republiky k 3.3. 1991.

SBORNÍK ČESKÉ GEOGRAFICKÉ SPOLEČNOSTI
ROČNÍK 1994 • ČÍSLO 2 • SVAZEK 99

JIŘÍ MALÝ

THE CZECH REPUBLIC - BASIC GEOGRAPHICAL CHARACTERISTICS

J. Malý: *The Czech Republic – Basic Geographical Characteristics.* - Sborník ČGS, 99, 2, pp. 111 - 118 (1994). - The contribution treats about basic geographical characteristics of the Czech Republic: its area, population, administrative division, geographical position, shape of the state territory and the state boundary.
KEY WORDS: the Czech Republic (CR) - geographical position - shape of the state territory - the state boundary.

1. Introduction

At the turn of the years 1992/1993, an important historical, political and geographical event occurred in Central Europe. After 74 years of its existence, the Czechoslovak state disappeared. On the 1st of January, two new independent states have come into existence on its territory: the Czech Republic and Slovakia. In the end of 1992, this was decided by national parliaments of both, in that time yet "federal" republics, as well as by the federal parliament.

2. Area, population, administrative division

The area of the CR is most often given as 78,864 km² (for instance Mištera, 1985, p. 13). This area represents about 0.05 % of the world dry lands and 0.75 % of the Europe's area. With its area, the CR ranks at the 21st position in Europe[1)] and is considered as a smaller European country. Among countries the area of which was in the past smaller than the Czechoslovakia's, Bulgaria, Hungary, Portugal and Austria are now larger than the CR. Among the newly arisen European countries, Russia, the Ukraine, Belorussia and the rest of former Yugoslavia (that is Serbia and Montenegro) are larger than the CR.

Population approaches 10.3 millions of inhabitants. The last population census in 1991 gave the population toll of 10,296.7 thousand. According to more recent investigations of the Czech Statistical Office, 10,328 thousand inhabitants lived on the Czech Republic's territory on June 30, 1993. In comparison with the world, respectively the European population, about 0.2 % of the world population and 1.5 % of the European population lives on the CR's territory. By its population, the CR ranks at the 12th position in Europe. More populous are today Hungary and Portugal, among newly arisen countries only Russia and the Ukraine.

Population density is 131 inhabitants/km², which ranks the CR among the most densly populated European countries. If not taking in account the smallest states as Monaco or San Marino, the CR takes the 7th position in Europe (See Table).

[1)] Up to 1989, Czechoslovakia was at the 14th position in Europe, including the Soviet Union.

Table 1 - The most densly populated states of Europe (inhabitants per km² on July 1, 1990).

1.	Belgium	323
2.	The Netherlands	320
3.	Great Britain	228
4.	Germany	200
5.	Italy	188
6.	Switzerland	154
7.	Czech Republic	131
8.	Poland	121
9.	Denmark	115
10.	Hungary	114

Lit.: Statistical year-book of the Czech and Slovak Federal Republic 1992. Note: The survey does not include states as Malta, Monaco, Liechtenstein, Luxembourg, San Marino and Vatican, which, due to their size, have a higher density of population.

The capital, Prague, seat of President, Government and Parliament, spreads on an area of 496.19 km² and on December 31, 1992, its population was 1,217 thousand inhabitants.

Administrative division was herited from the former federation: the state territory is divided into districts administrating municipalities. There are in total 75 districts, but only 71 district towns, as Prague, Brno and Plzeň are seats of two or three districts. As the area is concerned, the largest districts are Šumperk (1,952 km²), Jindřichův Hradec (1,944 km²) and Bruntál (1,745 km²), the smallest - without taking into account town districts of Ostrava, Brno-Town and Plzeň-Town - are Karviná (347 km²), Jablonec n.N. (403 km²) and Ústí n.L. (404 km²). Since the inauguration of the new government after the elections of 1992, a new administrative division is being prepared. Its definitive form, as well as the date of its validation, were not known in the moment of terminating this contribution.

National symbols of the CR, as the Great and Small coats of arms, are the same as in the former "federal" Czech Republic. The national flag has been taken over from the former federation, as well as the national anthem with the exception of its Slovak part.

3. Geographical position

Geographical position is generally meant as the relations of the given territory to something situated outside this territory (Häufler, 1984, p.9). Most often, the mathematical-geographical and the physical-geographical position is indicated.

3.1 Mathematical-geographical position

The mathematical-geographical position is characterized by the relation of the given territory to geographical coordinates. The CR is situated roughly in the middle of the north temperate zone. Its mean mathematical-geographical position is 15°28'44" of east longitude and 49°48'19" of north latitude. [2])

The position of the state territory limit points (Figure 1): The most northern point is situated at 51°03'26" of north latitude in the area of the Lobendava municipality near

[2]) The mean mathematical-geographical position is given by the arithmetical mean of limit coordinates values (Häufler, 1984, p.9).

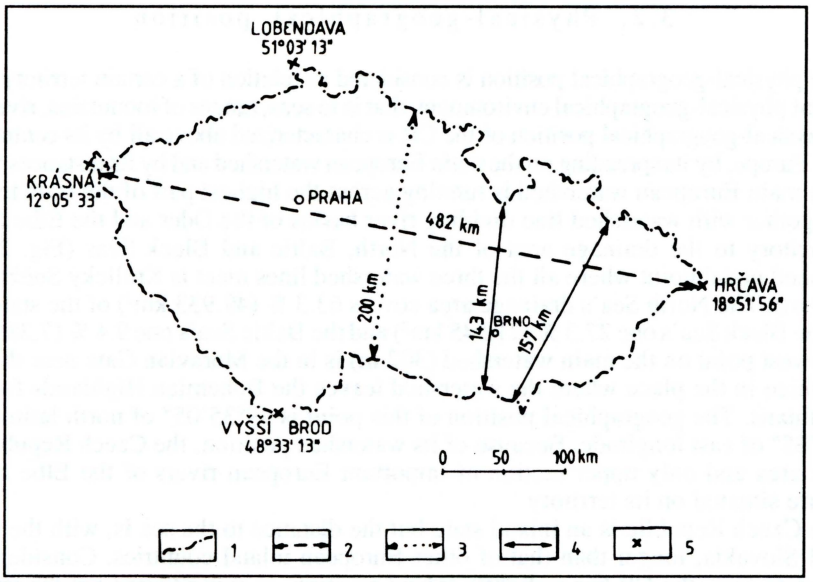

Fig. 1 - Shape of the state territory: 1 - state boundary, 2- maximal map distance, 3 - central breadth, 4 - minimal breadth, 5 - limit points.

Šluknov in the Děčín district, the most southern point at 48°33'13" of north latitude in the Vyšší Brod municipality area in the district of Český Krumlov, the most eastern point at 18°51'56" of east longitude in the area of Hrčava near Jablunkov, district of Frýdek-Místek, and finally the most western point is situated at 12°05'33" of east latitude in the area of Krásná by Aš in the Cheb district.

The geographical centre of the Czech Republic is situated by Číhošť near Ledeč n.S., district of Havlíčkův Brod, (Häufler, 1984, p.20). Its geographical coordinates are 15°20'01" of east longitude and 49°44'13" of north latitude (according to oral information of R. Čapek).

Latitudinal spreading of the territory, that is the central angle corresponding to the arc of the meridian limited by the local parallels, has the value of 2°30'13", which corresponds to the distance of 278.4 km. **Longitudinal spreading of the territory**, that is the central angle corresponding to the arc of the parallel limited by the local meridians, has the value of 6°46'23", which corresponds, at the mean parallel, to the length of 486 km [3]), at the 50th parallel (on which Prague is situated) to 485 km. The difference of local time of the limit points is 27 minutes.

The territory is run across by the 51°, 50° and 49° parallels of north latitude. The 51° parallel crosses the Šluknov and Frýdlant promontories, the 50° parallel traverses the south extremity of Prague and approches Pardubice and Opava, the 49° parallel runs accross České Budějovice.

The consequence of the mathematical-geographical position from the point of view of latitude is an oscillating level of sun radiation during the year accompanied by succession of four seasons. The consequence of the position from the point of view of longitude is the fact that the Czech Republic is situated in the so-called Central-European time zone going by the 15° meridian of east longitude.

[3]) The mean parallel value is equal to arithmetical mean calculated from the limit parellels values, that is 49°48'13".

3.2. Physical-geographical position

The physical-geographical position is considered as relation of a certain territory to elements of physical-geographical environment, that is to seas, ranges of mountains, rivers, etc. The physical-geographical position of the CR is characterized above all by its central position in Europe, by its spreading on the main European watershed and by its distances to seas.

The main European watershed is running across the highest part of the state territory and together with watershed line dividing river basins of the Oder and the Elbe divides the territory to the drainage area of the North, Baltic and Black Seas (Fig. 2). The watershed nodal point where all the three watershed lines meet is Králický Sněžník Mt. (1,423 m). The North Sea's drainage area covers 63.3 % (49,933 km²) of the state territory, the Black Sea's one 27.3 % (21,545 km²) and the Baltic Sea's one 9.4 % (7,386 km²). The lowest point on the main watershed (302 m) is in the Moravian Gate near the town of Hranice in the place where the watershed leaves the Bohemian Highlands for West Carpathians. The geographical position of this point is 49°35'05" of north latitude and 17°45'35" of east longitude. Because of its watershed position, the Czech Republic is a source area and only upper section of important European rivers of the Elbe and the Oder are situated on its territory.

The Czech Republic is an inland state but the distance to the sea is, with the exception of Slovakia, longer than that of other European inland countries. Considering its position to seas, the CR has a slightly inland position, as it is situated not far from the boundary of the so-called costal zone going as far as 250 km from the cost. The shortest distances to the seas are similar. The shortest distance to the Baltic Sea (Sczecin Bay) in the North is about 310 km, to the Adriatic Sea (Trieste Bay) in the South 330 km (Häufler, 1984, p.10) and to the North Sea to the Elbe estuary 380 km (Mištera, 1985, p.16). The open sea by the Rhin estuary is at about 540 km (Häufler, 1984, p.10).

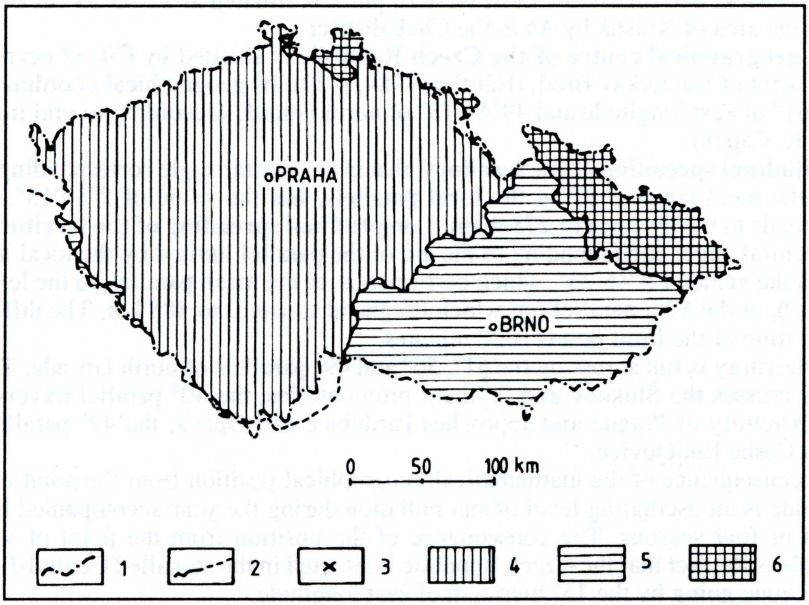

Fig. 2 - Course of the main European watershed and the drainage areas of the North, Baltic and Black Seas: 1 - state boundary, 2 - main European watershed, 3 - the lowest point on the main watershed, 4 - the drainage area of the North Sea, 5 - the drainage area of the Black Sea, 6 - the drainage area of the Baltic Sea.

Characteristic for the physical-geographical position of the CR is its position on the contact of two large geomorphological, respectively geological units, that is the Bohemian Highlands (geologically Bohemian Massive) and the (West) Carpathians. Both units differ by their geological structure and by their age, as well as by their geological and geomorphological development. A larger part in the West of the Republic is occupied by the Bohemian Highlands belonging to the old Herzynian mountains. A smaller part in the East is formed by the West Carpathians. The geomorphological provinces of the Central-European Lowlands and the West-Panonian Basin reach into the Czech territory only marginally (Fig. 3).

The highest point of the state territory is the top of Sněžka Mt. (1,602 m) on the border with Poland, the lowest point (115 m) is at Hřensko in the place where the Elbe leaves the Czech territory for Germany (Vlček, 1984, p.12). Both points are about 108 km distant and their vertical difference is 1,487 m. The mean altitude of the Czech Republic is about 450 m; 469 m in Bohemia and 432 m in Moravia and Silesia (Atlas Republiky československé, 1935, p.6). The same characteristic for Europe is only 315 m (Häufler, 1984, p.10). 5.02 % of the territory is in an altitude inferior to 200 m and only 1.5 % of the territory in an altitude superior to 1,000 m.

4. Shape of the state territory

The shape of the CR state territory is approximately rectangular and elongated in an east-west direction. The elongation of the state territory is characterized by the following data:

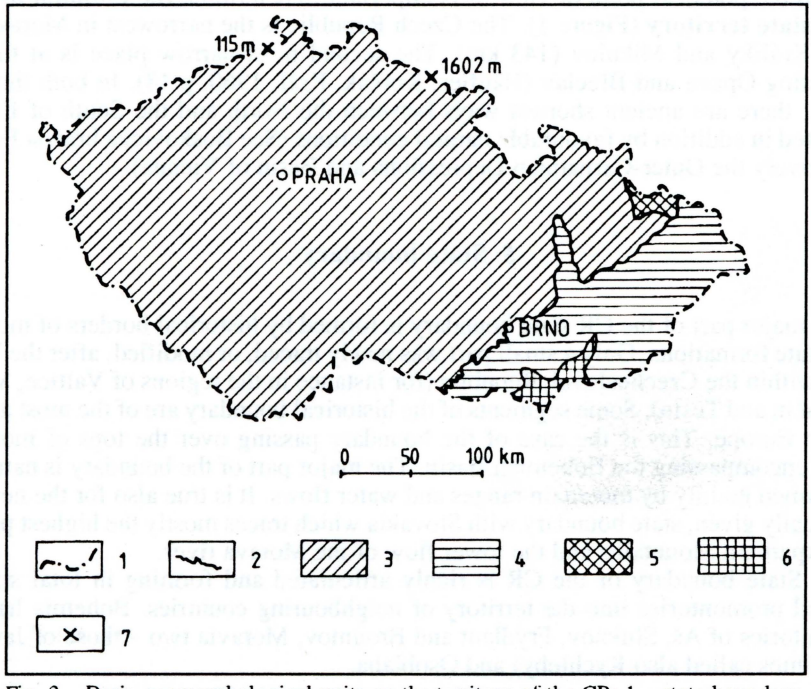

Fig. 3 - Basic geomorphological units on the territory of the CR: 1 - state boundary, 2 - boundary of the geomorphological provinces, 3 - the Bohemian Highlands, 4 - the West Carpathians, 5 - the Central European Lowland, 6 - the West Panonian Basin, 7 - the highest and the lowest points of the state territory.

The distance of the limit coordinates, that is the direct horizontal and the direct vertical distance of the limit points. Their values are equal to the so-called latitudinal, respectively longitudinal spreading of the state territory (See above).

In general, the direct horizontal distance of the limit coordinates is not considered as the longest dimension of the territory, as it, in all its length, does not cross the state territory. The longest direct dimension crossing in all its length the state territory, is about 482 km and is called **maximal map distance** (Figure 1). This datum is nevertheless only approximate, as it is impossible to establish it precisely because of a considerable distortion of the used map. This dimension is limited by a segment crossing from Vojtanov via south part of Prague, Čáslav and Šternberk to Mosty u Jablunkova. The centre of the segment lies at the southern edge of Čáslavská kotlina Basin near Ronov n. Doubravou.

The breadth of the state territory, measured perpendiculary to the maximal map distance in its centre (so-called central breadth), is about 200 km (Figure 1). This datum very well characterizes the breadth of the state territory which is proved also by the comparison with the arithmetical mean value calculated from the maximal[4]) and the minimal breadth of the territory (See below). This arithmetical mean is 211.5 km, the difference from the central breadth being only 11.5 km. The ratio between the maximal map distance and the central breadth (482:200) is 2.4. This fact shows the best the elongation of the state territory.

The maximal length of the state territory in the parallel direction is 452 km and was measured on the parallel of 49°32'10". **The maximal breadth in the meridian direction** is 276 km which corresponds to the meridian of 14°20'30" (Statistická ročenka ČSFR, 1992, p. 82. according to oral information of L. Skládal).

From the practical point of view, it is important to determine **the minimal breadth of the state territory** (Figure 1). The Czech Republic is the narrowest in Moravia between Králíky and Mikulov (143 km). The second most narrow place is at the line connecting Opava and Břeclav (Häufler, Korčák, Král, 1960, p.18). In both those direction, there are ancient shortest ways between the North and the South of Europe, supported in addition by favourable natural conditions (See Boskovická brázda Furrow, respectively the Outer-Carpathian Depressions and Basin of Vienna).

5. State boundary

The major part of the CR state boundary is formed by historical borders of more ancient state formations. Only a small part was newly traced, or modified, after the World War I within the Czechoslovak Republic (for instance in the regions of Valtice, Vitorazy, Hlučín and Těšín). Some segments of the historical boundary are of the most ancient ones in Europe. This is the case of the boundary passing over the tops of mountain ranges encompassing the Bohemian Basin. The major part of the boundary is natural as it is formed mainly by mountain ranges and water flows. It is true also for the new, but historically given, state boundary with Slovakia which traces mostly the highest parts of the Carpathian Mountains and the lower flow of the Morava river.

The State boundary of the CR is richly articulated and forming in total six pronounced promontories into the territory of neighbouring countries. Bohemia has four promontories of Aš, Šluknov, Frýdlant and Broumov, Moravia two - those of Javorník (sometimes called also Rychleby) and Osoblaha.

[4]) The maximal breadth of the territory is given by the length of the segment connecting the most northern and the most southern points of the state territory. Its value is 278 km.

The total boundary length is about 2,290 km [5]). The longest part is that with Germany (810.3 km, that is 35,4 %), follows that with Poland (761.8 km - 33.3 %), Austria (466.3 km - 20.4 %) and finally Slovakia. The length of the new state boundary with Slovakia is not yet exactly precised and different sources oscillate between 220 and 265 km (for instance Plesník, 1989, p. 39). In this case, the value of 250 km, representing 10.9 % of the total length of the state boundary, was used to calculate the total length of the CR state boundary and for derivation of other numeric characteristics (See below).

To evaluate the boundary length, respectively to compare the boundary length with other territorial units, the index of boundary length per 100 km² of state territory and the so-called Wagner index [6]) is most often used. **Per 100 km² of the CR state territory,** there is 2.9 km of boundary with neighbouring countries. For comparison: the same index is 1.1 km for Poland, 2.3 km for Hungary, 2.9 km for Slovakia, 3.1 km for Austria and even 4.5 km for Switzerland (Häufler, 1984, Häufler, Korčák, Král, 1960). When comparing the ratio of boundary length and territory area, it is important to note that the value of that simple index is disproportionally increasing with the area reduction. Comparison of big states with smaller ones can be thus not very objective.

This default can be eliminated by **Wagner index**. For the CR, it is 2.30 [7]) that means the state boundary is roughly two and half times longer than the perimetre of a circle with the area equal to that of the state. Analogical figure for Poland is 1.80, for Hungary 2.05, for Slovakia 2.1, for Austria 2.56 and for Switzerland 2.58 (Häufler, 1984). This index is more favourable for Poland (1.80), Hungary (2.05) and Slovakia (2.1), less favourable then for Austria (2.56) and Switzerland (2.58).

Another possible index for evaluating boundary evolution and for characterizing the shape of the state territory is the index of the so-called **territorial compactness** calculated by the formula

$$C = \frac{2 \cdot \sqrt{(\pi \cdot A)}}{l}$$

(A - territory area, l - boundary length)

The value for the CR is 0.43. More compact territory than the CR's is in Poland (0.56), Hungary (0.49) and Slovakia (0.47), less compact then in Austria (0.39) (Häufler, 1984).

According to the above mentioned facts, it is possible to arrive to a conclusion that the CR has, with respect to its area, an extraordinary long state boundary. Among our neighbours, only Austria is in a even worse situation.

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[5]) The exact figure will be known only after definitive tracing of the state boundary between the Czech Republic and Slovakia. Four possible modifications of the present boundary are considered. The work of the common Czecho-Slovak boundary tracing commission should be finished in 1994.

[6]) Wagner index is used in geography for evaluation of "development" of cost or boundary of a certain territory with respect to its area. In this case, it expresses the ratio of the real boundary length and the theoretically minimal length, which is the perimetre of a circle of the same area.

[7]) For the former Czechoslovakia, the Wagner index was 2.7. By coincidence, the same value of 2.7 was calculated also for the state boundary length per 100 km² of territory.

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Shrnutí

ČESKÁ REPUBLIKA - ZÁKLADNÍ GEOGRAFICKÉ CHARAKTERISTIKY

Česká republika vznikla po rozpadu ČSFR 1.1. 1993. Svou rozlohou 78 864 km² se řadí mezi menší evropské státy (21. místo v Evropě). Počtem obyvatel 10 328 tis. zaujímá 12. místo. Podle hustoty zalidnění patří mezi přední evropské země (7. místo bez nejmenších státečků).

Matematickogeografická poloha: ČR leží zhruba uprostřed severního mírného pásu. Poloha mezních bodů: nejsevernější 51° 03'26" s.š. u Lobendavy, nejjižnější 48°33'13" s.š. u Vyššího Brodu, nejvýchodnější 18°51'56" v.d. u Hrčavy a nejzápadnější 12°05' 33" u Krásné. Geografický střed leží u Číhoště nedaleko Ledče n. S., na 15°20'01" v.d. a 49°44'13" s.š. Šířkové rozpětí státního území činí 2°30'13", což odpovídá vzdálenosti 278,4 km. Délkové rozpětí 6°46'23" odpovídá 486 km. Rozdíl místních časů činí 27 minut.

Fyzickogeografická poloha ČR je charakterizována především ústřední polohou v Evropě, rozložením na hlavním evropském rozvodí a vzdálenostmi k mořím. Úmoří Severního moře náleží 63,3 % (49 933 km²) státního území, Černému moři 27,3 % (21 545 km²) a Baltskému moři 9,4 % (7 386 km²). Nejnižší bod na hlavním rozvodí (302 m) leží v Moravské bráně. Jeho zeměpisná poloha je 49°35'05" s.š. a 17°45'35" v.d. Z hlediska polohy k mořím má ČR slabě vnitrozemskou polohu. Nejkratší vzdálenost k mořím: k Baltskému moři cca 310 km, k Jaderskému moři 330 km a k Severnímu moři 380 km. Území republiky leží na styku dvou velkých geomorfologických jednotek - České vysočiny (geologicky Český masiv) a (Západních) Karpat. Nejvyšším bodem je vrchol Sněžky (1602 m) v Krkonoších, nejnižším výtok Labe v Hřensku (115 m). Oba body jsou od sebe vzdáleny asi 108 km, jejich vertikální rozdíl činí 1487 m. Střední nadmořská výška se pohybuje okolo 450 m (Čechy 469 m, Morava a Slezsko 432 m). V nadmořské výšce do 200 m se nachází 5,02 % území a nad 1000 m 1,5 %.

Tvar státního území má přibližně obdélníkovou podobu a je protažený v rovnoběžkovém směru. Protaženost území charakterizují především vzdálenosti mezních souřadnic (486 a 278 km) a maximální mapová vzdálenost (482 km) se středovou šířkou (200 km), jejichž poměr činí 2,4. Maximální délka území ve směru rovnoběžky je 452 km (platí pro rovnoběžku 49°32'10"), maximální šířka ve směru poledníku 276 km (platí pro poledník 14°20'30"). Minimální šířka území činí 143 km (na Moravě mezi Králíky a Mikulovem).

Státní hranice ČR tvoří z větší části historické hranice starších státních útvarů. Některé úseky patří k nejstarším v Evropě vůbec a z převážné části mají přirozený charakter. Celková délka hranic činí přibližně 2 290 km, z toho na Německo připadá 810,3 km (35,4 %), na Polsko 761,8 km (33,3 %), na Rakousko 466,3 m (20,4 %) a nejkratší jsou státní hranice se Slovenskem. Jejich délka je až do definitivního vymezení uváděna přibližně na 250 km. Státní hranice jsou členité a v porovnání s rozlohou státu mimořádně dlouhé. Vyplývá to z toho, že na 100 km² státního území připadá 2,9 km hranic se sousedními státy, Wagnerův index vývoje hranic činí 2,30 a ukazatel teritoriální kompaktnosti je 0,43.

Tab. 1 - Nejhustěji zalidněné státy Evropy (k 1.7.1990 v ob./km²).
Obr. 1 - Tvar státního území.
Obr. 2 - Průběh hlavního evropského rozvodí s vyznačením jednotlivých úmoří.
Obr. 3 - Základní geomorfologické jednotky na území ČR.

SBORNÍK ČESKÉ GEOGRAFICKÉ SPOLEČNOSTI
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INTERNATIONAL SCIENTIFIC CO-OPERATION AND THE INTERNATIONAL GEOGRAPHICAL UNION *)

International collaboration among scholars has had a long history. Students flocking to famous centres of learning who wished to spend some time with acknowledged masters, mature scholars exchanging correspondence or visiting others for extended periods of time, intellectuals participating in debates often sponsored by rulers or religious authorities - these are old examples of early forms of contacts and co-operation among academics. With time and scientific development the obvious need for such contacts led to much more structured and developed forms of interaction. Now these include holding various types of meetings and conferences, establishing international scholarly associations, creating government-sponsored research councils and academies, developing international scientific programs, and last, but not least, establishing international networks facilitated by the extraordinary development of telecommunications. Geographers have been involved in various forms of co-operation since ancient times. Now, many, but not all, of these co-operative activities are undertaken under the aegis of the International Geographical Union (IGU). This article briefly outlines the structure and activities of IGU and identifies some problems now facing the international geographical community. I have relied on the sources listed at the end.

History

Geography's roots reach far into history and into many countries on different continents. China, and countries of the Mediterranean Basin and the Muslim world are some examples that come easily to mind. However, it was in the nineteenth century that geography began its impressive growth, both as an academic discipline and as an applied field. Geography departments and institutes were gradually being formed at universities. In various European countries, as well as in America, national geographical associations were established. These attracted not only scholars, but also people active in business and government who were often associated with colonial ventures. At the same time libraries and documentation centres were established, which often were associated with publishing houses. Finally, various business and government agencies made use of geographers and their knowledge. It is not surprising, therefore, that in the later part of the nineteenth century the idea of an international gathering of scholars and people generally interested in the science of geography was first put forward. In fact, Charles

*) This is an expanded and revised version of a text originally published in a journal of the Korean Geographical Society, Geography 27 (1992) 2:161-167 (in Korean).

Ruelens, a distinguished Belgian scholar and librarian, proposed honouring two Flemish cartographers, Mercator and Ortelius, whose statues were to be erected in their homeland. The first International Geographical Congress was to have met in August 1870, but the Franco-Prussian War caused a delay. Eventually the meeting, under the title Congress of Geographical, Cosmographical, and Commercial Sciences, was held in Antwerp, 14-22 August 1871. Some 300 participants from 20 countries met for a series of discussions. The success of the 1st Congress prompted its participants and other interested people to organize subsequent congresses held at irregular intervals in various cities (Table 1). By the outbreak of the First World War nine such congresses had been held. Except for one in the United States, they were all held in Europe (IGU 1972).

The success of these congresses prompted some people to think about creating a permanent scientific organization. The idea was first brought up at the 3rd Congress in 1881, and a formal resolution on the subject was passed at the 10th Congress in 1913. That resolution called for a meeting of Secretaries of Geographical Societies worldwide to establish a permanent organization in charge of geographical congresses and contacts between practising geographers. The meeting planned for November 1914 in Copenhagen had to be cancelled due to the outbreak of the First World War. As well, the war meant the Congress planned for St. Petersburg in 1916 did not place.

It was only after that war ended that academics in the victorious Allied countries decided to create an International Research Council. This organization, established in 1919, was succeeded in 1931 by the International Council of Scientific Unions (ICSU), which still exists. During the second meeting of the Council in Brussels, 21 representatives from 7 countries (Belgium, France, Great Britain, Italy, Japan, Portugal, and Spain)

Table 1 - International Geographical Congresses, 1871-2000

Held in Europe	Held outside Europe
1. Antwerp, 1871	
2. Paris, 1875	
3. Venice, 1881	
4. Paris, 1889	
5. Bern, 1891	
6. London, 1895	
7. Berlin, 1899	
	8. United States, 1904
9. Geneva, 1908	
10. Rome, 1913	
	11. Cairo, 1925
12. Cambridge, 1928	
13. Paris, 1931	
14. Warsaw, 1934	
15. Amsterdam, 1938	
16. Lisbon, 1949	
	17. Washington, 1952
	18. Rio de Janeiro, 1956
19. Stockholm, 1960	
20. London, 1964	
	21. New Delhi, 1968
	22. Montreal, 1972
23. Moscow, 1976	
	24. Tokyo, 1980
25. Paris, 1984	
	26. Sydney, 1988
	27. Washington, 1992
28. The Hague, 1996 (approved)	
	29. Seoul, 2000 (approved)

established the International Geographical Union on 27 July 1922. From the very beginning, membership in the Union was by countries. The main objectives of the newly created Union were both scientific and organizational. It was to initiate and sponsor research into major problems in geography, co-ordinate research involving scholars from different countries, and organize the International Geographical Congresses. Five such congresses took place in the interwar years - 4 in Europe, 1 in Africa. The membership of the Union gradually increased and the permanent bureau was established. Following the first meeting in 1922, the General Assembly of member states met again in 1924 in Brussels and subsequently it met together with the congresses.

The Union survived the Second World War, even though the Congress planned for 1942 in Lisbon had to be postponed until 1949. Subsequently, membership of the Union expanded very considerably. The congresses were now regularly held, not only in Europe, but increasingly in other parts of the world. Various activities between the congresses were mainly organized by an increasing number of scientific commissions, working groups, and study groups. Finally, as a recognized representative of the geographic profession worldwide, the Union has been involved in an increasing number of international initiatives and ventures (Kish 1989).

Structure of the Union

According to the statutes in force in 1992, the main objectives of the International Geographical Union are:

1. to promote the study of geographical problems;
2. to initiate and co-ordinate geographical research requiring international co-operation and to promote its scientific discussion and publication;
3. to provide for the participation of geographers in the work of relevant international organizations;
4. to facilitate the collection and diffusion of geographical data and documentation in and between all member countries;
5. to promote meetings of the International Geographical Congresses, regional conferences between the International Geographical Congresses, and other meetings in furtherance of the objectives of the Union;
6. to participate in any other appropriate form of international co-operation with the object of advancing the study and application of geography;
7. to promote international standardization or compatibility of methods, nomenclature, and symbols employed in geography (IGU Bulletin 1993, 15).

The supreme authority of the Union continues to be the General Assembly of delegations of member states which meets every four years during the Congress. The Assembly receives the reports of the Executive, decides on the budget, elects officers of the Union, makes decisions on future numbers and composition of scientific commissions, and decides on the venue of the next Congress.

The activities of the Union are co-ordinated by the Executive Committee, which now consists of President, Secretary-General and Treasurer, and eight Vice-Presidents. A constant attempt is made to elect members of the Executive Committee who are not only distinguished scholars in their own right, but also represent different parts of the world and various sub-disciplines of geography.

Between the congresses, scientific activities are undertaken by commissions and study groups. Since they were first established in 1891, their number and profile has changed enormously. Initially, they were closely integrated with the congresses and their main function was to discuss or investigate selected problems and report their findings to the next Congress. Now they retain considerable autonomy over their activities and publications. The commissions are established by the General Assembly, while the study

groups, created for a trial period of four years, are the creatures of the Executive Committee. Both consist of a chairperson and ten full members - not more than one per country. Commissions and study groups (and, in the past, working groups) have always generated considerable debate within the Union. At issue was their number, size, method of selecting membership, rotation, duration, and, last but not least, their scientific profile and modus operandi. In view of the limited resources of the Union, support of the commissions and study groups has always been relatively limited. Not surprisingly, there have been frequent changes in the number and structure of these units.

Membership in the Union, from the very beginning, was by countries represented by the committees for IGU (sometimes also called National Committees). The membership expanded greatly after the Second World War and reached a maximum of 88 in the mid 1980s. However, following the change of statutes adopted in 1988, countries that were in arrears for three years or more, and/or did not maintain contact with the Union, lost their membership status. As a result, the number has declined and varies from one year to the next, since annual verification results in deletion of some countries nearly every year, but at the same time, several countries either return to the Union or join anew. At the time of the 18th General Assembly held in Washington in 1992, there were 67 member countries, divided into several categories according to the level of their financial contribution to the Union (Table 2). By 1993, their number increased to 71 (IGU Bulletin 1993).

Table 2 - Membership of IGU (15 July 1992)

Category	Number of Countries	Countries
Associate *)	9	Costa Rica, Cyprus, Estonia, Lebanon, Mongolia, Mozambique, Tunisia, Vietnam, Zimbabwe
I	26	Argentina, Bulgaria, Cameroon, Chile, Columbia, Cuba, Ghana, Guatemala, Hong Kong, Hungary, Iceland, Ireland, Israel, Ivory Coast, Lesotho, Lithuania, Mexico, Morocco, New Zealand, Nigeria, Pakistan, Philippines, Romania, Singapore, Tanzania, Uganda
II	9	China (Taipei), Czechoslovakia, Egypt, Indonesia, Norway, Poland, Portugal, South Africa, Thailand
III	8	Austria, Belgium, Denmark, Finland, Korea, Netherlands, Slovenia, Yugoslavia
IV	5	Australia, India, Spain, Sweden, Switzerland
V	2	Brazil, China (Beijing)
VI	1	Canada
VII	0	—
VIII	2	Japan, United Kingdom
IX	4	France, Germany, Italy, Russia
X	1	United States
Total	67	

*) Associate Members do not have the right to vote at the General Assembly

The Union is financially independent and has its own budget, which currently exceeds U.S.$100,000 a year. The revenue comes mostly from national dues paid by member countries (about 70%). IGU also receives grants from UNESCO via two councils of which the Union is a member - International Social Science Council (ISSC) and International Council of Scientific Unions. Most of the expenditures go to support commissions and study groups (55%), with publications and general administration also accounting for a considerable percentage (11% each).

Activities

The main recurring event in the life of the Union is the quadrennial International Geographical Congress. Twenty-seven Congresses have already been held (18 in Europe, 5 in America, 2 in Asia, 1 in Africa, and 1 in Australia). The 28th Congress is scheduled to meet in The Hague in 1996, and the 29th Congress will go to Seoul in the year 2000.

In 1955, the Union also decided to organize regional conferences which take place between the major congresses. Some of these regional conferences are planned around a specific theme, while others follow the format of the congresses. Ten regional conferences have been organized so far, with the next ones scheduled for 1994 in Prague, 1995 in Havana, and 1998 in Lisbon (Table 3). The format of the Congress and the regional conference have evolved over time. Now there are pre-Congress symposia sponsored by commissions and study groups, followed by the main part of the Congress, which is divided into sections and includes various thematic symposia, public lectures, and site visits. More recently, workshops and short courses have also been added. The third type of activity is represented by scientific field trips usually organized after the Congress. The general reports and scientific results are contained in the proceedings published after each event. Proceedings of the last Congress are already available (27th IGC 1993). In addition, various national delegations tend to sponsor special publications inspired by a Congress or regional conference. As a result, a very considerable volume of scientific literature has been generated by these events (Kish 1978).

One of the main features of the Union's work has been the activities of commissions and study groups. They are established to study a specific problem or to accomplish a task which requires international collaboration. Their main activity is to organize specialized symposia between the congresses as well as in connection with the congresses and to generate interest in specific areas of geography. Over the years, the number and

Table 3 - Regional Conferences of IGU, 1955-1998

Held in Europe	Held outside Europe
	1. Kampala, Uganda, 1955
	2. Tokyo and Nara, Japan, 1957
	3. Kuala Lumpur, Malaysia, 1962
	4. Mexico City, Mexico, 1966
5. Budapest, Hungary, 1971	
	6. Palmerston North, New Zealand, 1974
	7. Lagos, Nigeria, 1978
	8. Sao Paulo, Brazil, 1982
9. Barcelona, Spain, 1986	
	10. Beijing, China, 1990
11. Prague, Czech Republic, 1994 (approved)	
	12. Havana, Cuba, 1995 (approved)
13. Lisbon, Portugal, 1998 (approved)	

Table 4 - Scientific Meetings Organized by IGU Commissions and Study Groups, 1989-1992

Africa	Americas	Asia and Oceania	Europe
Europe	Argentina	China (17)	Austria
Kenya	Brazil	Hong Kong	Czechoslovakia (7.5)
Morocco (3)	Canada (7)	India (5)	France (13)
Nigeria	Chile (4)	Israel (2)	Germany (12)
South Africa	Jamaica	Japan (4)	Hungary (2.5)
	USA (48)	Malaysia (3)	Italy (6)
	Venezuela (2)	New Zealand	Netherlands (8)
			Norway
			Poland (3)
			Portugal (3)
			Spain (4)
			Sweden (2)
			Switzerland (4)
			UK (12)
			USSR/Russia (9)
			Yugoslavia

Note: In case of multiple meetings, the number is given in brackets

level of activity of commissions and groups has expanded considerably. The scope and scale of work performed by 22 commissions and 8 study groups during the last term (1988-92) can be seen from the statistics (Kosiński 1993a). Between them they organized 154 events, including 163 symposia and 31 sessions, that took place in 37 countries on 5 continents. While 16 events were related to the Regional Conference in China, and 36 were connected with the 27th International Geographical Congress in Washington, the remaining events were spread around the world, with the USA, France, Germany, and the UK hosting the largest numbers (Table 4). During this period, seven meetings took place in Czechoslovakia and an additional one was hosted jointly by Czechoslovakia and Hungary. The total number of participants in these events is estimated at 25,000, in addition to some 1,000 participants in the Regional Conference in China and 2,300 participants in the Congress in the USA. Between them, the commissions and study groups issued 177 publications, including 127 monographs, volumes of proceedings, and special issues of periodicals. Twenty-eight of them issued newsletters. Their circulation varied greatly, but at least 59 issues appeared and were sent to at least 5,000 addresses (Kosiński 1993a). The 18th General Assembly has established twenty-four commissions for the present term (1992-96). In addition, seven study groups were approved by the Executive (Table 5). Among their regular members are four Czech geographers (IGU Bulletin 1993).

The Secretariat of the IGU publishes a semi-annual *IGU Bulletin*. Some 4,500 copies are distributed free-of-charge through the network of committees of IGU worldwide. In addition, a small-circulation, frequent circular letter is sent to chairpersons of commissions and study groups as well as to national committees. Other central publications appear irregularly. During 1984-94 they also included the catalogue of IGU-sponsored publications and calendars of future events.

Co-operation

From the very beginning, the International Geographical Union was connected with the International Research Council, now known as the International Council of Scientific Unions. The Council, which recently celebrated its sixtieth anniversary, is a major organization representing natural sciences. It initiates various interdisciplinary programs

Table 5 - IGU Commissions and Study Groups Established in 1992

Commissions			Chairpersons
92.C	01	Climatology	M. Domrös, Germany
92.C	02	Coastal Systems	N.P.Psuty, USA
92.C	03	Communication Networks and Telecommunication	H. Bakis, France
92.C	04	Critical Environmental Situations and Regions	R. Kasperson, USA
92.C	05	Environmental Changes and Conservation in Karst Areas	V. Sauro, Italy
92.C	06	Frost Action Environments	J.-P. Lautridou, France
92.C	07	Gender and Geography	J. Momsen, UK
92.C	08	Geographic Information Systems	S. Kubo, Japan
92.C	09	Geographical Education	H. Haubrich, Germany
92.C	10	Geography and Public Education	M. Barlow, Canada
92.C	11	Geography of Commercial Activities	R.M. Ahsan, Bangladesh
92.C	12	Geography of Famine and Vulnerable Food Systems	H.-G. Bohle, Germany
92.C	13	Geomorphological Response to Environmental Change	A.C. Imeson, Netherlands
92.C	14	Health, Environment, and Development	D.R. Phillips, UK
92.C	15	Historical Monitoring of Environmental Change	V.V. Annenkov, Russia
92.C	16	History of Geographical Thought	K. Takeuchi, Japan
92.C	17	Marine Geography	H.D. Smith, UK
92.C	18	Mathematical Models	M.M. Fischer, Austria
92.C	19	Mountain Geoecology and Sustainable Development	J.D. Ives, USA
92.C	20	Natural Hazard Studies	C. Rosenfeld, USA
92.C	21	Organization of Industrial Space	S. Conti, Italy
92.C	22	Population Geography	D. Noin, France
92.C	23	Urban Development and Urban Life	D. Pumain, France
92.C	24	World Political Map	H. van der Wusten, Netherlands
Study Groups			Chairpersons
92.SG	01	Development Issues in Marginal Regions	R. Majoral, Spain
92.SG	02	Environmental Management and Mapping	N.F. Glazovsky, Russia
92.SG	03	Erosion and Desertification in Mediterranean Environments	M. Sala, Spain
92.SG	04	Recent Industrial Transformation, Urban Adaptation, and Regional Environment	B.L. Dezert, France
92.SG	05	Regional Hydrological Responses to Climatic Change	Liu, Chang-ming, China
92.SG	06	Sustainability of Rural Systems	I.R. Bowler, UK

Source: IGU Bulletin 1993

and establishes multidisciplinary committees. Information about ICSU activities can be found in its newsletter (ICSU-*Science International*) and various other publications. Over the years, many individual geographers, as well as IGU commissions, have been involved in a number of such programs and committees. Now, the most important initiative undertaken by ICSU is the International Geosphere-Biosphere Program (IGBP) with its own secretariat in Stockholm, Sweden. The program is concerned with global changes in the natural environment and its consequences. Geographers serve on its scientific committee and participate in some of the research activities. Another important initiative of ICSU is the International Decade for Natural Disaster Reduction (IDNDR) with its own secretariat in Geneva, Switzerland. The IGU is well represented in this program, both at the leadership level and in research activities.

The IGU is also a member of another co-ordinating body, the International Social Science Council, which represents social sciences around the world. The Council, established in 1951, has recently adopted a new constitution which is aimed at expanding the role of the Council in global social science. Information about current activities of ISSC can be found in a newsletter distributed jointly with the quarterly *International Social Science Journal* published by UNESCO (*ISSC Newsletter*). ISSC initiates various international and interdisciplinary programs, of which the most important now is the Human Dimensions of Global Environmental Change Program (HDP) with its own secretariat in Barcelona, Spain, and another office in Geneva, Switzerland. Geographers are involved at different levels in this program.

All three programs have established working groups which address individual problems identified by scientific committees. Participation in the actual research and work of these groups gives geographers access to the most exciting interdisciplinary research activities undertaken on a global scale. As a representative body of international geography, IGU is often consulted or invited to participate in various international initiatives and events. It is not always easy to react rapidly, and meaningful response to these invitations tests the capacity of the Union.

Problems and Prospects

The success of the International Geographical Union as a representative organization of world geographers will depend on success in solving various problems facing the Union. These can be conveniently grouped under four sub-headings: universality, effectiveness, responsibility, and co-operation.

To realize universality, the Union attempts to represent geographers in all countries of the world. Consequently, continual attempts have been made to expand the membership which now includes close to 70 countries. The important issue is not only to have as many member countries as possible, but also to maintain effective contacts with national geographical communities. The lack of contacts and co-operation is seen by our statutes as sufficient reason to exclude a country from the active membership list. This has already resulted in changes in the number of members from the 7 founding countries to a maximum approaching 90 and now back to around 70.

Universality of the organization can also be expressed in participation in various events sponsored by the Union. Membership in the congresses, regional conferences, and scientific symposia is open to all bona fide geographers, and in fact these events attract people from both member and non-member countries. This practice should and will continue. On the other hand, it is expected that members of the Executive Committee, and chairpersons and full members of commissions and study groups, will come from member countries. Here the most important issue is sufficiently rapid rotation of members to allow more countries to be represented and new blood to be added frequently in order to prevent a "closed-shop" mentality. The present automatic renewal of four-year terms for all members of the Executive is seen by some as undesirable. As well, it is important to make sure that events organized by the Union take place in various parts of the world. In fact, both the major congresses and the scientific symposia are organized in a large number of countries, but further improvements would be desirable.

Second, the effectiveness of an international organization can be measured by how well it fulfils its main objectives of sponsoring and encouraging international co-operation and exchange. The main problems with congresses and meetings are their frequency and format. The quadrennial congresses and regional conferences tend to last up to three weeks, including special symposia and field trips. Many people find it difficult to attend such long and costly events. Some may be tempted to attend specialized sympo-

sia and miss the Congress, thus reducing the effect of a global gathering of professionals. Another problem is the selection of papers presented to the congresses and regional conferences. Their number tends to become too large and not easily manageable from a purely organizational and scientific point of view.

The concern with commissions and study groups is with their number and longevity. How meaningful the co-ordination of work of the commissions and the financial support that IGU can offer them depends on their number. The proliferation of commissions, while reflecting enthusiasm of various geographers, may in fact reduce their effectiveness, and the Union has continually tried to limit their number and to encourage faster turnover of both commissions and their membership. Over the last several years, deliberate efforts were made to encourage individuals who wish to establish or renew commissions to carry out preparatory work earlier so that the four-year term of existence can be used more intensively. Proposed objectives are now carefully scrutinized and the work of commissions and study groups is evaluated by the Executive Committee. The evaluation process has to be made more meaningful and it should be possible to terminate ineffective bodies in mid-term, in order to avoid sponsoring groups which exist in name only.

Third, responsibility is vital since the Union has to rely on the voluntary work of committed individuals and support from various national organizations. It is obvious that nobody can be expected to devote all available time and energy to activities of the organization. On the other hand, it is not unreasonable to anticipate a responsible attitude from those who assume the leadership role. Should they be unable or unwilling to perform their duties, they should resign or be replaced without delay. It is not very helpful to retain non-functioning units or inactive officers.

Fourth, co-operation has become more important as the Union is increasingly called upon to respond to outside initiatives, either by undertaking certain activities or by offering advice and suggestions. If geography is to maintain credibility and visibility in an interdisciplinary forum, the profession has to be able to respond rapidly and meaningfully to unexpected challenges. Now IGU does not have a sufficiently flexible system of response. Establishment of such a system has to be seen as one of the important tasks for the future.

The International Geographical Union recently celebrated its seventy-fifth birthday, but if one takes into consideration the history of the congresses, the tradition of organized international co-operation of geographers goes back more than 120 years. It is a sufficiently long period to justify the need for such co-operation and acquisition of experience which will have to be creatively used to meet the challenge of the coming years.

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ORBIS GEOGRAPHICUS BOHEMICUS 1994

Publication of the updated directory of geographical institutions and geographers of the Czech Republic has been initiated by Organizational Committee of IGU 1994 Regional Conference which is being held in Prague. Publication of the directory aims at updating the list of Czech geographical workplaces and geographers after the further transformation of universities, Czech Academy of Sciences and research institutions, at creating the first directory of geographers in the Czech Republic at all - taking into account that the political formation is new in the map of Europe - and to provide to those who participate in the IGU Conference the basic view of the structure of geography in the country.

The directory is arranged according to individual institutions. The first institution mentioned is the Czech Geographical Society, than individual geographical departments and divisions at universities and Academy of Sciences of the Czech Republic, and finally the workplaces of not literally the geographical character, which - however - employ larger number of geographers. Each institution is presented with its English and Czech name, postal address, communication contacts and management.

List of geographers goes with each of the workplaces, structure of the entry on an individual being as follows:

- first name and surname including titles [1]), specialization code (see list of specializations),
- date and place of birth,
- completed university [2]), acquired scientific and pedagogic ranks and year of their acquirement,
- position at work.

Due to the lack of space, it is not possible to publicize in this way the alphabetical list of geographers, which includes, in addition, geographers working at non-geographical institutions, in state administration, private agencies and those who have retired. This list will be published in the magazine Moravian Geographical Reports 1/1994 issued by subsidiary of Institute of Geonics, branch Brno.

LIST OF TOPICAL SPECIALIZATIONS

10 Physical Geography, Landscape
11 Geomorphology
12 Soils Geography
13 Climatology, Climageography
14 Hydrology, Hydrogeography
15 Biogeography
16 Karst Geography
17 Geology
20 Human Geography
21 Population Geography, Demography
22 Geography of Settlements and Dwelling
23 Agricultural Geography
24 Manufacturing Geography
25 Transportation Geography
26 Recreational Geography
27 Marketing and Services Geography

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[1]) *RNDr. = Doctor of Natural Sciences, PhDr. = Doctor of Philosophy, PaedDr. = Doctor of Pedagogics (graduates from universities after special examinations associated with disertations); Mgr. = graduates from universities after 1990; Ing. = Engineer (graduates from Technical, Agricultural and Economic universities with no additional examination); Prof. = Professor, Doc. = Associate Professor; CSc. = Candidate of Sciences, DrSc. = Doctor of Sciences (scientific degrees associated with special theses and examinations)*

[2]) *in the period 1960 – 1990, the Masaryk University in Brno was named University of Jan Evangelista Purkyně*

30 Cartography
35 Mathematical Methods, Statistics
36 Remote Sensing
37 Geographic Information Systems
40 Regional Geography
41 Regional Geography of the Czech Republic
42 Regional Geography of Foreign Countries
43 Regional Economy
45 Regional and Urban Planning
50 Environmental Geography, Geoecology
60 Theoretical Geography
65 Historical Geography, History of Geography
66 Political Geography
67 Medical Geography
70 Teaching Techniques in Geography

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THEMATIC ATLASES OF CZECHOSLOVAKIA AND OF THE CZECH REPUBLIC

While before constitution of Czechoslovakia our thematic cartography has at its disposal only the work of A. L. Hickmann Industrial-Atlas des Königreiches Böhmen (Prague 1862-1864, 12 maps in the 1:900 000 scale), this type of production was sensibly richer after 1918. The first thematic atlas of the young Czechoslovak state was published by German Ass. Prof. of statistics Ernst Pfohl under the name of the *Průmyslový atlas Československé republiky* (Industry Atlas of the Czechoslovak Republic, Liberec 1920) with 40 sheets with major maps in the 1:500 000 scale. The work was published simultaneously in German version as *Wirtschaftsatlas des Čechoslowakischen Staates*. A much larger choice of economic-geographic maps was presented in the *Národohospodářský atlas republiky Československé* (Economic Atlas of the Czechoslovak Republic) by Julius Čiháš (Prague 1928) with 124 maps, mostly in the 1:3 000 000 and the 6 000 000 scale accompanied by text in Czech, German and French. The most important thematic atlas after the World War I was nevertheless the national atlas *Atlas republiky Československé* (Atlas of the Czechoslovak Republic), being published since 1931 in instalments (Prague 1935) and edited by Prof. Jaroslav Pantoflíček and Václav Láska. It contains 55 map sheets with about 500 maps and cartogrammes in the major scale of 1:1 500 000 with Czech and French explanations and with texts accompanying different maps. It was positively appreciated also at international level.

The first thematic atlas published in our country after the World War II was the *Populační atlas českých zemí* (Population Atlas of the Czech Lands) by Vladimír Srb and Jaroslav Šebesta (Prague 1948). It contains 19 black and white cartogrammes in the 1:1 700 000 scale (and 48 double pages of diagrammes) mapping the most significant demographic phenomena according to the results of the 1930 census and according to the latest investigations done in 1946 (however, the displacement of Germans is anticipated in the calculations back to 1930). Is its accompanied by Czech explanatory text.

The *Lesnický a myslivecký atlas* (Forestry and Hunting Atlas, Prague 1955), edited by Květoň Čermák et al. contains 120 map sheets, two third of them covering the territory of Czechoslovakia (major map scales being 1:750 000, 1:2 000 000 and 1:3 000 000). Detailed contents of the map part are indicated in Czech, Russian, English and German, the text accompanying individual maps covers 90 pages.

The first systematic and global survey of the Czechoslovakia climate is presented by the *Atlas podnebí Československé republiky* (Climatic Atlas of the Czechoslovak Republic), edited by Antonín Vesecký et al., containing 82 maps of the 1:1 000 000 scale (Prague 1958) and published in 2 000 copies. The Atlas was published simultaneously also in Slovak and it contains 14 pages of text.

The first systematical atlas of the Czech and Slovak history is the *Školní atlas československých dějin* (School Atlas of the Czechoslovak History), elaborated by 32 authors with participation of editorial board chaired by Ass. Prof. František Roubík (Prague 1959). It contains 44 map sheets and it was published in total in 16 editions (for the last time in 1988), its Slovak version was being published simultaneously.

The geographical counterpart to the atlas of history is the *Školní zeměpisný atlas Československé republiky* (School Geographical Atlas of the Czechoslovak Republic, Prague 1960), since 1961 published as School Geographical Atlas of the Czechoslovak *Socialist* Republic. It is in fact a miniature of the national atlas, even more valuable as a real national atlas was inexistent at that time. The first edition contains 50 maps and cartogrammes on 36 sheets and its editorial board was chaired by Prof. Karel Kuchař. Up to 1970, the atlas was published in four editions, while its Slovak version was in the same time published seven times.

The team of authors of the Czechoslovak Academy of Agricultural Sciences and of the Research Institute of Agricultural Economy elaborated under the direction of František Hamerník the *Atlas rajonizace zemědělské výroby v ČSR* (Atlas of the Agricultural Production Zoning in the CSR, Prague 1960). One volume, containing a set of zoning maps in the 1: 200 000 scale, was consecrated to each of 19 regions existing at that time. The map part is accompanied by methodical approach directions for using its contents and the atlas includes also a publication on Rajonizace zemědělské výroby v ČSSR (Agricultural Production Zoning in the Czechoslovak Socialist Republic, Prague 1960 and 1963).

Short after introduction of a new administrative territorial division of Czechoslovakia, Milan Kučera and Vladimír Srb elaborated the *Atlas obyvatelstva ČSSR* (Atlas of the Population of the CSSR, Prague 1962) containing statistical tables, graphs and 20 cartogrammes in the 1:3 000 000 scale, cartographically reproducing and documenting, according to districts, the cited demographical characteristics.

The most important work of the historic cartography is the *Atlas československých dějin* (Atlas of the Czechoslovak History, Prague 1965) elaborated under the direction of Jaroslav Purš and containing

45 sheets with 431 maps, cartogrammes, diagrammes and graphs. It is the basic scientific work presenting a unified and complex view on the historical development of our nations.

Similar work in the Czechoslovak geography from the qualitative point of view is the *Atlas Československé socialistické republiky* (Atlas of the Czechoslovak Socialist Republic, Prague 1966). This second national Czechoslovak atlas, edited by Antonín Götz, contains 58 map sheets with 433 maps in the basic scale of 1:1 000 000. The work contents are divided into seven thematic groups, explanatory notes and accompanying texts on the maps back-side are in Czech, English and Russian. Five maps of this atlas, completed by two new ones, gave birth to the *Geologický atlas ČSSR* (Geological Atlas of the CSSR, Prague 1966) destined, among other, to inform participants of the prepared International Geological Congress in Prague about the state of geological research in Czechoslovakia.

In the field of toponomastics, the rotaprinted *Atlas místních jmen v Čechách* (Atlas of the Place Names in Bohemia, Prague 1968) by Prof. Vladimír Šmilauer was published as a special appendix of the Newsletter of the Toponomastic Commission of the Czechoslovak Academy of Science. It contains 200 maps of different names and name types in the 1:1 500 000 scale and completes the author's book Osídlení Čech ve světle místních jmen (Colonization of Bohemia in the light of local names, Prague 1960).

A new version of the School Atlas of Czechoslovakia, *Atlas ČSSR* (Atlas of the CSSR, Prague 1972) was published in the edition of the unified system of school cartographic aids, directed by Antonín Koláčný, as school book for primary and secondary schools. It contains 42 map pages, its contents were extended and actualized in comparison with the first version of the school atlas and some maps correspond to the previously published wall maps. The atlas was being published up to 1983, in total in eight editions, the Slovak version had also eight editions in the years 1974-1984.

When the new educational system was introduced in Czechoslovakia in 1984, the *Atlas ČSSR* (Atlas of the CSSR) was published in a new, rather larger (50 map pages) and revised edition, as teaching aid for elementary and secondary schools (Prague 1984). In the following years, it was published five times, the sixth, actualized version (1990) - contains 48 map pages. The Slovak version was published three times in the years 1986-1989.

Only 300 copies of the *Atlas chemického a spotřebního průmyslu* (Atlas of the Chemical and Consumer Industry of the CSSR, Prague 1974) were destined for administrative use only. It contains 138 sheets with maps of localization of different industrial objects in districts and regions of the Republic on the basis of planning groups and production economic units and number of workers.

A team of authors, directed by Ass. Prof. Miroslav Buchvaldek, elaborated for students of the Charles University in Prague and the Jagellonian University in Krakow, in the form of roneoed lecture notes, the *Archeologický atlas Evropy a Československa* (Archaeological Atlas of Europe and Czechoslovakia, Prague 1979). It has 62 text and 72 map pages, 29 pages with 27 maps in 1:4 000 000 scale being devoted to the Czechoslovak territory - they present the localization of archaeological cultures and finding places in Czechoslovakia.

The census in 1980 gave origin to the *Atlas ze sčítání lidu, domů a bytů 1980. Česká socialistická republika 1:500 000* (Atlas of Population, Houses and Flats Census 1980. Czech Socialist Republic 1 : 500 000, Prague 1984). It has 30 sheets and links up with the previously published map sets of physical-geographical and economic-geographical regionalization in the same scale. As the first atlas in our country, it is based on using the Czechoslovak automatized cartographical system DIGIKART. The observed phenomena are expressed according to the municipalities territory. The extensive Czech text is situated on the back-side of map sheets.

The theme of Czechoslovak population and settlements is described in a complex way in all their space, regional and territorial connexions by the *Atlas obyvatelstva Československé socialistické republiky* (Atlas of the Population of the Czechoslovak Socialist Republic, Brno 1978). It has in total 24 sheets with 56 maps in the basic scale of 1:750 000, explications and accompanying texts are in Czech, Russian and English. The contents of the atlas link up with the part dedicated to the population in the National Atlas of 1966 and, methodically and technically, with the Atlas of Census of 1984. Beside this basic version, accessible in the time of its publication only to state administration and socialist organizations, the atlas was published in the same time in an abridged version of 19 sheets for public.

The view on the health situation from the point of view of localization of health centres, development of most serious illnesses and mortality due to them, is given by the *Soubor map zdravotnictví ČSSR* (Set of Health Maps of the CSSR, Brno 1987). Nine sheets of the atlas present in total 201 maps, cartogrammes and cartodiagrammes in scales going from 1:1 000 000 to 1:20 000 000, the most frequent ones being 1:4 000 000 and 1:20 000 000. Originally, the atlas had to contain 12 map sheets, but 3 sheets were left out because of being kept secret. Even then the set was published in a unsatisfactorily low number of 250 exemplars. The general introduction and texts accompanying the maps were published in Czech only in a small booklet.

The decreasing quality of environment in Czechoslovakia and the consequent stagnation or even deterioration of the health state of the population were on the origin of the *Atlas životního prostředí a zdraví obyvatelstva ČSFR* (Atlas of the Environment and Health of the Population of the ČSFR, Prague - Brno 1992). Its maps have to enable comparison of both phenomena to take measures against the present negative development and to eliminate destructive factors. The atlas has 21 sheets with 104 maps, most frequently in the 1:4 500 000 scale. Explanatory notes are in Czech and English, accompanying texts in Slovak and English, names of map sheets are in Czech (15) or in Slovak (6) and in English.

The result of the research work of the Czech dialectology in the years 1964-1976 is the first volume of the *Český jazykový atlas* (Czech Linguistic Atlas, Prague 1993) monitoring by area method on 159 maps distribution of different designation of substantives. Further four volumes, containing substantive declension, utilization of adjectives and pronouns, etc. should follow.

After the independent Czech Republic came into existence, 38 basic maps, cartogrammes and cartodiagrammes were chosen from the school atlas of the CSFR from 1990 and published on 32 sheets under the name of *Česká republika* (The Czech Republic, Prague 1994) as one of 7 sheet atlases for Czech primary schools (for the eight class in that case). It is in fact a miniature of the first national atlas of this country.

This outline of Czech thematic atlases can be information for foreign readers for whom Czech usually means a language barrier. The fact that some atlases have explications or are accompanied by the text in foreign languages is therefore emphasized here.

Ludvík Mucha

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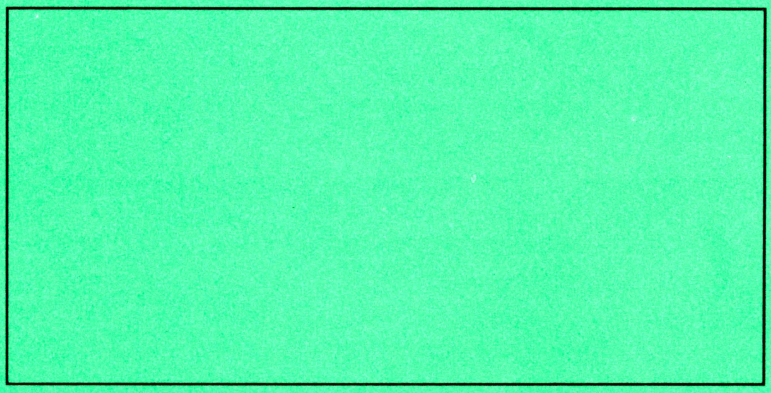

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