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‘Partially compiled’ maps 1:25,000 by Polish Military Geographical Institute (1919–1939)¹

Abstract. During the interwar period, an estimated 32–36% of Polish territory was covered by the Polish Military Geographical Institute’s (Pol. *Wojskowy Instytut Geograficzny*) 1:25,000 detailed map. At the same time, the MGI achieved a full coverage of the country by 1:100,000 tactical map. 50% of tactical map sheets were revised for the 1930s – many covered areas for which no detailed maps had been printed. Considering the fact that 1:100,000 tactical map was updated on the basis of revised 1:25,000 maps, another 17–21% of 1:25,000 detailed map sheets were finished or in progress by the German and Soviet invasion in 1939. The study confirmed additional 4% of 1:25,000 detailed map sheets as ‘partially compiled’ by the MGI and finished by the Germans. Another 17% of detailed map sheets are potentially to be found. Hypotheses, clues and evidence are presented in the paper.

Keywords: early topographic maps, Military Geographical Institute (*Wojskowy Instytut Geograficzny*), 1:25,000 detailed map of Poland, ‘partially compiled’ sheets, historical GIS

1. Introduction

Topographic maps by the Polish Military Geographical Institute (Pol. *Wojskowy Instytut Geograficzny*) had been recognized as reliable pre-WW2 sources of information for geographical-historical research in various publications. The thoroughness of the research is limited to the detail and accuracy of source maps. It turns out especially important in studies of small towns and rural area where military maps are sometimes the only preserved, large-scale cartographic documents. A serious mismatch in coverage at the scales 1:25,000 and 1:100,000 makes interwar Poland an interesting field to study.

An estimated 32–36% of Polish territory was covered by the Polish Military Geographical Institute’s (further MGI) 1:25,000 detailed map

(Pol. *mapa szczegółowa*). At the same time, the MGI achieved a full coverage of the country by 1:100,000 tactical map (Pol. *mapa taktyczna*). 50% of tactical map sheets were revised for the 1930s. Among them, many covered areas for which no detailed maps had been published. Therefore, two fundamental questions can be asked: what was the source material for updating those sheets of 1:100,000 tactical map and what happened to that source material? Considering the fact that one sheet of tactical map 1:100,000 covered the area of nine sheets of 1:25,000 detailed map, about 2160 sheets in 1:25,000 scale were finished or in progress by the German and Soviet invasion in 1939.

According to B. Krassowski (1973), the MGI published 1408 sheets of 1:25,000 detailed map, while another 708 sheets were ‘partially compiled’ before WW2. However, the most of these ‘partially compiled’ sheets were lost during the war. If found, missing sheets would fill an enormous gap in the historical recognition of towns and villages of modern eastern Poland and western Ukraine.

¹ The term ‘partially compiled’ sheets stands for these of MGI’s detailed map 1:25,000 where all content without relief (contours) and names has been compiled – *wykonano rysunek sytuacji bez rzeźby (warstwic) i nazewnictwa* (B. Krassowski 1973, pp. 77, 80).

2. Historical background

In 1918 a series of historical events related to WW1 created an opportunity for several European nations, including the Polish, to gain sovereignty. The Paris Peace Conference of 1919 confirmed restitution of the independent Polish Republic in Europe, but the new Polish borders were not fixed until 1922 (B. Konopska 2016). The new state faced an extraordinary challenge of bringing together three provinces that had existed in different administrative, legal and social circumstances under Austrian, German and Russian partitions for the previous 123 years. In the matter of cartography, nine different triangulation systems with eight different reference points and three different sea levels were to be reconciled. In 1919, Wojskowy Instytut Geograficzny (Military Geographical Institute) was set up in Warsaw to supply Polish army with maps and other geographical data (B. Krassowski 1973).

At its beginnings, MGI was focused on collecting and reprinting topographic maps left by Austro-Hungarian, German and Russian forces. Between 1920 and 1922 all 1:100,000 maps printed by the MGI were the so-called 'provisional' edition, i.e., resized, monochrome, counter-prints² (type 0). Since 1923 Polish cartographers started unifying, and updating gathered maps and, by the end of 1926, around 40% of Polish territory was covered with one-, two- and sometimes four-colour 1:100,000 tactical maps (type I). In the same period, the activity of the MGI related to the 1:25,000 detailed map was insignificant (*Planheft Osteuropa ehemals Polnischer Raum vom 26. Juli 1944*). It changed from 1927 on, when Polish cartographers started working on their own original 1:100,000 and 1:25,000 maps. Description of source materials used by the MGI is presented in table 1.

3. Tactical map 1:100,000 and its sources

In 1927 the MGI started printing its own, original 1:100,000 tactical map in two colours (type II: situation – black, contours – brown).

According to 20th-century sources, from 1928 onwards, the new tactical map was based on unified quasi-stereographic projection with a central point in Borowa Góra observatory (F. Biernacki, J. Stomczyński 1932). From 1929, all maps were printed with a grid interval of 2 km (type III). The new military topographic instruction stated that drawing tactical maps based on cartographic sources in a smaller scale than 1:25,000 detailed map is not allowed (*Przepisy podstawowe o sporządzaniu map i opisu wojskogeograficznego* 1929). The graphic form of tactical map evolved until 1931 when type IV was finally established. Since then, almost all tactical map sheets were printed in four colours (situation – black, contours – brown, waters – blue, forests – green), with a uniform and complete legend. A fair draft was drawn at 1:75,000 scale and then photomechanically resized to 1:100,000. Generalization level is more comparable to modern 1:50,000 than 1:100,000 topographic maps, cartographic content is close to an overload yet legible (P. Cebryk 2015). According to *Planheft...* (1944) between 1933 and 1939 36 sheets were printed in tourist edition with two additional colours (purple – relief shading, red – tourist routes and infrastructure). Type IV sheets gained an international esteem and recognition at international shows (B. Krassowski 1973).

The area of Interwar Poland was divided into 482 sheets of 1:100,000 tactical map, each of a size $\lambda 30' \times \varphi 15'$. However, two double-sized sheets with marginal parts of the country were produced; hence 480 sheets covered the whole country. B. Krassowski (1973) states that on 1st September 1939 there were 334 new four-colour sheets (type IV), 97 new two-colour sheets (type III), 26 old two-colour sheets (type II) and 23 oldest four-colour sheets (type I). German literature (*Planheft...* 1944) provides information about Polish territory being covered by 341 new sheets (type III and IV) and 139 older sheets printed before 1931 (type I and II).

A significant discrepancy between the numbers provided by B. Krassowski (1973) and *Planheft...* (1944) – 90 sheets in favour of newer types by Krassowski's count – had inspired the author to conduct his own investigation. The Internet query in digital repositories³ brought

² The term 'counter-print' (Pol. *kontrreprodukcja*) is used for rescaled, re-worked or redrawn copies of foreign maps. In German sources term 'temporary edition' (Ger. *Vorläufige Ausgabe*) for counter-printed sheets is used, see *Planheft...* 1944, pp. 30–31.

³ Map Archive for the Military Geographical Institute of Poland (WIG), 1919–1939 (<http://www.mapywig.org/>), Map-

Tab. 1. Types of detailed maps and tactical maps used by partitioning powers and counter-printed by MGI during Interwar period

Map type	Austrian maps	German maps	Russian maps	Polish counter-prints
Detailed map	Original <i>Aufnahmeblätter</i> 1:25,000 monochromatic print, Latin script, relief in hachures and heights in metric units	Original <i>Meßtischblätter</i> 1:25,000 monochromatic print, Latin script, relief in contours and heights in metric units <i>Karte des westlichen Russlands</i> 1:25,000 counter-prints of Russian <i>half-verst</i> and <i>one-verst</i> maps, monochromatic print, phonetic Latin transcription, relief in contours and heights in obsolete units	Original <i>half-verst</i> maps 1:21,000 monochromatic print, Cyrillic script, relief in contours and heights in Russian obsolete units	1:25,000 mostly monochromatic print, Latin script, relief depending on source, if Russian obsolete units then recalculated to meters
			Original <i>one-verst</i> maps 1:42,000 monochromatic print, Cyrillic script, relief in contours and heights in Russian obsolete units	
Tactical map	Original <i>Spezialkarte</i> 1:75,000 monochromatic print, Latin script, relief in hachures and heights in metric units	Original <i>Karte des Deutschen Reiches</i> 1:100,000 monochromatic print, Latin script, relief in hachure and heights in metric units; <i>Karte des westlichen Rußlands</i> 1:100,000 counter-prints of Russian <i>two-verst</i> maps, two-colour print, phonetic Latin transcription, relief in contours and heights in obsolete units <i>Karte des westlichen Rußlands</i> 1:100,000 counter-prints of Austro-Hungarian <i>Spezialkarte</i> , monochromatic print, Latin script, relief in hachures and heights in metric units	Original <i>two-verst</i> maps 1:84,000 two-colour print, Cyrillic script, relief in contours and heights in Russian obsolete units	1:100,000 one-, two- or four-colour print, Latin script, relief depending on source, if Russian obsolete units then recalculated to meters

raster images of all 480 tactical map sheets covering Interwar Poland. Only 346 of gathered sheets were printed after 1930. The query confirmed that 72% of the country was covered by

1:100,000 tactical maps printed in the 1930s.

Collected scans served as a foundation for another analysis. Sheets of the tactical map were examined to verify whether any information about source material had been provided. 331 sheets were compiled (at least in some part) based on maps at the scale 1:25,000 or larger. For 240 of them, source maps 1:25,000

ster (<http://igrek.amzp.pl/>), Jagiellonian University's Digital Library (<http://jbc.bj.uj.edu.pl/>), Polish Digital Repository of Scientific Institutes (<http://rcin.org.pl/dlibra/>) and The Library of Congress (<http://www.loc.gov/pl/>).

had been originally compiled (Polish maps) or at least checked in the field and updated after 1930 (counter-prints of Austrian, German or Russian maps) – Polish terms: *sprawdzony w terenie, reambulowany, unacześniony* are used. Therefore, it can be assumed that at least 50% of Polish territory was documented in high detail and revised for the 1930s (fig. 1).

4. Detailed map 1:25,000

MGI's detailed map 1:25,000 relies even more on surveying and mapping work by partitioning powers before WW1. After establishing its borders in 1922 the Republic of Poland covered 388,328 km² recovered from the three former empires: Russian – 262,025 km² (67.5%), Austro-Hungarian – 80,089 km² (20.7%) and German – 46,214 km² (11.9%) (J. Kreuztizer 1928). All former German and Austrian partitions had been surveyed, by the turn of 19th century, at 1:25,000 scale. Lands of the former Russian empire consisted of several areas

surveyed at different scales: – 226,300 km² (86.3%) of the western part at 1:21,000, – 25,500 km² (9.7%) of the eastern part at 1:42,000 and about 10,225 km² (3.9%) had been surveyed at smaller scales (B. Krassowski 1973). After WW1, only the Austrian state presented original cartographic materials to the MGI. For other areas, copies of foreign maps had to be used instead (J. Kreuztizer 1928, J. Słomczyński 1934).

Generally, MGI's work on detailed 1:25,000 by 1927 was limited to reprinting foreign sources. The number of exact, unchanged copies of foreign maps from that period is unknown. Several sheets in different parts of the country were updated and redrawn with Polish symbols. 85 reeditions of the German 1:25,000 topographic map (*Messtischblatt*) covered 10,200 km², while approx. 70 re-worked copy of the German WW1 1:25,000 maps (themselves drawn from 1:21,000 and 1:42,000 Russian originals) covered 6,300 km² – jointly no more than 3.2% of the country (B. Krassowski 1973).

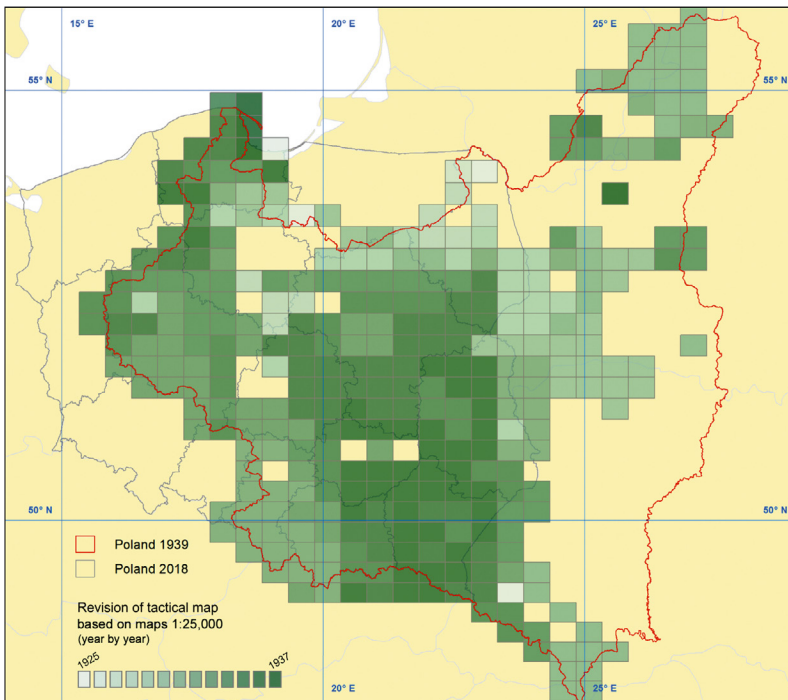


Fig. 1. The revision of MGI's 1:100,000 tactical map based on maps at the scale 1:25,000 or higher (Author's original work)

In 1927, MGI started organized production of its own, original 1:25,000 detailed map. B. Krasowski (1973) notes that 3904 sheets were needed to cover Polish territory in 1922 and 11 more in 1938 to cover newly acquired territory through partitioning of Czechoslovakia. Each sheet covered approximately 106 km² (110' × 95'). Negatives were drawn at 1:20,000 and then resized, providing a detailed and neat final product. Relief was presented in contours, with intervals depending on source materials. First detailed 1:25,000 map of the new type was published by the MGI in 1928. Maps were mostly monochromatic, yet several dozen two-colour sheets were also produced. Between 1933 and 1938, 30 six-colour sheets of tourist edition were also published.

In the 20 years of the interwar period of independence, original Polish surveying covered only a very small portion of the country: 178 sheets were produced according to German sources, 180 sheets according to the British source (*Poland and adjacent countries 1:25,000 sheets in Directorate of Military Survey 1st rough copy*, 19 May 1953), whereas B. Krasowski (1973) states that the Polish surveyed 245 sheets – a total of 23,500 km², which was approximately 6% of the territory.

As base materials for Polish 1:25,000 detailed map differed, only original Polish survey

and German 1:25,000 *Meßtischblätter* were adequate for modern warfare. Austrian and Russian detailed maps were considered inadequate for directing artillery fire due to either uncertain mathematical basis or measuring errors. Distortion on some sheets exceeded 100m in the field (J. Kreutzinger 1928, J. Słomczyński 1934, *Planheft...* 1944, B. Krasowski 1973).

Even though correcting and updating foreign detailed maps was MGI's focus in the 1930s, on 1st September 1939, the task was far from complete (*Planheft...* 1944). According to B. Krasowski (1973), 2706 sheets were checked in the field, and they covered 284,700 km² – 73% of the country. B. Krasowski (1973) also states that the MGI published 1425 sheets of normal type (36.4% of Poland), 155 counter-prints (4.0%) and 'partially compiled' – 708 sheets (17.9%). To verify the information on MGI's 1:25,000 detailed map provided by B. Krasowski (1973, p. 77), published index sheet was confronted with other sources:

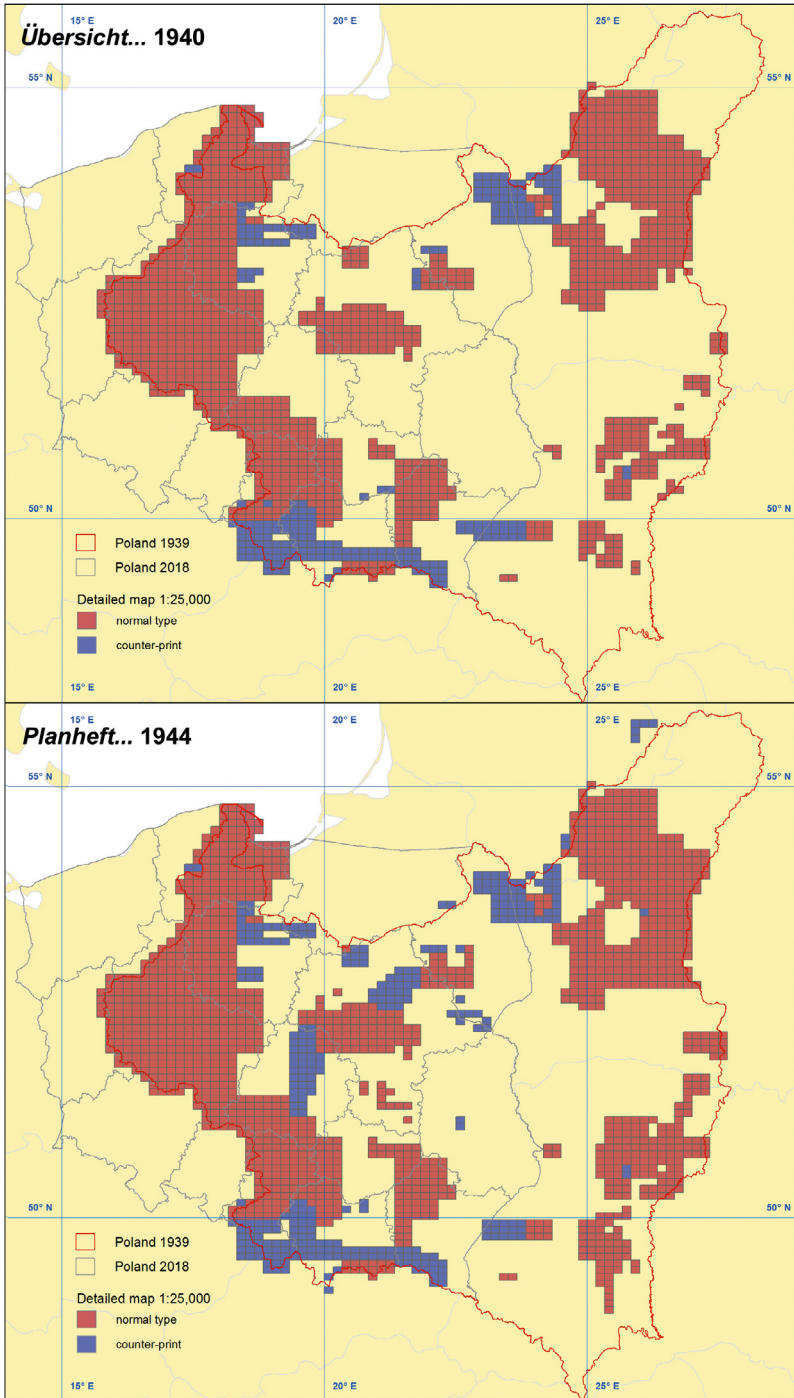
German (*Kriegskarten- und Vermessungsamt Warschau*):

1) *Spezialkarte von Polen 1:25 000 (1:25,000 detailed map of Poland)*, in: *Planheft Osteuropa ehemals Polnischer Raum vom 26. Juli 1944*;

2) *Übersicht zur Polnischen Karte 1:25 000 (The overview of the Polish map 1:25,000)*, 1940;

Tab. 2. MGI's 1:25,000 detailed map sheet types according to different sources

Former partition	Sheet type	Source of information			
		Übersicht 1940	Planheft 1944	Directorate 1953	Krasowski 1973
Austrian	normal	110	129	128	117
	counter-print /temporary	120	115	435	92
	'partially compiled'	–	–	3	241
	no data	557	543	221	337
German	normal	437	438	438	440
	counter-print /temporary	39	39	54	41
	'partially compiled'	–	–	1	–
	no data	46	45	29	41
Russian	normal	733	816	768	851
	counter-print /temporary	65	143	874	14
	'partially compiled'	–	–	31	467
	no data	1801	1640	926	1267
Overall	normal	1280	1383	1334	1408
	counter-print /temporary	224	297	1364	147
	'partially compiled'	–	–	35	708
	no data	2406	2230	1178	1647



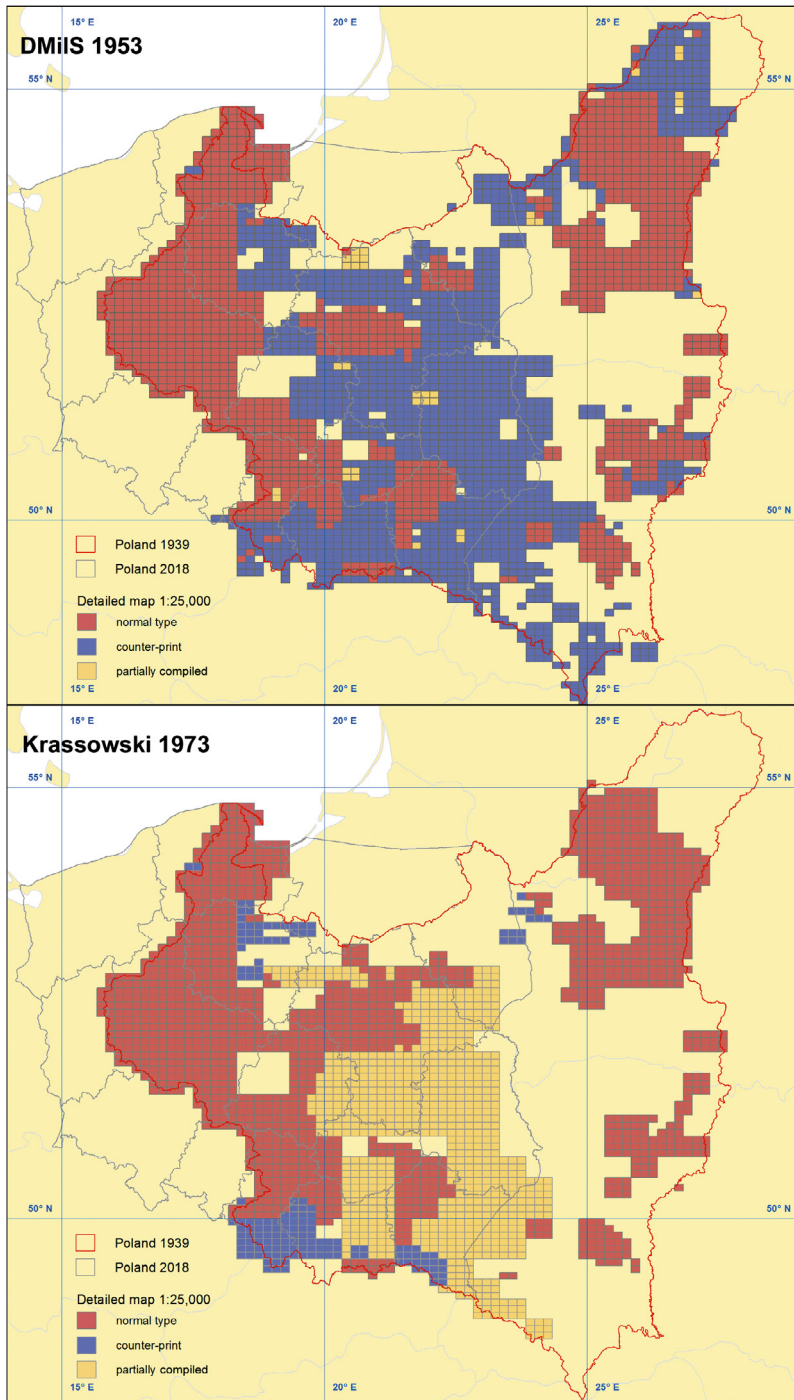


Fig. 2. MGI's 1:25,000 detailed map sheet types according to different sources (Author's original work)

3) *Übersicht über die als Schiesskarte geeigneten Blätter 1:25 000 des ehemals polnischen Raumes (The overview of the 1:25,000 map sheets suitable for artillery direction of the former Polish region)*, 1944; and British: *Poland and adjacent countries 1:25,000 sheets in Directorate of Military Survey 1st rough copy*, 19 May 1953.

The cross-validation revealed that sources provide different figures; therefore, it is interesting to analyze geographical divergence of progress that MGI made on 1:25,000 detailed map.

GIS analysis was based on 3910 sheets which covered Polish territory. Particular sheets were allocated to one of three former partitions with the following split figures: Austrian – 787 sheets, German – 522 sheets, Russian – 2599 sheets. Borders of former partitioning powers turned out to present an interesting methodical puzzle since 9 sheets sit across the Austro-Hungarian and German border, 68 sheets over the Austro-Hungarian and Russian border, and 97 sheets over the German and Russian border. Moreover, there is one sheet where borders of all former empires met (P47-S28-I Dąbrowa Górnicza with the tripoint). Particular sheets were allocated into one of the partitions based on a majority of its area. In author's belief, this was necessary to avoid miscalculations, like double- (or triple-) counting of the same record. Next, the information about sheet type (normal, counter-print, temporary edition, no data) was added along with the source of information. Calculation of types of Polish 1:25,000 detailed map for three partitions according to each source is presented in table 2.

The number of normal type sheets provided by B. Krassowski (1973) is the highest (1408), but if counted together with counter-prints (147), his total number (1555 sheets) is lower than the one presented in *Planheft...* from 1944 (1680 sheets). The cross-validation resulted in confirming 1250 normal type sheets (89% of Krassowski's count) by all sources. Only two normal type sheets highlighted by B. Krassowski (1973) are not confirmed by at least one of other sources, however.

Figure 2 demonstrates that the number of Polish counter-prints differs greatly from 147 mentioned by B. Krassowski (1973) to 1364 highlighted on Directorate's index sheet (1953). All

sources confirm 122 counter-printed sheets – 83% of Krassowski's. Among sheets highlighted on British source, 407 counter-prints and 6 'partially compiled' sheets are not confirmed by at least one of other sources. All sources confirm that MGI never started working on 1105 sheets.

5. 'Partially compiled' sheets of detailed map

At least 80% of the MGI's detailed map 1:25,000 sheets classified by B. Krassowski (1973) as the normal type or counter-print are confirmed by other sources. Therefore, expecting a similar percentage of 'partially compiled' sheets does seem reasonable. B. Krassowski (1973) highlighted 708 'partially compiled' sheets, whereas Directorate of Military Survey (1953) only 35 sheets. German sources do not mention 'partially compiled' sheets, which – in author's opinion – might have been counted as counter-prints.

679 of 708 'partially compiled' sheets mentioned by B. Krassowski (1973) match the sheets indexed by Directorate of Military Survey (1953). The British highlighted 10 of them as the normal type, 654 as counter-prints of foreign sources and only fifteen as truly 'partially compiled'.

52 of 708 Krassowski's 'partially compiled' sheets are confirmed by *Planheft...* (1944), with twelve being classified as the normal type and 40 as counter-prints. *Übersicht...* (1940) confirms 35 of Krassowski's 'partially compiled' sheets as counter-prints, however, ten of these are different from those in *Planheft...* (1944). All 62 sheets confirmed by Germans are also confirmed by the British, yet differences in classification of type occur. Only 29 of Krassowski's 'partially compiled' sheets are not confirmed by at least one of the earlier sources.

On the other hand, of Directorate's following 20 'partially compiled' sheets, B. Krassowski (1973) classifies 11 as the normal type, three as counter-prints and 6 as no-data. German sources (*Übersicht...* 1940, *Planheft...* 1944) confirm fifteen of 35 Directorate's 'partially compiled' sheets as either normal types or counter-prints.

In summary, almost 96% of Krassowski's 'partially compiled' sheets of Polish detailed map 1:25,000 are confirmed by at least one other source, while only 9% are confirmed by

all other sources at once. All German and British sources agree on 24 'partially compiled' sheets being actually counter-prints. However, only one sheet marked by B. Krassowski as 'partially compiled', P41-S33-B Pilawa is classified as the normal type by all other sources. It is not difficult to notice that the most significant difference in presented numbers is related to 'partially compiled' sheets of the former Russian empire, where 906 sheets are questionable (almost 35% of all sheets related to the former Russian partition). Even though there are fewer questionable sheets of the former Austrian partition – 438, the relative percentage is even higher (56% of all sheets in the formerly Austrian area). Minor differences are related to the former German partition, where only the British (1953) mention one 'partially compiled' sheet (P46-S28-H Cynków).

6. Searching for 'partially compiled' sheets

As German sources provide no information about 'partially compiled' sheets of Polish de-

tailed map 1:25,000, a significant discrepancy in numbers presented by Directorate of Military Survey (1953) and B. Krassowski (1973) leads to the key question, *whether The Directorate for Military Survey and Krassowski used two, very different collections of sheets, or whether they applied very different classification criteria*. Since both hypotheses might be true, the author conducted his own examination.

In January 2016 author began an enquiry *if any MGI's detailed map 1:25,000 'partially compiled' sheets or rough copies of fieldwork are known to librarians and cartographers* of various institutions in Poland, such as the Central Military Archive (CAW), Central Military Library (CBW), National Library (BN) and other academic institutions and researchers interested in the field. The enquiry was supported with Krassowski's index sheet of MGI's 1:25,000 detailed map, along with detailed description of what B. Krassowski (1973) wrote about 'partially compiled' sheets. Additional question to the National Library was sent *whether the location of the collection of MGI's detailed map*

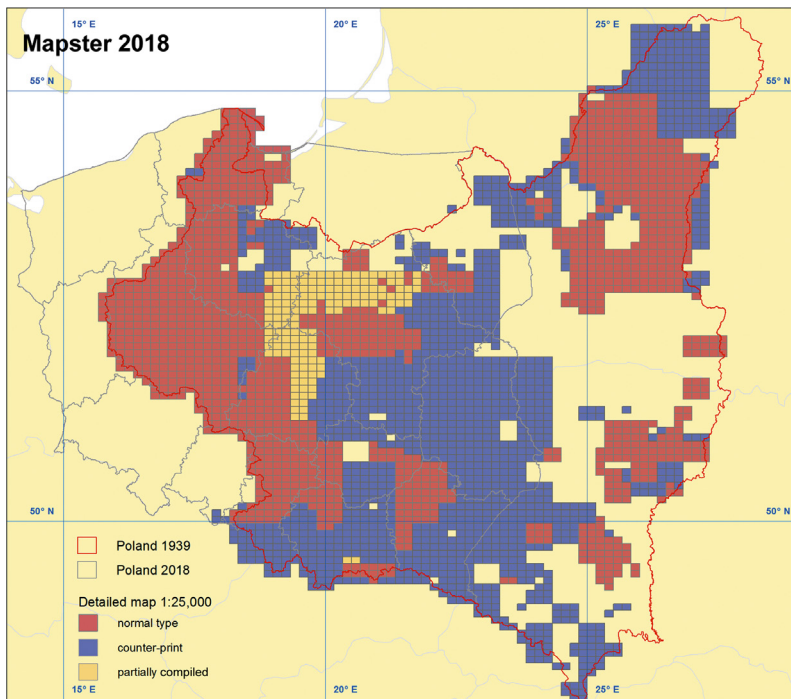


Fig. 3. MGI's 1:25,000 detailed map sheet types available via Mapster in 2018 (Author's original work)

1:25,000 that the late Bogusław Krassowski had used is known. Unfortunately, no positive answers were received.

Finally, the author turned to examine all sheets of MGI's 1:25,000 detailed map available online via igrek.amzp.pl (Mapster). On 1st June 2018, there were 2929 sheets available, many in three or more different copies (e.g. counter-print of foreign source, normal type sheet, tourist edition, German copy). Currently, there are 2849 sheets of 3910 sheets referred to the study area (fig. 3). 1375 sheets are normal type, among which 1271 are literally MGI's normal type, further 24 are MGI's normal type – tourist edition, another 40 are MGI's normal type – temporary edition (unsuitable for directing artillery fire). Another 38 sheets are reprints of MGI's normal type sheets done by the German mapping services, e.g. *Reichsamt für Landesaufnahme, Kriegskarten-und Vermessungsamt Warschau* – among these one sheet is a two-colour edition and four sheets are a temporary edition. One additional sheet is MGI's rough copy of 1:20,000 survey (P-38-S44-B Borowa).

There are 1323 counter-prints available via Mapster: 436 sheets of Austrian *Aufnahmeblätter* 1:25,000, 42 sheets of German *Meßtischblätter* (five sheets with Polish names), 802 sheets of Russian maps (including seven sheets printed by Germans). There are 43 mixed counter-prints, where MGI matched foreign sources: 27 Austrian/Russian sheets, seven Austrian/German sheets and 9 German/Russian sheets.

The Germans produced an unknown number of 1:25,000 sheets from re-scaled 1:100,000 Polish series for the area where no detailed Polish material was available. The actual purpose remains unclear, given 1:100,000 scale detail was not considered sufficient for directing artillery fire (Ger. *Als Schiesskarte nicht geeignet*). Several of these are available at igrek.amzp.pl as *Sonderausgabe ehem. Polen 1:25,000*.

At Mapster, there are 152 sheets that must have been 'partially compiled' by MGI, and then finished and printed by the Germans (fig. 4a). All content is Polish design (topographic signs); however, names of villages and towns are German or Polish with German spelling. Among these sheets, B. Krassowski (1973) highlighted 90 as the normal type (Łódź and surrounding area), only 33 as 'partially compiled' (between Ciechocinek and Ciechanów), one as a coun-

ter-print and 28 as no data (Włocławek area). It is quite difficult to explain why so many sheets had been misinterpreted. It seems important to notice, that of these sheets 150 cover former Russian partition, and only two sheets refer to the former Austrian partition (P51-S31-G Zabrzeż and P51-S31-H Stary Sącz). Moreover, none of these was highlighted as normal type on other indexes.

P41-S33-B Pilawa is the only normal type sheet at Mapster that B. Krassowski (1973) had misinterpreted as 'partially compiled' – it is the one that had been confirmed as the normal type by German and British sources. Currently, Mapster provides 660 Polish counter-printed sheets where B. Krassowski (1973) had highlighted 'partially compiled' sheets (fig. 4b); 423 of these are Russian *half-verst* or *one-verst* maps, 213 Austrian *Aufnahmeblätter* 1:25,000 and 24 sheets are a compilation of Austrian and Russian maps (the borderline between former Russia and Austro-Hungary). Areas highlighted by B. Krassowski (1973) as 'partially compiled' are covered by sheets of tactical map 1:100,000 which were updated in the late 1930s. Following MGI's 1929 Manual (*Przepisy...*), it is almost certain that these counter-prints of 1:25,000 detailed map were updated in the field. Therefore, it is not the matter whether the fieldwork originals ever existed, but more a question of what happened to these elaborates in WW2 and, if they survived, where they might be now.

All sources agree that Mapster lacks one sheet of a 1:25,000 detailed map – P36-S26-H Brzoza is surely a missing normal type sheet and P51-S34-H Smolnik is surely a missing counter-print of *Aufnahmeblatt* 1:25,000. Three sources agree on sheet P43-S44-A Karasin being a normal type. Assuming the sources are accurate, 46 sheets may be missing (fig. 5) – up to 23 normal type, up to 9 counter-prints and 12 'partially compiled' (mentioned only by B. Krassowski). Sheets potentially missing from Mapster are listed in table 3.

Looking for a proof that 'partially compiled' sheets ever existed, author encountered interesting examples – 1:15,000 Military-Geographic plans (Ger. *Militär-Geographische Stadtplänen*) of Lublin (fig. 6) and Radom – marginal descriptions of the German plans quote sources as '*Grundkartenwerk: Poln. Karte 1:25 000*' (Basic map: Polish map 1:25,000).

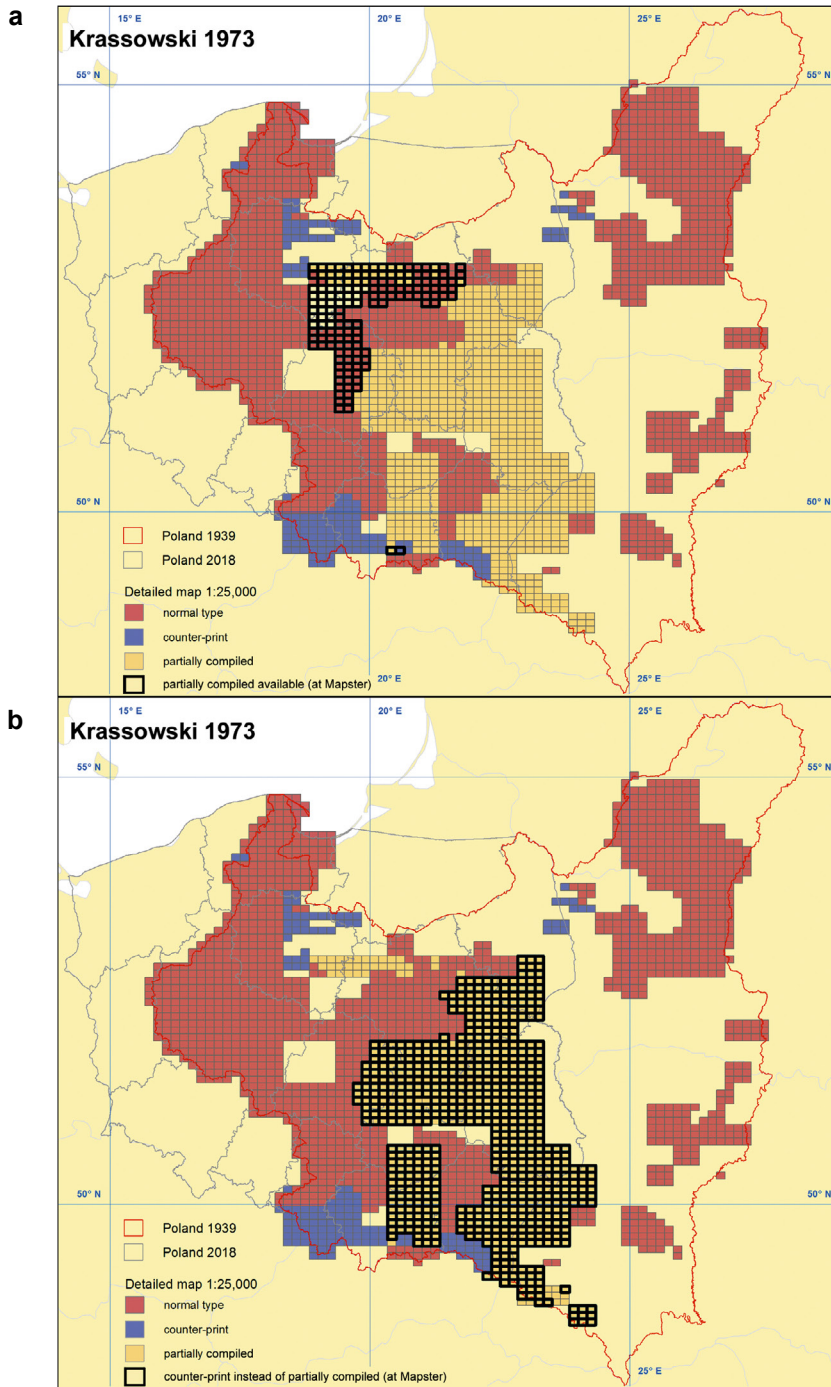


Fig. 4. MGI's 1:25,000 detailed map sheet types according to B. Krassowski in 1973: a) highlighted sheets are actually 'partially compiled' sheets available via Mapster in 2018; b) selected sheets are where Mapster provide counter-prints instead of 'partially compiled' sheets (Author's original work)

Tab. 3. MGI's 1:25,000 detailed map sheet types unavailable via Mapster

Former partition	Sheet no.	Map type according to source			
		Übersicht 1940	Planheft 1944	Directorate 1953	Krassowski 1973
Austrian	P48-S32-A	-	-	counter-print	'partially compiled'
	P49-S35-D	-	-	counter-print	'partially compiled'
	P51-S34-H	counter-print	counter-print	counter-print	counter-print
	P52-S41-C	-	normal	-	-
	P52-S41-D	-	normal	-	-
	P52-S41-G	-	normal	-	-
	P53-S36-G	-	-	-	'partially compiled'
	P53-S36-H	-	-	-	'partially compiled'
	P53-S37-A	-	-	-	'partially compiled'
	P53-S37-B	-	-	-	'partially compiled'
	P53-S37-D	-	-	-	'partially compiled'
	P53-S37-E	-	-	-	'partially compiled'
	P53-S37-F	-	-	-	'partially compiled'
	P53-S37-H	-	-	-	'partially compiled'
	P53-S37-I	-	-	-	'partially compiled'
	P53-S41-A	-	normal	-	-
P58-S40-A	-	-	counter-print	-	
German	P36-S26-H ⁴	normal	normal	normal	normal
Russian	P26-S44-B	-	-	counter-print	-
	P36-S35-C	-	normal	-	-
	P36-S35-F	-	normal	-	-
	P36-S35-I	-	normal	-	-
	P38-S43-C	-	-	counter-print	-
	P38-S44-A	-	-	counter-print	-
	P41-S45-A	-	normal	-	-
	P41-S45-B	-	normal	-	-
	P43-S32-G	-	-	-	'partially compiled'
	P43-S32-H	-	-	-	'partially compiled'
	P43-S44-A	-	normal	normal	normal
	P44-S32-I	-	-	-	'partially compiled'
	P46-S40-I	-	normal	-	-
	P46-S41-A	-	normal	-	-
	P46-S41-B	-	normal	-	-
	P46-S41-C	-	normal	-	-
	P46-S44-D	-	-	counter-print	-
	P46-S44-E	-	-	counter-print	-
	P47-S42-H	-	normal	-	-
	P47-S42-I	-	normal	-	-
	P47-S43-H	-	normal	-	-
	P48-S41-F	-	normal	-	-
	P48-S41-G	-	normal	-	-
	P48-S41-H	-	normal	-	-
	P48-S41-I	-	normal	-	-
	P49-S41-A	-	normal	-	-
P49-S41-B	-	-	counter-print	-	
P49-S41-E	-	normal	-	-	
Overall	normal	1	24	2	2
	counter-print / temporary	1	1	10	1
	'partially compiled'	-	-	-	14
	no data	44	21	34	29

⁴ Sheet P36-S26-H Brzoza was uploaded at igrek.amzp.pl (Mapster) in June after the submission of the article.

Presented content is the classical MGI's design, with Polish quasi-stereographic grid, Polish place-names, undeniably revised for the late 1930s (actually 1934 for Lublin and 1935 for Radom). US Army Map Service (1953 sheets no. 23108 and 23109) copies of German (1942) 1:25,000 maps of Grodno (P34-S37-C Grodno Zachód and P34-S38A Grodno Wschód) provide examples of 'partially compiled' sheets covering the area where no revised 1:100,000 tactical maps were published after 1930.

7. Conclusions

The specific geopolitical situation of interwar Poland and an increasing threat from Nazi Germany made a serious impact on the schedule of surveying and updating of the Polish 1:25,000 detailed map. Therefore, western regions of the country, as well as the so-called "Polish corridor" leading to the Baltic (J. Hagen 2009), were almost completely covered by normal type sheets revised for the 1930s. A big effort was made to cover northeast regions with Vil-

nius area, where the main direction of the Soviet invasion was expected (B. Krassowski 1982). The less strenuous effort was made to cover southeast direction, where areas of Lviv, Rivne, Ternopil were mapped. In central Poland, only two major spots were "filled" by the outbreak of WW2: the area around Warsaw and the COP (Pol. *Centralny Okręg Przemysłowy* – the Central Industrial Region between Sandomierz and Rzeszów to the south).

Estimated 98% of MGI's 1:25,000 detailed map sheets are now available online via Mapster (igrek.amzp.pl), however, 46% of these are just counter-printed foreign sources revised around the turn of the 20th century. It is hard not to notice that far greater area of Interwar Poland was covered by updated sheets of 1:100,000 tactical map than by the 1:25,000 detailed map, as the 1:100,000 series was decided to be a stop-gap, until the appearance of 1:25,000 detailed series. The information about source material printed on tactical maps seems reliable. Both Directorate of Military Survey (1953) and B. Krassowski (1973) confirm that

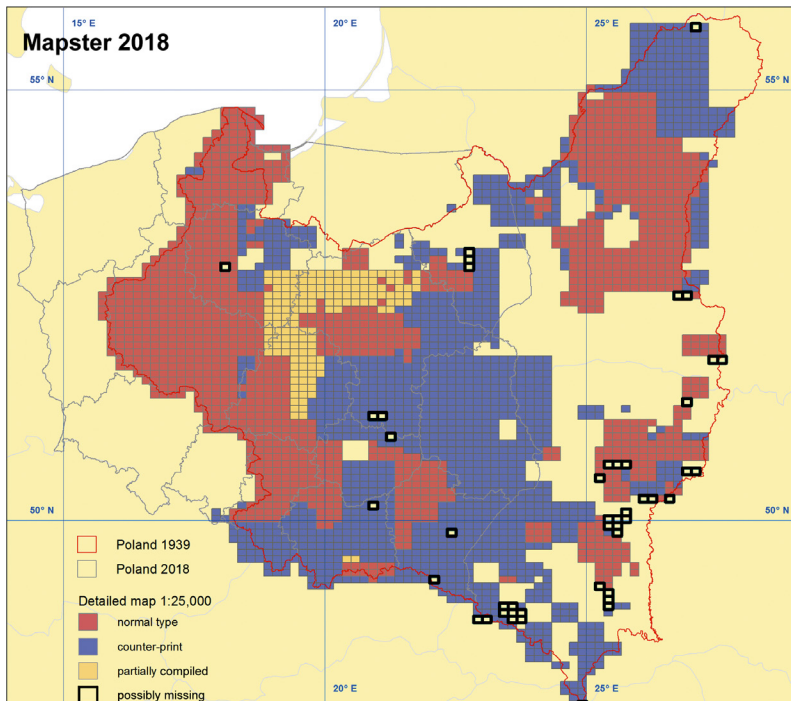


Fig. 5. MGI's 1:25,000 detailed map, various types of sheets available at Mapster, highlighted sheets are possibly missing (confirmed by at least one source) (Author's original work)

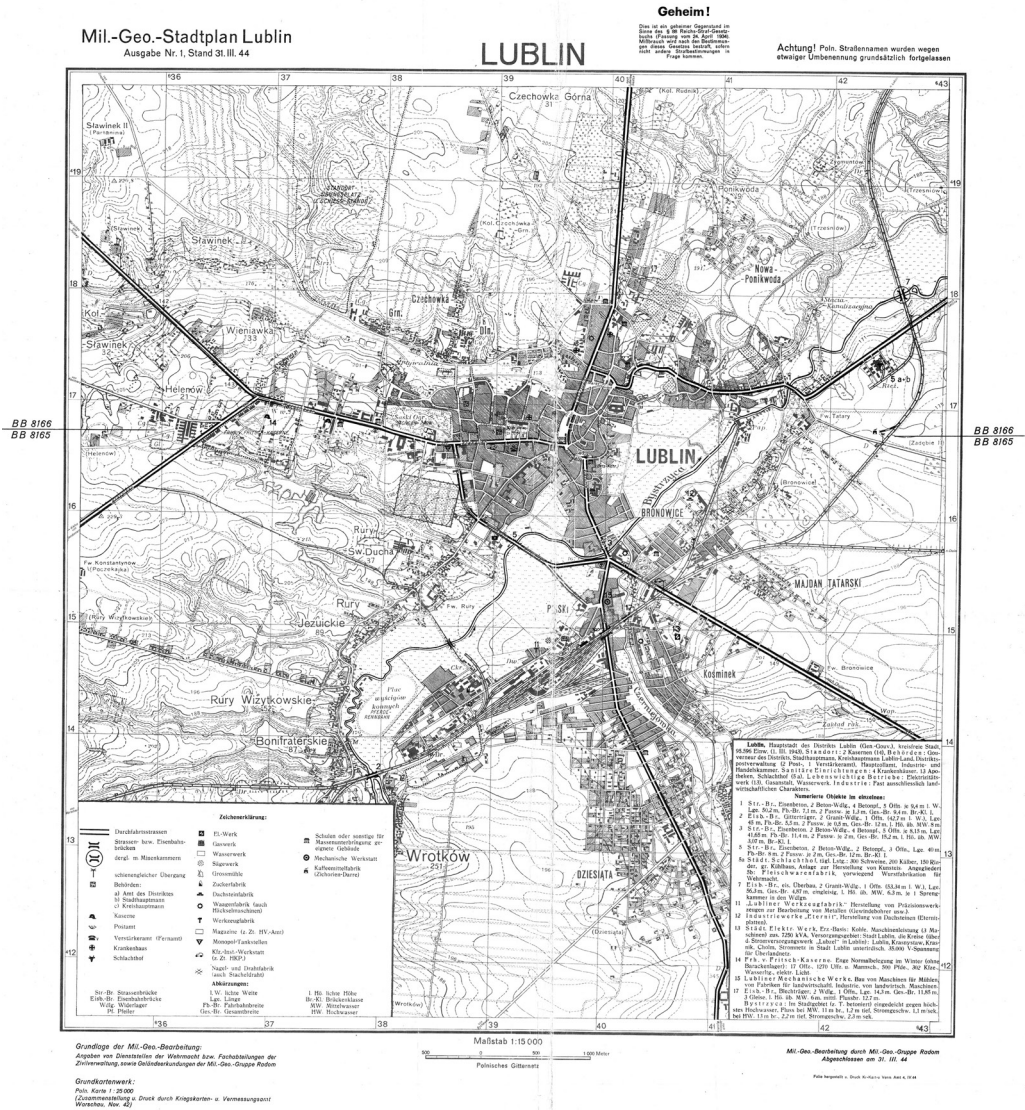


Fig. 6. *Militär-Geographische Stadtplan Lublin 1:15,000 (1944)*, 61 × 63 cm, 22% of original size. The map is based on enlarged 1:25,000 detailed map by the MGI– ‘partially compiled’ sheets P43-S35-H Lublin Północ and P44-S35-B Lublin Południe. Source: Cyfrowa Biblioteka Narodowa POLONA (polona.pl), public domain.

updating of detailed map sheets in central region was “work in progress” in the late 1930s. According to B. Krassowski (1973), there were 708 ‘partially compiled’ sheets of the 1:25,000 detailed map – which account for 18% of all planned sheets and refer to 19.7% of Polish territory before WW II. 152 ‘partially

compiled’ sheets that had been finished by Germans have already been found, 33 of these covering expected areas. Evidence presented in the paper partially confirms Krassowski’s statement about ‘partially compiled’ sheets, however, its total number is still unknown. Unsuccessful queries in Polish archives had



Fig. 7. MGI's 1:25,000 detailed map and corresponding 3D mock-ups: a) sheet P35-S43-A Mir; b) sheet P37-S40-D Różana. Map source: The University of Chicago Library (via Mapster), public domain. 3D mock-ups: Pavel Sanko & Konstantin Zobnin (www.shtetlroutes.eu).

not made author any closer to confirming if any other 'partially compiled' materials have been preserved. If so, its current location is yet to be discovered. The author hopes that what is to be found, is a little more than just counter-printed Austrian *Aufnahmeblätter* 1:25,000 or Russian *half-verst* or *one-verst* maps.

Despite the fact that there are different types and series, MGI's 1:25,000 and 1:100,000 maps have always been highly regarded among Polish cartographers. Interwar Poland was fully covered by 1:100,000 tactical map and therefore the geographical-historical recognition of the 1930s. may be regarded as complete. On the other hand, it is not equally deep and detailed due to the lack of 1:25,000 detailed maps in certain regions. The detailed depiction of settlements on MGI's 1:25,000 maps turned out

especially important for small towns where no other interwar large-scale maps have been preserved (fig. 7; J. Kuna 2016).

Foundation of Internet map libraries, such as Mapster, created an opportunity for a broader audience (historians, GIS specialists, hobbyists) to recognize benefits of using MGI's maps as a reliable source of historical information. The global access increases the probability that more unknown or missing sheets will be published. How many other projects could be completed if all 'partially compiled' sheets were ever to be found?

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Literature

Biernacki F., Słomczyński J., 1932, *Odwzorowanie quasi-stereograficzne Wojskowego Instytutu Geograficznego* (Quasi-stereographic projection by

Military Geographical Institute). Warszawa: WIG, pp. 7–22. Available online at: http://maps.mapywig.org/m/m_documents/PL/BSG_TOM_9_F.BIER-

- NACKI J., SŁOMCZYŃSKI ODWZOROWANIE QUASI-STEREOGRAFICZNE WIG_1932_small.pdf
 Cebrzyk P., 2015, *Dawne mapy topograficzne Lubelszczyzny jako źródła informacji w badaniach historyczno-geograficznych* (Early topographical maps of Lublin region as information sources in historical-geographical studies). In: A. Czerny: *Dawne mapy topograficzne w badaniach geograficzno-historycznych* (Early topographical maps in geographical-historical studies). Lublin: Wydawnictwo UMCS, p. 100. Available online at: <http://phavi.umcs.pl/at/attachments/2016/0708/103742-czerny-dawne-mapy-07-07-low-res.pdf>
- Hagen J., 2009, *Mapping the Polish corridor: Ethnicity, economics and geopolitics*. "Imago Mundi" Vol. 62, no. 1, pp. 63–82. Available online at: <http://dx.doi.org/10.1080/03085690903319325>
- Konopska B., 2016, *The cartographic materials auxiliary in the determination of the borders of Poland during the Paris Peace Conference (1919–1920) in the light of archival records*. "Polish Cartographical Review" Vol. 48, no. 2, pp. 67–75. <https://doi.org/10.1515/pcr-2016-0006>
- Krassowski B., 1973, *Polska kartografia wojskowa w latach 1918–1945* (Polish military cartography 1918–1945). Warszawa: Wydawnictwo Ministerstwa Obrony Narodowej. Available online at: http://maps.mapywig.org/m/m_documents/PL/Boguslaw_Krassowski_Polska_Kartografia_Wojskowa%20w_Latach_1918_-_1945_v_1.1.zip
- Krassowski B., 1982, *Analiza zasięgu polskich map topograficznych w przeddzień wybuchu II wojny światowej* (The analysis of the range of Polish topographic maps the day before the outbreak of WW2), typescript, pp. 79–102. Available online at: http://maps.mapywig.org/m/m_documents/PL/B.Krassowski_Analiza_zasiegu_polskich_map_topogr_w_przeddzien_wybuchu_II_w_swiatowej_1982.pdf
- Kreutzinger J., 1928, *Topografia pomiar i zdjęcie kraju, kartografia i wojskowe znaczenie terenu* (Topography, surveying of the country, cartography and military importance of the terrain). Warszawa, p. 145. Available online at: http://maps.mapywig.org/m/m_documents/PL/J.KREUTZINGER_TOPOGRAFIA..._1928.pdf
- Kuna J., 2016, *Cartographic visualization of Jewish heritage in cross-border tourist project Shtetl Routes (Poland, Belarus, Ukraine)*. "Polish Cartographical Review" Vol. 48, no. 4, pp. 173–183. Available online at: <https://doi.org/10.1515/pcr-2016-0013>
- Planheft Osteuropa ehemals Polnischer Raum vom 26. Juli 1944* (Mapbook Eastern Europe former Polish region for 26th July 1944), Merkblatt 34/31b. Available online at: http://maps.mapywig.org/m/m_documents/DE/Planheft_OSTEUROPA_ehemals_Polnischer_Raum_1944.pdf
- Przepisy podstawowe o sporządzaniu map i opisu wojskowo geograficznego* (Basic provisions on mapping and military description of terrain), 1929, Ministerstwo Spraw Wojskowych, Warszawa, pp. 7–16. Available online at: http://maps.mapywig.org/m/m_documents/PL/PRZEPISY_PODSTAWOWE_O_SPORZADZANIU_MAP_WIG_1929.pdf
- Słomczyński J., 1934: *Polskie mapy wojskowe* (Polish military maps). „Wiadomości Służby Geograficznej” T. 8, nr 3, pp. 363–386. Reprint available online at: http://maps.mapywig.org/m/m_documents/PL/J.Slomczynski_POLSKIE_MAPY_WOJSKOWE_WSG_3-1934_odbitek_LoC_UA995.P7_S55.pdf

Map indexes

- Polnische taktische Karte 1:100 000* (1:100,000 Polish tactical map). In: *Planheft...*, 1944, p. 64. Available online at: http://maps.mapywig.org/m/WIG_maps/index_sheets/Polen_B2_Polnische_taktische_Karte_100K.jpg
- Spezialkarte von Polen 1:25 000* (1:25,000 detailed map of Poland). In: *Planheft...*, 1944, p. 65. Available online at: http://maps.mapywig.org/m/WIG_maps/index_sheets/Polen_B3_Spezialkarte_von_Polen_25.jpg
- Übersicht zur Polnischen Karte 1:25 000* (The overview of the Polish map 1:25,000), 1940. Available online at: http://maps.mapywig.org/m/WIG_maps/index_sheets/Uebersicht_zur_Polnischen_Karte_25K_1940.jpg
- Übersicht über die als Schiesskarte geeigneten Blätter 1:25 000 des ehemals polnischen Raumes* (The overview of the 1:25,000 map sheets suitable for artillery direction of the former Polish region), 1944/ Available online at: http://maps.mapywig.org/m/WIG_maps/index_sheets/Uebersicht...Schiesskarte_Blaetter_25K_ehm.polnisches_Raumes_II.1944.jpg
- Poland and adjacent countries 1:25,000 sheets in Directorate of Military Survey 1st rough copy*, 19 May 1953. Available online at: http://maps.mapywig.org/m/ALLIED_maps/index_sheets/POLAND_AND_ADJACENT_COUNTRIES_25K_sheets_in_DMilSurvey_1_rough_copy_c.1955.jpg
- Mapa szczegółowa 1:25 000* (1:25,000 detailed map). In: B. Krassowski 1973, p. 77.
- Mapa taktyczna 1:100 000* (1:100,000 tactical map). In: B. Krassowski 1973, p. 76.
- Materiał podstawowy – zdjęcia topograficzne* (source material – surveying). In: B. Krassowski 1973, p. 52.