

HISTORICO-CARTOGRAPHICAL WORKS IN CZECHOSLOVAKIA

The last report about Czech efforts and achievements in historical cartography was submitted at the Amsterdam congress (1938). Professor Václav Švambera submitted at the occasion a publication of the *Monumenta Cartographica Bohemiae*, which was accepted into a series of editions, assembling the most important map monuments of individual countries, which were successively to be realized in different states. Since that time I carried on with the extension and elaboration of that basic work, which will even in future confine itself to an overall representation of Bohemia, Moravia, Silesia and Slovakia, but in preparing the new edition of the *Monumenta* it was necessary to study even partial and detailed survey and cartographical monuments and their relationship to contemporary overall maps. Of the results of those studies I should like to point out some principal perceptions and issues.

The reasons for publishing the facsimile editions were strengthened by the 2nd world war. The map collections in the area of Central Europe were disorganized and partly destroyed by the war, some rare items were damaged by fire and sword, locations as well as owners of map funds changed, collectors of old maps became rarer and map sheets vanished from the bookseller's market. Although Czechoslovakia was not afflicted as badly as some other countries, it was nevertheless necessary to make up a list of what, in the nature of old maps of our countries, had been preserved in Czechoslovakia. The evidence was, to a certain extent, facilitated by the fact that some public and numerous private collections passed into the ownership of the state. I refer to the work by Fr. Roubík: *List of maps of the Czech countries* (Praha 1951 and 1955). Today, the largest fund of historical maps reposes with us in the Cartographical Department of the Czechoslovak Academy of Sciences. We also went through country archives and came across numerous documents throwing new light upon the methods of work of the old land surveyors and cartographers, and incidentally enriching the local historical research at the same time. In previous historico-cartographical research the historical and biographical aspects prevailed, whereas, the cartographical evaluation, the critical discussion of accuracy and the practical usefulness of maps were either passed by or considered in a manner usual and current in case of modern maps, but unsuitable for application to old maps. I refer to the methods by which we carry out the cartometric analysis of old maps, at the close of the present paper.

It is natural that facsimile work was at first applied only to the oldest and rarest of monuments handed down to us from outstanding representatives of the former learned world, depicting memorable events in the history of discoveries and attracting the reader not only by its geographical contents, but also visually, by its antique character or its splendid graphic appearance. Maps of the 18th and 19th century were not reproduced in facsimile, they were not even studied to any special extent. They were of recent origin, their artistic value was usually not exceptional; geographically their contents were not very accurate and their large number did not create an impression of rarity. In so far as they formed part of an atlas or an annexe to literary works, they were preserved in sufficient numbers and it did not seem necessary to reproduce them again for modern

scholars. Loose sheets, loosely published maps, were always much rarer. The nineteenth century met the ever growing demand for maps by an increased production of individual maps and charts, which, in view of the frequently occurring changes of geographical scenery, enjoyed but short periods of practical usefulness. Their majority lacked ornamentation of any worth-while value, so that not even collectors of graphical art preserved them. Obsolete maps and charts, which had been replaced by newer ones, were put away and destroyed and thus maps of this period tend to be rarer than some far older maps. The care afforded to their preservation against decay is also still inadequate and rendered more difficult by wear of existing specimens and the considerably poorer quality of paper used at the time.

But even those recent maps are still in practical use, be it in connection with reconstructions or the growth of towns, with adjustments of water-ways and constructions of waterworks, with resuming operations in abandoned mining districts, with renewing former plantations and cultures, with searching out and interpreting former place names *a. s. f.* The official mappings of the 19th century furthermore include some private works, which are of considerable scientific or methodizing importance: Amongst the Czech ones, it is mainly the altimetric work by Karel Kořistka which deserves mentioning, who 100 years ago published the first hypsometric maps, furthermore the first Czech school maps, atlases and globes, which bear witness to the origins of Czech cartographic terminology and geographic nomenclature, *a. s. f.*

At the present time, we are listing, in response to a wider action of the International Union of History of Sciences, also the older geodetic, astronomic and cartographic instruments as well as globes and it is a strange fact that we rather possess museum pieces of large globes of the 17th and 18th century, than some of the smaller and almost mechanically manufactured globes of the past century, of which we sometimes do not even know a single copy or specimen. We observe that the care for old maps must progressively be extended to cover the more recent periods as well, if we are to close and to prevent a further widening of the gap between the already secured and still being discovered monuments, and the present time, which would one day make it impossible for our successors to follow the continuity of development. Such are the reasons why we occupy ourselves today with the newer history of cartography. At the same time we have, for instance, made accessible the large map collection (the so called atlas *Austriacus* and atlas *Germanicus*), which was left, in 1780, by the Viennese collector Bernard Paul Moll. This collection of maps, charts and views of towns and landscapes, comprises untold quantities of material covering the Central European area of Austrian and German countries as well as Belgium, the Netherlands, Switzerland, Italy, the Danube basin and the Balkan peninsula, and represents an analogy of the world-famous atlases by van der Hem, Stosch and others. It reposed unutilized and not catalogued over a century at Brno and it was only last year that I could clarify its origin and history, and that we compiled its catalogue, since from our Central European point of view, it is a unique collection (cit.: Kuchař, Dvořáčková: *The Map Collection of B. P. Moll at the University Library at Brno. Praha 1959*).

Transferring our attention to the newer history of cartography, we have begun to study the great complex of the Ist Austrian Ordnance mapping carried out in Czech countries between 1763 and 1783, and the IInd Ordnance mapping of 1838—1853 (both in a scale of 1 : 28 800). The mentioned *Monumenta Car-*

tographica cannot be, however, brought up to that period; we wind up in the middle of the 18th century, because the following ordnance mapping already covers several thousand sheets for this country, and it is sufficient to have them in photo-reproductions. But even this photo-documentary task is being carried out only now, after a more than 20 year's interruption of our pre-war efforts.

To popularize historico-cartographical knowledge, I wrote a small book, entitled "Our maps from the old days to the present", Praha 1958, our Central Office of Geodesy and Cartography gives popularization attention as well, and in 1959 published its first volume of "The development of cartographic representation of Czech countries". Further volumes are being prepared and will deal with ordnance and cadastral mapping in this country, with the achievements of Czech and Slovakian geometers, with old maps of our towns and old maps of Slovakia. This publication will not be a duplication as regards the *Monumenta Cartographica*. It contains only examples or reduced reproductions of maps, and appeals to the local reader. The *Monumenta* feature facsimile maps in original size, to fully substitute rare originals and will be published as a source and documentary work with interpretations in foreign languages, i. e. for the world public. Apart from that all, the Slovak Office of Geodesy and Cartography has already published one volume of detailed biographical monographies, with more to come (cit.: Jan Purgina: The life and work of Samuel Mikovini, Bratislava 1958). It contains not only facsimiles of maps by that deserving cartographer who mapped Hungary in the first half of the 18th century, but also reproductions of his various graphical works and documents connected with his life. The new *Monumenta Cartographica* are ready and will cover all our countries, i. e. contain maps not only of Bohemia, but also of Moravia, Silesia and Slovakia as represented on old maps of Hungary. They are thereby increased to 80 map sheets of 70×54 cm, and the text was also — as compared to the prewar editions — conceived in an entirely new manner. The investigation of the Munich cosmographical tables, to which D. B. Durand attracted attention already before the war, convinced us of the existence of independent maps of Bohemia and Moravia as early as the beginning of the 15th century, and of the independence of these Czech made maps on the renaissance of Ptolemy's *Geographia*. The oldest preserved maps of our countries tie upon this local, Central European, tradition; in the case of the oldest of them (Claudianus, Bohemia 1518) we have mainly traced its foreign made copies, i. e. the maps by the Basel cosmographer Sebastian Münster and also that by Zalteri, which had been pointed out to us by prof. Roberto Almagià. This map disclosed to us the connecting link between Claudianus' and Criginger's maps (1568). Criginger's map, which I described in 1930, was in the meantime discovered in a 2nd copy, also an incomplete one, but nevertheless complementing the first one (the so called Salzburg copy). We also already know the title of the map (*Bohemiae regni chorographica descriptio*), and know for sure that it was engraved by Wolf Meyerpeck, who also made the map of Saxony.

The significance of Criginger's map superseded in importance the fact that the Czech astronomer Tadeáš Hájek z Hájku had already mapped Bohemia about 1560. Hájek's mapping was not so altogether frustrated by the Emperor's lack of interest as had hitherto been believed. It seems, that even the Viennese humanist Wolfgang Lazius made use of it for his map of Austria of 1562—63 and that it had also been accessible to further cartographers, in Augsburg to Peter Zimmermann, in Prague to Paul Aretin and to the then here domiciled

Dutchman Aegid Sadeler, while Criginger who lived in the Krušné hory mountains had no knowledge of it. Paul Aretin, of whose cartographic activities we had, until recently, no other evidence than his signature on a map of Bohemia (of 1619), today appears to us as a surveyor fully the equal of those who were invested with the function of land-surveyors; his recently discovered map of the domain of Záhřeb in Moravia, of 1623, is a full evidence thereof.

Several fresh discoveries have also been made in connection with the well known map by Müller (Bohemia 1720). To begin with, we know already the manuscript maps of Bohemian districts by this outstanding imperial engineer and furthermore several detailed maps of the border territory between Bohemia and Saxony, which permit us better to judge John Christoph Müller's manner of work than his known map printed off copper engravings.

The fundamental maps of Moravia were also studied anew. I described the oldest map of that country (1930) according to copies from the Paris Bibliothèque Nationale. Since then, the number of known copies increased considerably. We know now, that the plates of this map had not been altogether lost to Fabricius, because prints of the map with a new legend (explanations) made their appearance after his death (1595).

It is but natural that in this country repeated attention is accorded to the map of Moravia by our countryman Jan Amos Comenius (1627), which had in the past years been twice reproduced in facsimile and published at the occasion of the 300th anniversary of the publication of his Opera Didactica Omnia. It had, until recently, been overlooked that the Austrian cartographer Mattheus Vischer Tyrolensis, known by his maps of the Austrian countries and his collections of Austrian sights, also made a map of Moravia (1692). It is an irreparable loss that no copies off the copper plates of that map, which had been deposited at Brno, were made in time before the occupation, and that the plates themselves were destroyed in an airraid on Brno. In the Monumenta Cartographica, this map will be reproduced for the first time, and as a work equalling in scale (1 : 187 660) and contents the later map by Müller it well merits the place. By now we also have evidence of Vischer's detailed survey work in this country, for inst. his map of the Pardubice domain (1688), which we already reproduced in facsimile some time ago.

The analysis of Müller's maps also gave us a new insight into the so called Josephinian mapping (Joseph II). Müller's map of Moravia, and still more his dominant work, the great 25 folio map of Bohemia, enjoyed excellent renown in the 18th century. When the first Austrian ordnance survey was taken in hand, no geodetic foundation had been provided for it. Müller's Bohemia and Moravia were simply enlarged to a scale of 1 : 28 800, divided into sections of $2 \times 1\frac{1}{3}$ Bohemian miles and the sections were then complemented in the terrain, as seen. Nobody at the time, or later, remarked that the frames with the grid are on both Müller's maps deflected in relation to the topographical drawing, and that this wrong orientation also affects the Josephinian map sections. The rectangular frames of the Josephinian sections are not orientated according to the cardinal points, but differently twisted for each country, so that it is not surprising that it had never been possible to assemble this mapping into a uniform map of the entire Monarchy.

In Silesia we lost, due to the war in 1945, the only copy of the first edition of the oldest map of that country, before it was possible to procure its repro-

duction. We are referring to the map by Martin Helwig (1561), which we know today from later editions and copies of same only. In a similar way we were deprived of one of the oldest maps of the Krkonoše mountains (probably approx. 1580), which we, however, succeeded in reconstructing from various photographs. On the other hand, the post-war fluctuation of material brought to light some manuscripts of an unknown mapping of Silesia in a scale of 1 : 34 000 dating from the middle of the 18th century, which now awaits elaboration.

As regards Slovakia, we mainly concerned ourselves in more detail with its oldest map recording, i. e. the map by the Esztergom Archiepiscopal secretary Lazar, who elaborated it in 1513, just before the Turkish invasion of Hungary. So far its correctness was valued only as regards the tracing of the Danube river. The map is, however, surprisingly correct even in individual points. Lazar composed it from drawings of the different river valleys. Though his composition did not maintain a uniform orientation, the main asset of the map nevertheless is that its topographical contents can, almost without exception, be identified. This high standard is also shared by the other oldest maps of our countries (Claudianus, Fabricius, Helwig), but less so by their foreign copies. In Hungary the map representation considerably deteriorated due to the adjustment of Lazar's map by the Viennese Wolfgang Lazius. His incorrect picture of Hungary was thereafter maintained during 150 years of Turkish occupation of Hungary, upto the advent of John Christoph Müller to this country. Müller was at that time in the services of the count of Marsigli, and it seems that he enjoyed better working conditions there than later in imperial services. It may be considered a fact that Marsigli's detailed maps of the Danube, contained in his *Opus Danubiale*, also originate from Müller.

The conclusion of the new edition of the *Monumenta* will feature reproductions of maps of the Northern Hungarian comitates, dated 1736—47, which almost cover the entire territory of Slovakia as well as further parts of Hungary, and which were authored by the outstanding engineer of the time, Samuel Mikoviny. He already based his mapping on trigonometric surveys, which he successively extended from Bratislava further towards the east. On Müller's map of Hungary, Slovakia diverges in geographical longitude by almost 10, on Mikoviny's maps it is only by minutes and the geographical latitudes are absolutely correct. It is also Mikoviny's merit that he gave his copper engravings a hatched terrain. On the other hand it should be borne in mind that the long survival of the so called hill design in representing a terrain had rather carto-reproductory reasons than principle ones. Müller's maps printed off copper, as well as his models for the copper engravers, feature this old manner of representing a terrain, but where his survey elaboration was to remain in manuscript, he already excellently employed the so called plastic shading.

During the analysis of many a map that was included in the *Monumenta*, we have also accumulated quite an amount of cartometric experience. When cartographically describing old maps, the prime task is to determine and to give their scale. In the majority of cases, specially in cases of printed maps, the graduation in degrees and minutes of geographical latitude in the map border, is used for the purpose. A more detailed analysis of old maps, however, revealed that this method does not lead us to correct results. Maps, as a matter of fact, used not to be designed into the geographical grid, but the grid used to be,

in the majority of cases, superimposed subsequently and the scale of the network may considerably differ from the scale of the topographical contents of the map.

As an example we can mention the very maps of Moravia and Bohemia by Müller which are of a somewhat later period and which were highly valued in their time: The map of Moravia was published twice, first in 1716 as a whole, and again in 1730 featuring the individual Moravian districts. Both maps show absolutely the same scale as regards contents, but the frame of the first is in a scale of 1 : 180 000, whereas that of the other 1 : 158 000. Due to the different dimensions of the grid and the deflected orientation, the points plotted in the map acquire a different geographical position and different co-ordinates. The majority of those who used the maps, took very little notice of it however. We have a justified suspicion that the whole matter was not clear for a long time even to professional cosmographers. Fabricius, in 1568, contented his readers by declaring that the „gradus longitudinis et latitudinis are a matter to concern the erudite“, and himself also provided his map with a grid only subsequently.

On his manuscript maps of Bohemian districts, J. Chr. Müller (1714) gave the degree of meridian too great a length, so that their scale results in 1 : 89 700, whereas their topographical contents actually feature a scale of 1 : 107 000. Prior to having his map engraved, Müller altered the length of 10^o meridian, thus also changing the latitudinal extent of Bohemia from north to south by a whole 10'.

Another manner of determining the scale employs the graphic representation of the then current mile on the map, but even that encounters certain difficulties: As a rule the length of the graphic scale harmonizes very well with the length of 10^o meridian, for inst. 15 German miles precisely equal 10^o. This, however, shows us that both, the grid as well as the graphic scale, were probably engraved subsequently. The second difficulty, when making use of the graphic scale for deriving the actual scale of the map, results from the fact that we usually do not know the correct (kilometric) value of the various local miles graphically represented on the map.

The method we consider the most reliable, even though elaborate, is the one that derives the scale of a map by comparing the distances of points plotted on a map (i. e. data in millimeters) with the actual ones (in km) as taken from modern maps. Just one or some few distances will, however, not be sufficient for the purpose, we have to measure as great a number as possible and to elaborate the results statistically. Thus for inst. Aretin's map of the Zábřeh domain of 1623, (with a total number of 130 measured points) yielded:

Scale:	1 : 16 000	1 : 18 000	1 : 20 000	1 : 22 000	1 : 24 000	1 : 26 000
Number of points:	13	19	22	18	11	

A statistically, but rather graphically than numerically, made analysis of the map contents, seems to be the most effective in other cases too. In the present case, the divergence of the numbers mentioned in the 2nd line is very considerable; it shows us that the map is very inaccurate. The width of the dispersion permits us to estimate the accuracy of the map. With a modern map, all the points would be concentrated in one category.

To conclude our reflections concerning the scale, we should also remark that we have to discern between the scale a map should have, and that which the author meant to give the map. Of the former we have already said that the most suitable method is to determine same according to the topographical contents of the map. To find out what scale the author meant to give the map, requires knowledge of the measures of his time, if not even of his ideas about the size of the earth, and that is rarely the case. We could frequently convince ourselves that old maps used to be drawn up according to the distances between places and the grid superimposed subsequently. At first (at the end of the Middle Ages) cosmographers meant to proceed in a more scientific and modern way: to plot at least some points according to their co-ordinates and then to fill in the rest in detail with topographical design, but that manner was given up, because those who set about making maps from practical motives, did not know the methods of astronomical determination of geographical latitudes, not to mention the geographical longitudes. Estimates as well as measuring of distances, by viatorium for inst., did disclose the actual travelling distance including all bends and inclinations of routes, but those distances were of no use for directly drawing up a map if the measurer had not already graphically traced the whole track as layed out in nature. We possess an interesting example of how the cartographers then proceeded: J. Ch. Müller first reduced these measured curving distances to nine tenths. One of his maps displays two graphic scales. One is the correct scale of the map and allows direct measuring of straight (aerial) distances. The second, shorter one by 1 tenth, he used for plotting positions of places according to their curved travelling distances and this scale allows to measure on the map (even though only approximately) any distance the traveller had to go, without the use of a curvimeter.

Of 10^0 meridian, cosmographical circles for a long time assumed that it equalled 15 German miles = 60 Italian miles = 60 000 double strides (passus), which would be 88,8 km. It seems that in praxis nobody calculated with the German mile = 4 000 passus = 5,9 km. When using maps on which $10^0 = 15$ German miles, it would have countlessly been discovered that the distance between two points on the same meridian and 1 degree of latitude apart (for inst. Prague—Dresden or Prague—České Budějovice) was bigger than 88,8 km. It did not occur to anybody, because the German mile was different in cosmographical theory and different again in praxis; in praxis it equalled 5 Italian miles, i. e. 7,4 km. An example of this can already be seen on Etzlaub's map. Etzlaub certainly did not imagine the world to be smaller than it actually was. If we had some proof that Etzlaub also reckoned with a world of $\frac{1}{5}$ shorter circumference than his contemporary cosmographers took it to be, we should have to impute the intention to him of drawing up a map in a $\frac{1}{4}$ larger scale than ascribed to it.

It would be very useful for the cartometric analysis of old maps, if we knew the precise values of different measures that were used for measuring in nature and for specifying distances and sim., i. e. mainly the different kinds of mile and furthermore all sizes of measures that were used in geometry and cartography for designing drawings and maps, i. e. mainly those of inches and their fragments. It is beyond doubt that the old cartographers and geometers proceeded in a similar manner as we do when drawing maps, i. e. when we represent 1 mile in terms of 1 inch. If we knew the ratio of various formerly used miles to the length of the contemporary inches, as we know that of the English mile to the

inch, we could easily decide what scale the author of an old map intended to give to his work. In order to facilitate correct interpretation or, as the case may be, even a utilization of preserved map monuments, it would be necessary to extend investigation into the history of old cartography to include studies in old metrology and that, if possible, in all countries, since old maps frequently use or mention not only local measures, but foreign ones too. It is not only for determining map scales, i. e. in connection with the problem which we have just treated in some detail, that we need their knowledge, but also for other cartometric studies on old maps, as for inst. the determination of their projection, and in general in connection with all efforts to penetrate into the former methods of cartographical work. We intend to expound the experiences we accumulated in Czechoslovakia during the course of cartometric analyses inclusively at another occasion and they will comprise some new perceptions about old Bohemian measures for which our old maps afford quite an amount of hitherto unutilized data.

PRÁCE Z HISTORICKÉ KARTOGRAFIE V ČESKOSLOVENSKU

Jsou mnohé důvody, pro něž je třeba věnovat větší pozornost mapovým památkám nejen sloveně starým a vzácným, ale i těm, které vznikly v posledních dvou stoletích. Jejich větší grafická přesnost dovoluje použít jich i při některých aktuálních hospodářských a technických pracích jako cenných a poměrně spolehlivých pramenů. Po ukončení studia staršího období vývoje kartografie začíná se v ČSR obracet pozornost k novějším mapováním. Neznamená to, že budeme starší dobu nadále zcela opomíjet. Známe, jednak od dřívějška, jednak z nálezů posledních let, již skoro všechny její základní mapy a text připravený k edici Monumenta cartographica, kde tento základní materiál je reprodukován na 80 tabulích formátu 70×54 cm, shrnuje většinu toho, co lze k této starší epoše říci. Podařilo se vysvětlit mnoho spojitostí mezi články tohoto vývoje; na rozdíl od dřívějších historicko-kartografických prací nezabýval se náš rozbor jen historií vzniku starých map a biografiemi jejich autorů, ale také oceňováním jejich měřických a kartografických metod. Kartometrických a statistických analys používáme i při kritickém hodnocení map novějších. Většinou jde o rozsáhlé soubory zobrazující celé státní území ve velkém měřítku a s daleko větší přesností, než jakou měly mapy staršího období. Pro velký počet listů není možné tyto soubory, byť unikátní, zajišťovat pro budoucnost jinak než fotograficky, ale důkladný rozbor je i v tomto případě nutným předpokladem pro praktické využití tohoto materiálu.

Jedna z charakteristik každé mapy se rozvádí šířeji; totiž určení měřítka starých map. Docházíme k názoru, že nejběžnější způsob určování měřítka, totiž z délky 1^0 poledníkového nebo z délky nějaké míle na mapě zobrazení, nevystihuje skutečnost, poněvadž zeměpisná síť i měřítka grafická byla často k mapě přikreslována dodatečně a měřítka topografického obsahu mapy může být zcela jiné. Za nejvhodnější považujeme určení měřítka staré mapy statistickým zpracováním vzdálenostních údajů. Upozorňujeme dále na rozdíl mezi měřítkem, které mapa skutečně má, a mezi měřítkem, které mapě chtěl její původce dát. K tomu je však zapotřebí znát jeho představu o velikosti Země, o mírách používaných v různých dobách a zemích pro měření terénních vzdáleností a k jejich vynášení do map a plánů. Poněvadž při tom nevystačíme s domácími mírami, je třeba objasnit vzájemné vztahy různých měř; doporučujeme prohloubení historicko-metrologických studií i v jiných zemích, aby byla umožněna správná interpretace, popř. i využití dochovaných mapových památek.

РАБОТЫ ПО ИСТОРИЧЕСКОЙ КАРТОГРАФИИ В ЧЕХОСЛОВАКИИ

Существует много причин, почему большое внимание необходимо уделять не только старым и редким картам, но и тем, которые были созданы в последних двух столетиях. Большая графическая точность этих материалов позволяет использовать их в качестве ценных и достаточно достоверных источников при создании некоторых современных экономических и технических работ.

После окончания изучения прошлого периода развития картографии, в ЧСР приступают к новому картированию. Это, однако, не означает, что старые работы будут забыты. Подготавливаемая к изданию Monumenta cartographica, где на 80 листах

размером 70 × 54 см, собраны основные картографические материалы, наиболее полно характеризует картографию этого древнего периода. Анализируя этапы развития, удалось объяснить связи между отдельными периодами; в отличие от более ранних историко-картографических работ, где, главным образом, разбирались история возникновения старых карт и биографии их авторов, работы последних лет давали оценку картографических методов и методов измерения. С помощью картографического и статистического анализа проводится критическая оценка и более современных карт. Говоря о содержании этих карт, можно отметить, что они, в основном, отображают целые страны в более крупном масштабе и с большей точностью, чем карты более древнего периода. Из-за большого количества листов эти материалы, хотя они и являются уникальными, можно использовать только в форме фотографий, однако тщательное исследование и в этом случае является необходимым условием при практическом использовании этих материалов. Одна из характеристик карт дается наиболее подробно: речь идет об определении масштаба старых карт. Было установлено, что наиболее часто применяющийся способ определения масштаба, а именно, исходя из длины 1^0 по меридиану или из длины какой-либо мили, отображенной на карте, не соответствует действительности, т. к. масштаб часто наносился на карту дополнительно и не соответствовал масштабу картографического содержания карты. Наиболее правильным способом определения масштаба старых карт считается способ статистической обработки данных, характеризующих расстояния. Кроме того, необходимо подчеркнуть различие между масштабом который хотел дать автор и действительным, отображенным на карте. Для объяснения этого различия необходимо знать представление автора о размере Земли, о мерах измерения, используемых в разные периоды и в разных странах. Поскольку знание чешских мер измерения недостаточно, необходимо изучать взаимоотношение различных мер; рекомендуется более углубленное изучение исторических мер измерения в различных странах, обеспечивающее правильную интерпретацию по возможности и использование сохранившихся исторических картографических материалов.

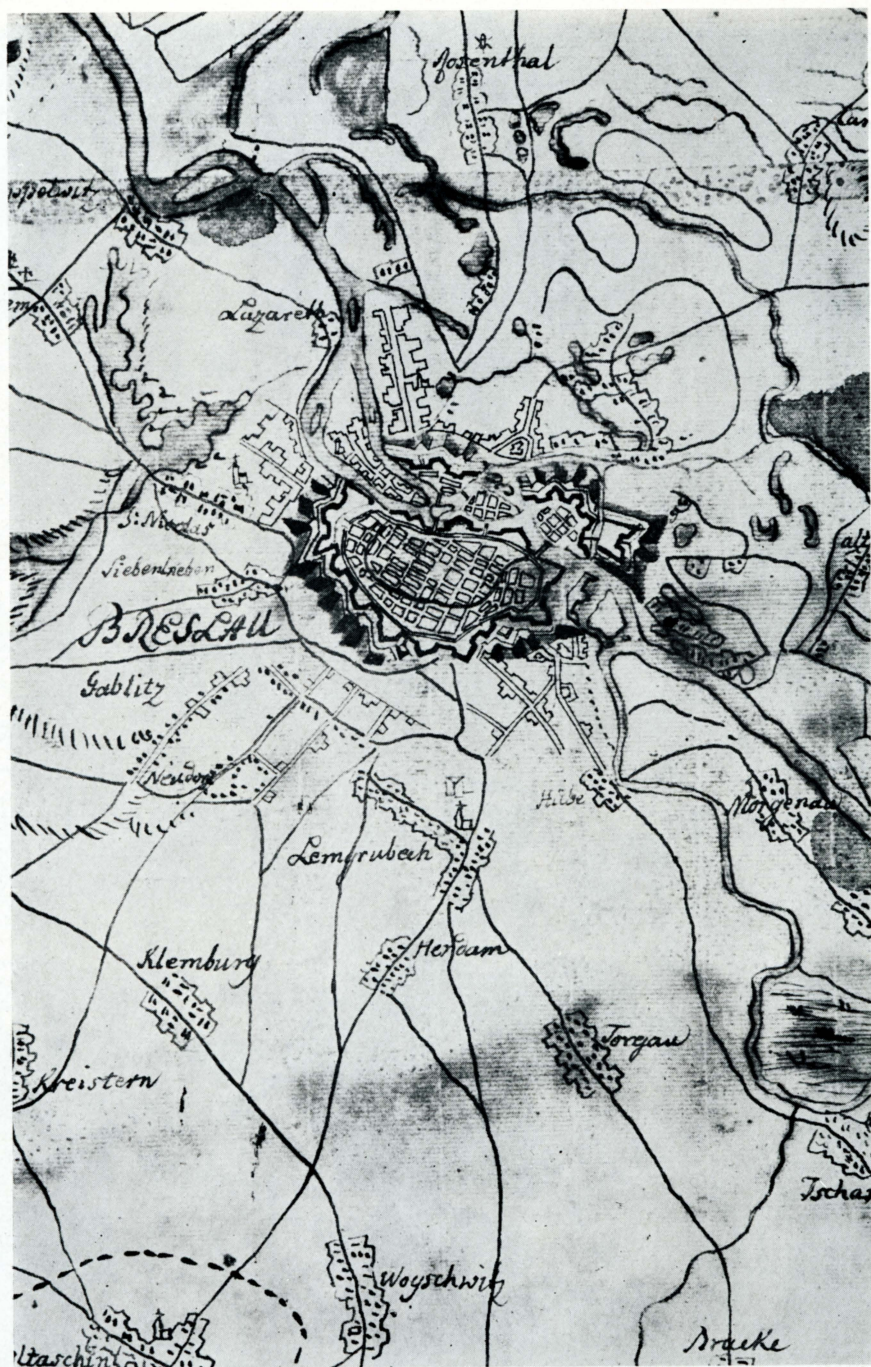


Reproduction of Aretin's map of the Zábřeh domain, of 1623 (original size 133×92 cm, original scale 1 : 20 800).

Aretinova mapa zábřežského panství z roku 1623 (původní rozměr 133×92 cm, měřítko 1 : 20 800).

Карта Аретина поместья Забрег из 1623 г. (Оригинальный размер 133 × 92 см, масштаб 1 : 20 800).

(Příloha ke článku: K. Kuchař: Historico-cartographical works...)



Example from recently discovered copies of Silesian mapping, dating from the 2nd half of the 18th century (original scale 1 : 34 000).

Ukázka nově objevené mapy slezského mapování z druhé poloviny 18. stol. (původní měřítko 1 : 34 000).

Часть теперь открытой карты Силезского картографирования из второй половины 18 века (оригинальный размер 1 : 34 000).