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EMIGRATION OF MATHEMATICIANS FROM POLAND IN THE 20th CENTURY (ROUGHLY 1919–1989)*

1. Periodization

For 123 years (1795–1918) Poland did not exist as an independent state, its territory being partitioned between Prussia (Germany), Austria and Russia¹. It was a period of enforced assimilation within new borders and thus of restraining native language and culture which first provoked several national uprisings against oppressors, and then – in the three decades at the turn of the 19th to 20th centuries – of a slow rebuilding of the nation's intellectual life. Conditions, however, were in general so unfavourable that many talents remained undeveloped while some talented people left the country to settle and work elsewhere. Some of the mathematicians emigrating then (in the chronological order of birth):

- Józef Maria Hoene–Wroński (1776–1853) in France,
 - Henryk Niewegłowski (1807–1881) in Paris,
 - Edward Habich (1835–1909) in Peru,
- Franciszek Mertens (1840–1929) in Austria,
- Julian Sochocki (1842–1927) in Petersburg,
 - Jan Ptaszycki (1854–1912) in Petersburg,
- Bolesław Młodziejewski (1858–1923) in Moscow,
 - Cezary Russyan (1867–1934) in Kharkov,
- Władysław Bortkiewicz (1868–1931) in Berlin,
- Alexander Axer (1880–1948) in Switzerland.

Thus the period of partitions was a time of a steady outflow of many good names (not only mathematicians), barely balanced by an inflow due to assimilation processes. The net result was decisively negative.

After Poland regained independence in 1918, five newly established or re-established Polish universities (Kraków, Lwów, Warsaw, Vilnius, Poznań)

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¹ Cf. N. Davies, *God's Playground. A History of Poland*, Oxford University Press, Oxford 1981.

and a few other scientific institutions have attracted active mathematicians from Poland and some from former Russia, the latter fleeing from the Bolsheviks. Among the fugitives there were mathematicians:

- Wiktor Staniewicz (1866–1932) from Petersburg, after 1919 professor and rector of Vilnius university,
- Antoni Przeborski (1871–1941) from Kharkov, after 1922 professor of Warsaw university,
- Kazimierz Abramowicz (1889–1936) from Kiev, after 1922 at Poznań University,
- Eustachy Żyliński (1890–1954) from Kiev, after 1920 professor of Lwów university,

and some others.

In the new situation in the two decades of 1919–1939, there has developed and flourished a Polish school of mathematics, a sociological phenomenon in itself¹. Polish mathematics has risen to world importance with particular achievements in the theory of sets (W. Sierpiński and others), point-set topology (K. Borsuk, K. Kuratowski and others), functional analysis (S. Banach, S. Mazur and others), mathematical logic (A. Tarski and others), in addition to probability theory (H. Steinhaus, M. Kac and others), trigonometric series (A. Zygmund and others), differential equations (S. Zaremba, J. Schauder and others), and several other areas². However, the inadequate number of academic positions with the darkening political atmosphere towards the end of that period, including anti-Jewish sentiments, brought eventually a first wave of decisions to emigrate (section 2).

After twenty years of independence came World War II, which put Poland under double subordination. The Nazis and Soviets decided to put an end to the Polish state for good (the Nazis despised Poland as a *Saison-Staat* and the Soviets as a *bastard of the Versailles treaty*), in particular to finish off its independent cultural and intellectual life, with the Nazis adding to that the extermination of all people of Jewish descent. The Soviet attitude was more selective: they quickly imprisoned all former army officers, policemen and other officers of the Polish state, then organized four mass deportations of the Polish civilian population to Siberia, but generally tolerated school teachers, university professors and musicians. One result of such policy from both the

¹ Cf. Mary Kuzawa CSFN, *Modern Mathematics. The Genesis of a School in Poland*, New Haven 1968, K. Kuratowski, *A Half-Century of Polish Mathematics 1920–1970. Remembrances and Reflections*, Oxford Pergamon Press & Polish Scientific Publishers, Oxford & Warszawa 1980.

² No all-embracing evaluation of the development, achievements and influence of the Polish school of mathematics has yet been published. One may consider J.-P. Kahane, *Aperçu sur l'influence de l'école mathématique polonaise 1918–1939*, Centre Scientifique de l'Académie Polonaise à Paris, Paris 1992, R. Duda, *Die Lemberger Mathematikerschule* in: *Jahresbericht der Deutschen Mathematiker-Vereinigung* 112, 1/2010, pp. 3–24 (English translation: *The Lwów School of Mathematics* in: *Newsletter of the European Mathematical Society*, Issue 78, Dec. 2010, pp. 40–50), J.-P. Pier (ed.), *Development of Mathematics 1900–1950*, Birkhäuser Verlag, Basel – Boston – Berlin 1994, *Handbook of the History of General Topology*, Vols. 1 & 2, Kluwer, Dordrecht 1997 & 1998, and other sources.

Nazis and the Soviets was that membership of the Polish Mathematical Society had dropped from 1938 to 1946 to a half of the 1938 figure¹.

After 1945 Poland became, along with other countries of Central–Eastern Europe, a satellite Soviet state hampered by severe political and ideological restrictions. Even the growth in number of universities and other scientific institutions at that time, with available academic positions growing fast, did not prevent a new propensity to emigrate, which was impeded only by the severe passport policy. If they wished, Germans and Jews were allowed to emigrate, but in public life anti–Semitism was all but absent for more than two decades. However, in 1968 came the shameful enforced emigration of remnants of the pre–war Jewish population from Poland, which included several dozens of mathematicians. Emigration continued at a high level thereafter too.

While emigration in the three decades after 1945 was undertaken for very different reasons, we consider that period jointly, and it is the second wave of emigration described here in detail (in section 3).

The next turning point was the year 1976 with mass protests against new drastic price rises, followed by mass persecutions of protesters and first open opposition movements. In the late 1970s economic conditions worsened and in the summer 1980 strikes spread all over the country. To appease the protests the authorities agreed to legalize the independent trade union *Solidarity*. The union soon listed over 10 million members (in 40–million Poland) and confrontation with the communist regime became inevitable. It took the form of martial law the regime declared on December 13, 1981. The *Solidarity* union was crushed (temporarily) but the moral collapse of the regime became clear as well.

General disillusionment and lack of hope for a better future resulted in a widespread and strong tendency to seek a more promising place to live elsewhere. This time the tendency had some official support. For instance, everyone of those interned (their number exceeding 10 thousand) could immediately return their internment certificate into one–way passports and leave. The number of emigrants from that rather short period was roughly the same as the former one which lasted twice as long. These emigrés constituted the third and final wave described below (section 4).

Since 1989, when Poland regained freedom, there has been little emigration in the strict sense. People are free to go wherever they wish (almost) and to seek a position wherever they find that opportune. So mathematicians move around, going this way or that way, but as a rule they maintain physical contact with their country of origin (previously rather unlikely). Some have even come back, e.g. L. Dubikajtis and A. Granas, both after retirement.

In this article attention will be focused upon the period of 1918 to 1989. Since the number of mathematicians leaving Poland in that period exceeded 300², they are listed up, as mentioned above and for logical reasons, in three parts in the time order:

¹ R. Duda, *O stratach osobowych matematyki polskiej związanych z II wojną światową* [On personal losses of Polish mathematics related to World War II] in: *Antiquitates Mathematicae* 3, 2009, pp. 137–169.

² A more detailed list than the three given below can be found in: R. Duda, *Emigracja matematyków z ziem*

- A. Before WWII and immediately after (roughly 1919–1946).
- B. Satellite state up to 1976 (roughly 1946–1976).
- C. Time of change (democratic opposition, *Solidarity*, martial law and after – roughly the years 1976–1990).

Each part offers a (probably incomplete) list of emigrants and a short discussion of the circumstances. Names are shown in alphabetic order. Each name is supplied with a short biography (for mathematically important names get a bit longer biographies). The article closes with general bibliographical references and separately particular ones for some names.

2. Emigration prior to and during World War II

In this section we list all mathematicians who left Poland between two world wars, during WWII, and immediately after (note, however, that the number of those who perished during the war is much bigger than that of those who emigrated in that period).

In the list comprising over thirty names one can distinguish several groups.

First there are those who became emigrants accidentally because borders have been changed. In the time of partitions everyone could move freely within the borders of the dominant state but after imposing new borders (as a result of WWI) some of them found themselves outside the newly established Polish state. Examples: Z. Borewicz, W. Bortkiewicz, L. Lichtenstein, C. Rus-syan, J. Sochocki.

Then there are those who found their temporary refuge (voluntary or involuntary) in the Soviet Union. Two of them (C. Burstin, H. Lauer), being convinced communists, fell victim to the Stalin purges, one (S. Bergman) succeeded to leave in time (F. Noether from the same Tomsk university was arrested and shot soon after), and one (A. Walfisz) was wise enough to decline any political involvement and managed to survive. One can also add here the name of L. Chwistek, whose hometown Lwów became occupied by Soviets in 1939 and who fled from advancing Germans in 1941 to Dušanbe in Central Asia. Politically engaged on the side of pro-Soviet Union of Polish Patriots, he died in Moscow, presumably after declining an offer to enter the expatriate communist government of Poland. And considering deportation to be a kind of involuntary emigration, deported S. Leja was one of those who later escaped from Siberia and after the war voluntarily emigrated to United States.

There is the impressive group of a dozen or so mathematicians who left Poland to the West in the late thirties. Although they were accomplished mathematicians, they were unable to find adequate academic positions in the country, some due to their Jewish descent. Their lives, however, were not in danger at the time so it was their choice (with the exception of A. Tarski who went for lectures with the intention to return afterwards). Nevertheless, as subsequent events showed, if they had not left, they would probably have shared the fate of Polish Jews and perished in the Holocaust. Instead, they succeeded in making substantial contributions to mathematics. Most

prominent names in this group are S. Eilenberg, W. Hurewicz, M. Kac, J. Szałwowski–Neyman¹, A. Tarski, S. Ulam. One can also include in this group S. Mandelbrojt and B. Mandelbrot, who left Poland earlier, and involved emigration paths of N. Aronszajn, S. Bergman, W. Birnbaum and some others. The last group includes wartime and immediate post-war emigrants to the West. The most prominent names here are J. Łukasiewicz and A. Zygmund, but one can also mention O. Nikodym, B. Sobociński and a few others.

List of the names (comprising 35 mathematicians):

- #²Nachman ARONSZAJN (1907–1980). Born in Warsaw. Graduate of Warsaw University. From 1930 in France and after 1948 in United States, where he became a professor in Lawrence, Kansas University.
- #Stefan BERGMAN (1895–1977). Born in Częstochowa, studied in Breslau, Vienna and Berlin. Started his academic career in the Berlin University (1931–1933). Compelled to leave, went to Soviet Union and worked at the universities of Tomsk and Tbilisi (1933–1937). In 1937 he managed to return to the West. From 1939 in United States where he was a professor in several universities, the longest term in Stanford.
- #Zygmunt Wilhelm BIRNBAUM (1922–2000). Born in Lwów, graduate in law and mathematics at Lwów University. From 1939 in United States, professor in Seattle, University of Washington.
- #Zenon BOREWICZ (1922–1995). Born in Susły near Żytomierz (then capital of the Polish autonomous district in Ukraine), graduate of Leningrad (now Petersburg) University, where he became professor. He always considered Poland his homeland, although could visit it only at the end of his life (and did it several times).
- #Władysław BORTKIEWICZ (1868–1931). Born to a Polish family in Petersburg, graduate of Petersburg University (law) and Göttingen University (mathematics). From 1901 professor of statistics at Berlin University. Author of some articles in Polish, published in Warsaw.
- #Celestyn BURSTIN (1888–1938). Born in Tarnopol, studied in Lwów and Vienna. A convinced communist, since 1929 in Soviet Union. Professor at Mińsk University, Byelorussia, and member of the Byelorussian Academy of Sciences. Arrested in 1937 on charges of espionage for Poland and Austria, he perished in mass graves at Kuropaty near Mińsk. Rehabilitated in 1956.
- #Chaim Chojnacki *vel* Haim HANANI (1912–1991). Born in Słupca, studied in Vienna and Warsaw. Emigrated in 1935 to Palestine, where he became the first doctor of mathematics at Jerusalem University. Fighting for a Jewish state, he was imprisoned by the British. After 1955 professor of Technion in Haifa and in 1969–1973 the first rector of Ben Gurion University in Beersheba.
- #Leon Kazimierz Antoni CHWISTEK (1884–1944). Born in Cracow, graduate of Cracow University. From 1930 professor of Lwów University. After the

¹ Known both as Szałwowski–Neyman and Neyman.

² The sign # means that there is a specific bibliography on that name at the end of the article.

outbreak of the German–Soviet war in 1941, he fled to Tbilisi. Known painter and good logician.

- #Samuel EILENBERG (1913–1998). Born in Warsaw, graduate of the Warsaw University. From 1939 in United States, professor at Columbia University in New York. Eminent mathematician, best known for his work on algebraic topology and homological algebra.
- #Witold HUREWICZ (1904–1957). Born in Łódź, graduate of Vienna University. In 1927–1936 he worked in Amsterdam, later in United States, since 1944 professor at MIT. Eminent mathematician, best known for his work in homotopy theory.
- #Mark KAC (1914–1984). Born in Krzemieniec, graduate of Lwów University. From 1938 in United States, professor at several universities (Cornell, Rockefeller, California). Eminent mathematician, best known for his work in probability theory.
- #Wacław KOZAKIEWICZ (1911–1959). Born in Złotniki near Kielce. Graduate of Warsaw University. From 1938 on a scholarship in France, he was surprised there by the outbreak of WWII. Soldier with the Polish armed forces in France. From 1944 in Canada, where in 1959 he became a professor on the French university in Montreal.
- #Henryk LAUER (1890–1939). Born in Warsaw, studied in Zürich and Paris where he met Lenin, graduate of ETH in Zurich. After return to Warsaw and imprisonment for communist activity, he was allowed to leave for Soviet Union. Party worker in Mińsk, Byelorussia, and member of the Byelorussian Academy of Sciences. Arrested 1937, perished. Rehabilitated in 1955.
- #Stanisław LEJA (1912–2000). Born in Grodzisko Górne near Przeworsk (nephew of eminent mathematician Franciszek Leja). Graduate of Lwów University. Deported by the Soviets from Lwów to Siberia in 1941, he managed to leave the Soviet Union with the Polish army. After the war he was a teacher of mathematics in Great Britain. In 1951 he moved to the United States, and in 1957 he became professor at Western Michigan University in Kalamazoo.
- #Zbigniew LEPECKI (1902–1949). Born in Kluczkowice near Lublin. Graduate of Warsaw University. Emigrated in 1939 to Brasil, where he became a professor at the university in Curitiba.
- #Leon LICHTENSTEIN (1878–1933). Born in Warsaw, graduate of Polytechnic Institute Charlottenburg (Berlin). From 1921 professor at Leipzig University. He kept closed contacts with Poland seeking an academic position there. Died in Poland soon before expected dismissal from Leipzig University.
- #Jan ŁUKASIEWICZ (1879–1974). Born in Lwów, graduate of Lwów University. From 1915 professor at Warsaw University. For a short time minister of education. Fleeing from the advancing Soviets, he left Warsaw in 1944 and moved to Münster where German logician E. Scholz was of great help to him. After the war he settled in Dublin in 1946. Eminent logician.
- Benoit MANDELBROT (1924–2010). Born in Warsaw but in 1938 his family moved to France. Worked in the United States, France (Paris) and Switzerland (Geneva). Best known for the invention of fractals. He visited Poland several times. Nephew of S. Mandelbrojt.

- Szolem MANDELBROJT (1899–1983). Born in Warsaw. Studied in Warsaw and in Kharkov. Since 1923 in France. Wanted to return to Poland, but there was no available academic position, so in 1926 he took French citizenship.
- #Franciszek MERTENS (1840–1927). Born near Poznań to a Polish–French–German family. From 1865 professor at Jagiellonian University in Cracow, member of the Academy of Sciences in Cracow. In 1884 he went to Graz and then to Vienna. Although speaking German at home, he embraced Polish culture, spoke and wrote fluent Polish, was careful to present some of his papers in Polish, and was considered a Pole by the Cracow community.
- #Bolesław MŁODZIEJEWSKI (1858–1923). Born in Moscow, graduate and professor of Moscow University. His father was a Pole from Ukraine; after being educated at the medical department of Vilnius University, he became professor of medicine at Moscow University. B. Młodziejewski spent all his life in Moscow but kept his Polish ties and was helpful in 1915 to bring W. Sierpiński from internment in Wiatka to Moscow.
- #Otton Marcin NIKODYM (1889–1974). Born near Kołomyja, graduate of the Lwów University. In 1946 he went to Belgium and from there to the United States, where he became professor at Kenyon College, Ohio. Known for the *Radon–Nikodym integral*.
- #Alfred ROSENBLATT (1880–1947). Born in Kraków, graduate of Kraków University, and from 1920 professor there. Emigrated in 1935 to Lima in Peru.
- #Cezary RUSSYAN (1867–1935). Born in Marianówka (now Ukraine), graduate of Novorossiisk University in Odessa. In 1902–1906, professor at Cracow and Lwów, from 1906 in Kharkov. Dismissed by the authorities in 1934, abandoned by all (for fear of the secret police), he died next year.
- #Bolesław SOBOCIŃSKI (1906–1990). Born in Petersburg, graduate of Warsaw University in logic. Engaged in the political and military Polish underground, he had to flee from the advancing Soviets. From 1946 in the United States and from 1960 professor at the University of Notre Dame in South Bend, Indiana.
- #Julian Karol SOCHOCKI (1842–1927). Born in Warsaw, graduate of Petersburg University. From 1873 professor of Petersburg University. Always dreamed of the return to homeland. Died in poverty.
- #Jerzy SPŁAWA–NEYMAN (1894–1981). Born in Ukraine, studied in Kharkov. From 1921 in Poland, graduate of Warsaw University. Emigrated 1934 to London, from 1938 professor at Berkeley University. Eminent statistician.
- Ryszard SYSKI from Warsaw. Officer cadet *Ryś* in the Warsaw Uprising (1944)¹. After the war he became professor at a university in Maryland, United States.
- #Alfred TARSKI (1902–1981). Born in Warsaw, graduate of Warsaw University. Invited 1939 for a series of conferences in United States, he was caught there by the outbreak of the war. A convinced anticommunist, after

¹ About the event see: N. Davies, *Rising '44. The Battle for Warsaw*, Macmillan Publishers, London 2004.

1945 he decided to stay. From 1946 professor of the Berkeley University. Eminent mathematician and logician, one of the highest rank.

- #Stanisław ULAM (1909–1984). Born in Lwów, graduate of the Lwów University. From 1936 in United States, but every summer holiday up to 1939 he spent in Lwów. During the war engaged in the Manhattan Project in Los Alamos. Professor at the University of Colorado in Boulder. Eminent mathematician with contributions to many different areas of mathematics.
- #Arnold WALFISZ (1892–1962). Born in Warsaw, studied in Germany. After a stay 1927–1936 in Warsaw, where he co-founded *Acta Arithmetica*, a journal devoted to number theory, he moved in 1936 to Tbilisi in Georgia (then Soviet Union). Born within the borders of the Russian empire, he had somewhat easier standing in the Soviet Russia. Declining any political involvement, he managed to survive.
- #Aleksander WUNDHEILER (1902–1947). Born in Warsaw, graduate of Warsaw University. In 1939 he emigrated to United States.
- #Stanisław Krystyn ZAREMBA (1903–1990). Born in Cracow (son of mathematician Stanisław Zaremba). Studied in Kraków and in Paris. After the outbreak of WWII he fled to Vilnius and from there to Dušanbe. He left the Soviet Union together with the Polish Army in 1942 and after the war worked at several universities, including Beirut, London (Polish University College), Madison, Quebec, but for the most part at the University of Wales.
- Antoni Józef ZIELICKI (1910–1973). Finished studies in mathematics before WWII. Deported to Siberia by the Soviets, he left Soviet Union with the Polish army in 1942. After the war he settled in England but turned down British citizenship. Teacher of mathematics at Polish schools in Great Britain.
- #Antoni ZYGMUND (1900–1992). Born in Warsaw, graduate of Warsaw University. From 1930 professor in Vilnius. In 1940 he managed to go, via Sweden, to the United States. From 1947 professor in Chicago, where he initiated an influential school of analysis.

3. Emigration after World War II up to 1976

After the war Poland became a different country. One third of its pre-war population perished during the war (killed, fugitives, murdered, deported, wasted by starvation). Its territory was reduced by ca. 70 000 km² and pushed ca. 200 km westwards (the Soviets took its eastern part of ca. 180 000 km², including the university cities Lwów and Vilnius, as the Allies gave Poland ca. 110 000 km² at the expense of Germany with the university city Breslau/Wrocław). Its very existence, to say nothing of internal matters, depended on the Soviet whim.

With Poland subordinated to the Soviet Union, some Polish citizens intended to leave but that was a difficult and dangerous undertaking. Requests to obtain a passport always attracted hostile attention from the authorities. There were practically two ways for those wanting to leave: one could plead family reunification (with Jews and Germans privileged there) or to go abroad with an official delegation or for an official contract to teach in Africa or Middle East and then refuse to return. The so-called *non-returners* were comparatively frequent but for their freedom they had to pay a price: as a rule

family members were not allowed to leave the country to join them. In such cases reunification was hard to achieve and separation could last several years.

One way or another, in the first two decades of Poland as a satellite state some 20 mathematicians left Poland, among them: W. Bogdanowicz, S. Drobot, A. Ehrenfeucht, J. Jaworowski, S. Knapowski, S. Mrówka, J. Mycielski, S. Świerczkowski, J. Włoka, and Z. Zieleźny.

Then came the shameful *anti-Zionist* campaign, initiated by Party authorities in March 1968. The campaign was accompanied by pressure, sometimes brutal, upon people of Jewish origin to leave the country for ever. A few resisted but in the next several months thousands left, including more than 26 mathematicians (the list comprises exactly 26 names, but some names may be missing and some *Zionist* emigrants left somewhat later). Among them were brothers J. and P. Blass, S. Fajtlowicz, M. Jaegermann (husband with wife Nicole Tomczak-Jaegermann), K. and W. Kuperberg (a married couple), brothers A. & R. Ramer, J. Strelcyn, brothers M. & W. Wojtkowski.

In the shadow of that forced emigration there developed a less visible *internal* emigration among those who were dismissed from their university positions but refused to leave and took their jobs elsewhere, say in the Institute of Mathematics of the PAS (Polish Academy of Sciences). Employment in that Institute, which concentrated upon research and with no students, was tolerated by the authorities and became a sort of a temporary asylum for otherwise unwanted people. Among mathematicians who suffered that way (they are not included in the list below) there were S. Hartman, E. Marczewski, or M. Stark.

For about a decade, 1968–1976, some liberalization was then allowed. The government took out huge loans abroad and invited foreign visitors. Passports were much easier to obtain. Nearly thirty mathematicians profited from the unexpected chance and left for good, among them K. Apt, J. Bochnak, A. Granas, J. Mycielski, and T. Przymusiński.

The list below covers the period of 1946–1976 but it is not complete and nor are the details concerning some of the people on it. In many cases it is difficult to obtain reliable information (for various reasons, ranging from breach of any relations with the country to not admitting being considered as emigrants) and thus omissions are possible. However, an effort has been made to include all emigrants with Ph.D.'s (while leaving the country) and/or continuing their mathematical profession. To show the latter at least one academic position is provided. So in spite of all its shortcomings the list gives one an idea of the size of emigration and a variety of human vicissitudes, and of its impact upon mathematics in and outside Poland.

Here is the list (comprising 85 names):

- Mieczysław ALTMAN (1916–2001). Having climbed all ranks up to professorship in the Institute of Mathematics of PAS, he went in 1970s to United States, where he worked at Louisiana State University and other academic institutions.
- Krzysztof APT. After studies in Wrocław and Ph.D. in Warsaw (under A. Mostowski), he went in 1974 to Amsterdam where he became a professor at

the Centre for Mathematics and Computer Science.

- Józef BLASS and Piotr BLASS, brothers. After completing studies in Warsaw, each worked on their Ph.D. They were forced to leave in 1968. Piotr became a professor in Jacksonville, University of North Florida.
- Jacek BOCHNAK. After studies in Cracow, Ph.D. (under S. Łojasiewicz) and habilitation, he did not return in 1974. Professor at Amsterdam's Vrije Universiteit.
- Witold BOGDANOWICZ (later changed his name to Victor Bogdan). After studies in Warsaw and Ph.D. (under S. Mazur), he went to United States in 1961 and did not return. Professor at Catholic University Washington DC.
- Aleksander BRAUNER. After studies in Warsaw and before completing his Ph.D. he was forced to leave in 1968. He went to Israel and found a job at the Institute of Energy in Haifa, Israel.
- Juliusz BRZEZIŃSKI. After studies in Warsaw and Ph.D. (under A. Mostowski) he left the country in 1970 for Göteborg, Sweden.
- Jan CHABROWSKI. After studies in Cracow, Ph.D. (under J. Szarski) and habilitation he left the country in 1975. Professor at Brisbane, University of Queensland (Australia).
- Józef DODZIUK. Before completing his studies, he was forced to emigrate in 1968. After a short stay in Zurich and Ph.D. in Columbia University he moved to CUNY, New York.
- Engelbert DORNFELD. After studies in Wrocław and Ph.D. (under W. Ślebodziński) he resettled to Germany.
- Stefan DROBOT (1913–1998). After studies in Cracow (completed in 1938) and a short stay in Lwów, he was deported by the Soviets to Siberia. He luckily survived, came in 1946 to Wrocław, where he obtained Ph.D. (under W. Ślebodziński). Emigration 1959 to United States, where he found a job at the universities of Chicago, Notre Dame and Ohio, the latter in the years 1963–1982.
- Zygfryd DYRSZLAG. After studies in Opole and Ph.D. in Cracow (under Z. Krygowska, teaching mathematics), he resettled to Germany.
- Andrzej EHRENFEUCHT. After studies and Ph.D. (under A. Mostowski) in Warsaw, he went in 1965 to United States and did not return. Professor at Boulder, University of Colorado. Son-in-law of Alfred Tarski.
- Siemion FAJTLOWICZ. After studies and Ph.D. (under E. Marczewski) in Wrocław, he was forced to emigrate in 1968. Professor at Texas University, Houston.
- Henryk FAST. After studies and Ph.D. (under H. Steinhaus) in Wrocław, he emigrated to United States in 1960. Professor at the University of Riverside and Wayne State University.
- Abraham FESSEL. After studies and Ph.D. (in pedagogy) in Warsaw he lectured on teaching mathematics at Warsaw University. He left the country in 1958 for Israel.
- Marek FISZ (1910–1963). After studies in Warsaw (completed 1939) he spent WWII in the Soviet Union. After Ph.D. (under H. Steinhaus), he worked 1951–1960 at Warsaw University and Institute of Mathematics of PAS,

receiving the title of professor. He went 1960 to United States and did not return.

- Krzysztof FRANKOWSKI. After studies in Łódź and Warsaw, he emigrated in 1958 to Israel where he got a Ph.D. in 1962 in Jerusalem. Since 1967 professor at State University of Minnesota at Minneapolis.
- Andrzej GLIKSON. Studies in Warsaw. Emigration in 1968 to Australia.
- Abraham GOETZ. After studies and Ph.D. (under W. Ślebodziński) in Wrocław, he emigrated in 1965 to the United States. Professor at Notre Dame University.
- Andrzej GRANAS. After studies in Warsaw, Ph.D. in Moscow (under L. Ljusternik), habilitation and professorship back in Warsaw, he emigrated to Canada, where he was a professor at the Université de Montreal in 1970–1991. During that time and after he was a frequent visitor in Poland.
- Henryk HECHT. After studies in Warsaw, forced to emigrate in 1968. Professor at University of Utah Salt Lake City,.
- Włodzimierz HOLSZTYŃSKI. After studies and Ph.D. (under K. Borsuk) in Warsaw, he was forced to emigrate in 1968. One of the best students of Borsuk. Somewhere in United States.
- Michał JAEGERMANN (see also below his wife: Nicole Tomczak–Jaegermann). After studies and Ph.D. (under A. Mostowski) in Warsaw, he was forced to emigrate in 1968. Computer scientist in Edmonton, Alberta, Canada.
- Jan JAWOROWSKI. After studies, Ph.D. (under K. Borsuk), habilitation and professorship in Warsaw, he did not return in 1964 from Great Britain. Retired professor of Indiana University.
- Jan KALICKI (1922–1953). Studied at Warsaw University (during the war it was an underground university). Went to London in 1946 on a British Council scholarship and decided to stay. In London he obtained a Ph.D. in logic in 1948. Since 1951 at the University of California in Berkeley. One of the very first *non-returns*.
- Monika KARŁOWICZ. After studies and Ph.D. (under K. Kuratowski) in Warsaw she left the country to the United States in the early 1970s.
- Stanisław KNAPOWSKI (1931–1967). Studies, Ph.D. (under W. Orlicz) and habilitation in Poznań. In 1964 he did not return from the United States. Talented number theorist, died in accident.
- Antoni KOSIŃSKI. After studies and Ph.D. (under K. Borsuk) in Warsaw, he went in 1958 to the United States and did not return. He was one of the first *non-returns*, notorious particularly because he was an active Party member. Professor in New Brunswick, Rutgers University.
- Piotr KOSMOL. After studies and Ph.D. (under K. Urbanik) in Wrocław, he resettled in 1967 to Germany. Professor of Kiel University.
- Ignacy (Icchak) KOTLARSKI. After studies in Warsaw, Ph.D. (under H. Steinhaus) and habilitation, he was forced to emigrate in 1968. Professor in Stillwater, Oklahoma State University.
- Bronisław KRAKUS. After studies and Ph.D. in Warsaw (under K. Borsuk), he was forced to emigrate in 1968. He went to Sweden.

- Wojciech KUCHARZ. After studies in Katowice and Cracow, and Ph.D. (under J. Siciak), he went late in the 1970s to the United States. Professor in Albuquerque, University of New Mexico.
- Krystyna KUPERBERG (née Trybulec, wife of Włodzimierz Kuperberg, see below). After studies in Warsaw, she was forced to emigrate in 1968 nearly having completed her Ph.D. thesis (under K. Borsuk). Professor in Alabama, Auburn University. Invited talk at ICM '98 in Berlin.
- Włodzimierz KUPERBERG (husband of Krystyna Kuperberg, see above). After studies and Ph.D. (under K. Borsuk), forced to emigrate in 1968 immediately after obtaining his Ph.D. Professor in Alabama, Auburn University.
- Franciszek LABISCH. After studies in Warsaw, he resettled to Germany in 1960.
- Andrzej LELEK. After studies, Ph.D. (under B. Knaster) and habilitation in Wrocław, he moved to Warsaw, where he became professor at the Institute of Mathematics of PAS. In 1968 he did not return from abroad. Professor in Houston, Texas.
- Jacek LITWIN. After studies in Warsaw, he was forced to emigrate in 1968. Ph.D. in Paris.
- Bogdan ŁAWRUK. A Ukrainian. After studies and Ph.D. (under J. Łopatyński) in Lwów, he moved in 1958 to Poland which became his host country for a decade. After habilitation, in 1969 he went abroad and did not return. Professor at Université de Montreal, Canada.
- Grzegorz ŁUBCZONOK. After studies and Ph.D. (under M. Kucharzewski) in Katowice, he went in 1975 to Australia, and from there to Rhodes University, Republic of South Africa.
- Stanisław MRÓWKA. After Studies and Ph.D. (under K. Kuratowski) he went in 1958 to United States. Professor of State University of New York in Buffalo.
- Jan MYCIELSKI. After studies, Ph.D. (under S. Hartman) and habilitation in Wrocław, he did not return from Italy in 1969 and moved to the United States. Professor at University of Colorado in Boulder.
- Edmund OLEJNICZAK. After studies and Ph.D. (under W. Janowski) in Łódź, he went on a foreign contract, returned, and eventually went again in 1974.
- August PIECZKOWSKI. Born in former Eastern Prussia. After studies, Ph.D. (under S. Jaśkowski) and habilitation in Toruń he was reunited in 1974 with his family in Germany.
- Tomasz PIETRZYKOWSKI. After studies, Ph.D. and habilitation in Warsaw, he left the country in 1967 going to Halifax, Canada.
- Antoni POL. After studies in Warsaw he left the country in 1970s for Australia.
- Artur RAMER, and Roald RAMER, brothers. After studies in Warsaw, both emigrated in 1968. Roald works at the University of Amsterdam, Department of Qualitative Economics.
- #Juliusz REICHBACH (later changed his name to Juliusz PODGÓR, 1927–1994). After studies and Ph.D. (under J. Słupecki) in Wrocław, he emigrated in 1955 with his brother Marian (see below) and mother to Israel. Homesick, he tried to return which he eventually did in 1989.

- #Marian REICHBACH (later changed his name to Meir REICHAW, 1923–2000). Studies and Ph.D. (under B. Knaster) in Wrocław. After emigration in 1955 to Israel he became a professor at Technion, Haifa.
- Marek ROCHOWSKI. After studies and Ph.D. (under W. Ślebodziński) in Wrocław he moved to Katowice, from where he left in 1976 for Germany.
- Grzegorz ROZENBERG. After studies and Ph.D. (under H. Rasiowa) in Warsaw, he left the country after 1968 and settled in Holland. Professor at Leiden University.
- Maciej SIKORSKI. After studies in Warsaw, he was forced to emigrate in 1968. He went to Sweden.
- Wojciech SŁOWIKOWSKI. After studies, Ph.D. (under R. Sikorski) and habilitation in Warsaw, he left the country in 1967. Professor at Aarhus University, Denmark.
- Andrzej SOLECKI. After studies and Ph.D. (under J. Mozrzykas), he left the country in 1976, first going to Germany. Now in Brasil.
- Gabriel SPIRA. After studies in Warsaw, he was forced to emigrate in 1968 to Israel.
- Alicja STERNA–KARWAT. After studies and Ph. D. (under S. Rolewicz) in Warsaw, she left the country to Sydney, Australia.
- Jan Maria STRELCYN. After studies in Warsaw he emigrated in 1968 to France. Professor in Rouen.
- Emanuel STRZELECKI. After studies and Ph.D. (under K. Urbanik) in Wrocław, he emigrated in 1965 to Australia. Professor at Monash University, Melbourne.
- Andrzej SZANKOWSKI. After studies in Warsaw he emigrated in 1968. Ph.D. in Denmark. Later at Hebrew University, Jerusalem.
- Wojciech SZATZSZNAJDER. After studies and Ph.D. (under Z. Ciesielski) in Warsaw, he left the country after 1970 and found a job at Universidad Autonoma, Mexico.
- Paweł SZEPTYCKI (1935–2000). After studies in Warsaw, he got his Ph.D. in Pretoria, Republic of South Africa. Later professor at Kansas University in Lawrence.
- Szymon SZNAJDER (later changed his name to Simon SNEIDER). After studies and Ph.D. (under A. Zięba) in Wrocław, he left the country in 1971 for Denmark. Teacher of mathematics there.
- Andrzej SZULKIN. After studies in Warsaw, he emigrated in 1969. Professor at Stockholm University, Sweden.
- Włodzimierz SZWARC. After studies and Ph.D. (under J. Perkal) in Wrocław, he emigrated in 1968. Professor in Milwaukee, Wisconsin University.
- Jędrzej ŚNIATYCKI. After studies and Ph.D. in Toruń, he left the country in 1969. Professor in Calgary, University of Alberta, Canada.
- Halina ŚWIATAK. After studies and Ph.D. (under S. Łojasiewicz) in Cracow, she left the country in 1972 via Vienna to go to Canada.
- Grzegorz ŚWIĄTEK. After studies and Ph.D. (under M. Misiurewicz) in Warsaw, he left the country to United States. Invited lecturer at ICM '98 in Berlin.
- Stanisław ŚWIERCZKOWSKI. After studies and Ph.D. in Wrocław, he went abroad in 1961 and did not return. To earn money for his favourite pastime

sailing he worked as a mathematician at universities in Scotland, England, United States, Australia, Canada, Oman.

- Waclaw TIMOSZYK. After studies and Ph.D. (under C. Ryll–Nardzewski) he left the country in 1974. Professor at Norwich University, Great Britain.
- Nicole TOMCZAK–JAEGERMANN (wife of Michał Jaegermann, see above). After studies and Ph.D. (under A. Pełczyński) she emigrated together with her husband in 1968. Professor in Edmonton, University of Alberta, Canada.
- Mariusz URBAŃSKI. After studies, Ph.D. and habilitation in Toruń, he went to United States. Professor in Denton, University of North Texas.
- Bronisław WAJNRYB. At the end of his studies he was forced to emigrate in 1968. Professor at Technion, Haifa, Israel.
- Szymon WEKSLER (1914–2001). After studies in Łódź, he was forced to emigrate in 1968. Ph.D. and further career in Israel.
- Jerzy WILKOWSKI. After studies and Ph.D. (under S. Rolewicz) in Warsaw, he was forced to leave the country in 1968. Soon died in Germany.
- Pepe WINKLER. After studies in Warsaw, he emigrated in 1968, first to Uppsala in Sweden and then to United States.
- Joseph WLOKA. After studies in Wrocław, he declared himself a Silesian German and left the country in 1958. After Ph.D. (under Köthe) in Heidelberg and subsequent habilitation, he was a professor in Heidelberg, Los Angeles and Kiel.
- Krzysztof WOJCIECHOWSKI. After studies and Ph.D. (under B. Bojarski) in Warsaw, he left the country for the United States. Professor in Indianapolis.
- Maciej WOJTKOWSKI (brother of Waclaw, see below). After studies in Warsaw and Ph.D. in Moscow (under V. M. Alekseiev) he became professor in United States.
- Waclaw WOJTKOWSKI (brother of Maciej, see above). After studies in Warsaw, he left the country in 1968 before obtaining his Ph.D. Professor in Boise, United States.
- Andrzej WOLANOWSKI. After studies and Ph.D. in Warsaw, he left the country in 1970.
- Włodzimierz WRONA (1912–1988). Studies and Ph.D. in Cracow. Having spent the year 1938/39 in Amsterdam and the World War II in Cracow, he tried to get out. In the 1960s he got contracts in Ghana and Nigeria, from where he moved in 1970 to United States. Professor at Harvard.
- Branley ZEICHNER. One of six students of Wrocław University detained in 1968. Forced to emigrate¹. Computer scientist at Jerusalem University .
- Zbigniew ZIELEŹNY. After studies and Ph.D. in Wrocław (under J. G. Mikusiński), he left the country in 1966. Professor at the University in Buffalo, United States.

4. Emigration in the years 1976–1990

Those years were a time of decline of the Polish satellite state. The Solidarity movement, officially founded in September 1980, has enjoyed

¹ For a moving interview with B. Zeichner see T. Torańska, *We have left something behind, what do you think?* in: *Gazeta Wyborcza – Duży Format*, March 6, 2006.

growing support inside (quickly gaining around 10 million members) and popularity abroad. Solidarity was considered a lethal danger by the communists, who answered with proclaiming Martial Law on 13 December 1981 (with the abolition of Solidarity) and promises of essential economic reforms. Although Martial Law was suspended in 1983, and even an ICM, originally planned in 1982, took place in Warsaw with a delay of one year in 1983, the failure of reforms, general disillusionment and apparent hopelessness nourished emigration tendencies. The authorities seemed then interested in getting rid of all *troublesome* people, and so to receive a passport was then relatively easy. As foreign states were willing to help many people took the opportunity to leave the country. Unlike previous generations of emigrants, that of 1976–1990 was mainly of young people at the outset of their professional life. And the large scale of that emigration made it more devastating than ever before.

In 1989 the political situation improved fundamentally. There came the bloodless victory of the opposition in Poland and later also elsewhere in Central–Eastern Europe. The Soviet system collapsed and Poland became an independent and democratic country, soon to become a member of the EC. And since that time, with free movement available for all, it is hard to speak of emigration, even though emigration continues, more in the form of a brain drain. That phenomenon, however, is of a different nature and scale, and so it will not be considered here.

The last list of mathematical emigrants from Poland provided here shows names of those who left the country in the years 1976–1990. For obvious reasons, this list was even more difficult to compile and so it seems even more incomplete than the two previous ones.

Here are some of the names (the list comprises 146 names):

- Andrzej ADRABIŃSKI. After studies of mathematics in Wrocław, he begun there his career as a computer scientist. Harrassed by the secret police he left the country in 1985.
- Bernard BADZIOCH. After studies in Warsaw, he left the country. He got his Ph.D. at Notre Dame University, Indiana. Professor at Johns Hopkins University.
- Tadeusz BAŁABAN. After studies in Warsaw, Ph.D. (under B. Bojarski) and habilitation, he left Warsaw with the last plane before Martial Law (on 12 December 1981). Professor at Rutgers University.
- #Robert BARTOSZYŃSKI (1933–1998). Studies at Warsaw University and academic career in the Institute of Mathematics of PAS, up to professorship. In 1980 he left the country to become professor in Boise, Idaho State University. Statistician and bioprobalist. Member of the International Statistical Institute and Institute of Mathematical Statistics.
- Tomasz BARTOSZYŃSKI (son of Robert Bartoszyński, see above). After studies and Ph.D. (under W. Guzicki) in Warsaw, he left the country in 1985 together with his wife Joanna Kania–Bartoszyńska, a mathematician herself (see below). Professor in Boise, Idaho State University.

- Piotr BERMAN. After studies in Warsaw, he left the country in 1980s. Professor at Pennsylvania State University.
- Jan BERNERT. After studies and Ph.D. (under W. Pogorzelski, logic) in Katowice, he left the country in the 1980s for Germany.
- Roger BIELAWSKI. After studies in Toruń he left and got his Ph.D. in Montreal, Canada. Later in Glasgow/Edinburgh.
- Maksymilian BORATYŃSKI. After studies, Ph.D. and habilitation in Warsaw, he left in the 1980s for Italy.
- Tomasz BORTNIK. After studies and Ph.D. in Toruń, he left in the 1980s and went to the United States.
- Włodzimierz BRYC. After studies at Warsaw Technical University and Ph.D. (under S. Kwapien), he left the country in 1981. Professor at Ohio University, Cincinnati.
- Zdzisław BRZEŃNIAK. After studies and Ph.D. (under B. Szafirski) in Cracow, he left the country in 1993. After some time in Germany and Italy, he settled in Hull, Great Britain.
- Witold BULA. After studies and Ph.D. (under J. Mioduszewski) in Katowice, he left in 1986. Professor at Brock University, St. Catharines, Ontario, Canada.
- Krzysztof BURDZY from Lublin. He emigrated in the 1980s. Professor in Seattle, University of Washington.
- Włodzimierz CHARATONIK. After studies in Wrocław and Ph.D. (under K. Sieklucki) in Warsaw, he left in 1988. Professor at University of Missouri–Rolla.
- Wojciech CHOJNACKI. After studies, Ph.D. (under J. Kisyński) and habilitation in Warsaw, he went to Adelaide, Australia.
- Piotr CHRUŚCIEL. After studies, Ph.D. (under K. Maurin) and habilitation in Warsaw, he left around 1985 for Scandinavia and then Australia.
- Krzysztof CIESIELSKI. After studies and Ph.D. (under P. Zbierski) in Warsaw, he left in 1985. Professor in Morgantown, West Virginia University.
- Jacek CYGAN. After studies and Ph.D. (under A. Hulanicki) in Wrocław, he left the country in 1986. Professor in Baton Rouge, Louisiana.
- Zofia DENKOWSKA. After studies and Ph.D. (under S. Łojasiewicz) in Cracow, she decided in 1988 to stay abroad. Professor in Angers, France.
- Andrzej DERDZIŃSKI. After studies in Wrocław, Ph.D. (under W. Roter) and habilitation, he left in 1981. Professor of Ohio State University, Columbus.
- Edward DOBROWOLSKI. After studies in Wrocław (electronics at the Technical University, mathematics at the University) he obtained Ph.D. (under W. Narkiewicz) and left for a contract to Algeria later in the 1970s. Now in Canada.
- Tadeusz DOBROWOLSKI. After studies, Ph.D. (under H. Toruńczyk) and habilitation in Warsaw, he left in 1989. Professor in Pittsburg, Kansas State University.
- Szymon DOLECKI. After studies in Wrocław (Technical University) and Ph.D. (under S. Rolewicz) in Warsaw, he left the country in 1980s. Professor in Dijon, France.

- Wojciech DORABIAŁA. After studies in Szczecin, he got his Ph.D. at Notre Dame University. Professor at the University of Pennsylvania.
- Tomasz DUBEJKO. After studies in Warsaw, he left in 1980s. For a long time in Belgium, then at Northwestern University, Illinois.
- Małgorzata DUBIEL. After studies and Ph.D. (under A. Mostowski) in Warsaw, she left in 1984. Married A. Lachlan. Senior lecturer at the university in Burnaby, British Columbia.
- Lech DUBIKAJTIS. After studies, Ph.D. and habilitation in Toruń, he left in 1982. In 1983–2002 professor at the University in Cosenza, Italy. After 2002 he returned, as professor emeritus, to Toruń.
- Jerzy DYDAK. After studies, Ph.D. (under K. Borsuk) and habilitation in Warsaw, he emigrated in the 1980s. Professor in Knoxville, at the University of Tennessee.
- Jacek FABRYKOWSKI. After studies and Ph.D. (under A. Schinzel) in Warsaw, he emigrated in 1980s. For a time in Winnipeg, Manitoba, Canada, later in the United States.
- Krzysztof GAWĘDZKI. After studies in Gdańsk and Warsaw, Ph.D. (under K. Maurin) and habilitation in Warsaw, he left in 1980s. Lecture in ICM '86 in Berkeley. Professor in Lyon, France.
- Jerzy GILEWSKI. After studies and Ph.D. (under K. Urbanik) in Wrocław, he emigrated in 1980s to France.
- Janusz GOLEC. After studies in Cracow, he got a doctoral scholarship abroad in 1986 and decided to stay. In Fordham University, Bronx, NY.
- Beniamin GOŁDYS. After studies and Ph.D. (under R. Zieliński) in Warsaw, he emigrated in 1980s. Professor in Sidney, University of New South Wales, Australia.
- Paweł GÓRA. After studies and Ph.D. (under K. Krzyżewski) in Warsaw, he left the country for Canada.
- Jacek GRACZYK. After studies and Ph.D. (under M. Misiurewicz) in Warsaw, he left for Orsay, France.
- Piotr GRACZYK. After studies and Ph.D. (under T. Byczkowski) in Wrocław, he left in 1990. Professor in Angers, France.
- Andrzej GUTEK. After studies and Ph.D. (under J. Mioduszewski) in Katowice, he emigrated in 1980s. Professor at Tennessee Technical University.
- Paweł HITCZENKO. After studies and Ph.D. (under S. Kwapien) in Warsaw, he left for Philadelphia in the United States.
- Henryk IWANIEC, brother of Tadeusz Iwaniec (see below). Studies, Ph.D. (under A. Schinzel), habilitation, professorship, correspondent member of the PAS. Accomplished mathematician, as witnessed by invited lectures at ICM '78 in Helsinki and ICM '86 in Berkeley. He left in 1980s together with his wife Katarzyna IWANIEC, also a mathematician after studies and Ph.D. in Warsaw. H. Iwaniec is a professor at Rutgers University.
- Tadeusz IWANIEC, brother of Henryk Iwaniec (see above). Studies, Ph.D. (under B. Bojarski) and habilitation in Warsaw, lecture at ICM '83 in Warsaw. He left the country in 1980s together with his wife Grażyna IWANIEC, also a mathematician after studies and Ph.D. in Warsaw. T. Iwaniec is a professor at the University of Syracuse.

- Zdzisław JACKIEWICZ. After studies, Ph.D. and habilitation in Gdańsk, he left shortly before Martial Law. Professor in Temple, State University of Arizona.
- Krzysztof JAROSZ. After studies, Ph.D. (under W. Żelazko) and habilitation, he emigrated in 1986. Professor in Edwardsville, Illinois.
- Jakub JASIŃSKI. After studies and Ph.D. in Gdańsk, he emigrated in 1980s to Scranton in United States.
- Tadeusz JÓZEFIAK. After studies, Ph. D. (under S. Balcerzyk), habilitation and titular professorship in Toruń, he left in 1985 for the United States. One of the editors of *Mathematical Reviews*.
- Tomasz KACZYŃSKI. After studies in Warsaw he got his Ph.D. in Montreal (under A. Granas). Professor of the University of Sherbrook, Quebec.
- Anna KAMIŃSKA. After studies, Ph.D. and habilitation in Poznań, she emigrated in 1985. Professor at the University of Memphis, United States.
- Joanna KANIA–BARTOSZYŃSKA (wife of Tomasz Bartoszyński, see above). After studies in Warsaw, she emigrated together with her husband in 1985. Ph.D. in Berkeley (under Kirby). Professor in Boise, Idaho State University.
- Marek KARPIŃSKI. After studies, Ph.D. and habilitation in Poznań, he left for Germany. Professor in Bonn.
- Marek KIMEL. After studies and Ph.D. at the Technical University in Gliwice, he emigrated in 1980s. Professor of statistics in Houston, Rice University. In contact with his native country, he got habilitation in Cracow and titular professorship.
- Maciej KLIMEK. After studies and Ph.D. (under J. Siciak) in Cracow, he left in 1981. Professor in Uppsala, Sweden.
- Andrzej KŁOPOTOWSKI. After studies in Toruń, he emigrated in 1985 to France and worked at Université Paris XIII.
- Jerzy KOCIK. After studies in Wrocław and confiscation of his Ph.D. thesis (under J. Mozrzyk) by the security police (in revenge for his political involvement with the opposition), he emigrated late in 1984. Receiving his Ph.D. in the United States, he became professor in Carbondale, State Illinois University.
- Piotr KOKOSZKA. After studies at the Technical University and Ph.D. (under A. Weron) in Wrocław, he went in 1990 to the United States. Professor in Logan, Utah State University.
- Jerzy KONDERAK. After studies and Ph.D. (under A. Zajtz) in Cracow, he left in 1986 to Bari, Italy.
- Halina KOROLCZUK. After studies in Białystok and getting her Ph.D., she left for the Republic of South Africa.
- Andrzej KORZENIOWSKI. After studies and Ph.D. (under K. Urbanik) in Wrocław, in 1980 he did not return. Professor in Arlington, University of Texas.
- Piotr KOSZMIDER. After completing studies in Warsaw in 1988, he immediately left the country. He received his Ph.D. in Canada in 1992 and in 1998 he moved to Brasil, professor in Sao Paulo.
- Maciej KOUTNY. After studies and Ph.D. at Warsaw Technical University, he left in 1985. Professor in Newcastle, Great Britain.

- Andrzej KOZEK. After studies, Ph.D. (under W. Klonecki, in statistics) and habilitation in Wrocław, he went in 1980s to Australia.
- Wojciech KOZŁOWSKI. After studies and Ph.D. (under J. Musielak) in Cracow he left in 1985 for Australia.
- Przemysław KRANZ. After studies and Ph.D. (under W. Orlicz) in Poznań, he left for the United States. Professor at the University of Mississippi, Oxford, Mississippi.
- Wiesław KRAWCEWICZ. After studies in Gdańsk, he emigrated in 1980s. Professor in Edmonton, University of Alberta, Canada.
- Ewa KUBICKA and Grzegorz KUBICKI (married couple). After studies at Wrocław Technical University (both of them), they left the country in the 1980s. Both are professors at the University of Louisville, Kentucky.
- Krzysztof KURDYKA. After studies and Ph.D. (under S. Łojasiewicz), he visited France several times. From 1994 professor in Chambéry, Université de Savoie.
- Sławomir KWASIK. After studies and Ph.D. in Gdańsk, he left in the 1980s. Professor in New Orleans, Tulane University.
- Iwo LABUDA. After studies, Ph.D. and habilitation in Poznań, he left in the 1980s. Professor at the University of Mississippi, Oxford, Mississippi.
- Irena LASIECKA. After studies and Ph.D. at Warsaw Technical University, she left the country for the United States. Professor in Charlottesville, University of Virginia.
- Longin LATECKI. After studies in Gdańsk, he left in 1988. Professor at Temple University, Philadelphia, Pennsylvania.
- Alojzy LECHICKI. After studies in Szczecin and Ph.D. in Poznań (under L. Drewnowski), he left the country in 1984.
- Urszula ŁĘDZEWICZ–KOWALEWSKA. After studies, Ph.D. and habilitation in Łódź, she emigrated in 1987. Professor in Edwardsville, Southern Illinois University.
- Stanisław ŁOJASIEWICZ, Jr. (son of eminent mathematician Stanisław Łojasiewicz). After studies and Ph.D. (under C. Olech) in Cracow, he emigrated in 1985 (together with his wife Wanda Szpunar–Łojasiewicz, see below) to the United States.
- Janusz ŁYSKO. After studies and Ph.D. (under K. Sieklucki) in Warsaw, he left Poland in 1980s. Professor at Widener University, Chester, Pennsylvania.
- Andrzej MAKAGON. After studies at Wrocław Technical University and Ph.D. (under A. Weron), he left Poland in the 1980s. Professor of Hampton University. Habilitation in 2002 in Poland.
- Lech MALIGRANDA. After studies and Ph.D. (under W. Orlicz) in Poznań, he left the country in the 1980s. For a long time in Caracas, Venezuela. From 1991 professor at the Technical University in Lulea, Sweden.
- Wiktor MAREK. After studies, Ph.D. and habilitation in Warsaw, he went 1981 to United States. Professor at the University of Kentucky in Lexington.
- Piotr MIKUSIŃSKI (son of eminent mathematician Jan Mikusiński). After studies and Ph.D. in Katowice, he left Poland late in the 1980s. Professor in Orlando, University of Central Florida.

- Piotr MINC. After studies and Ph.D. (under K. Sieklucki) in Warsaw, he left in the 1980s. Professor of Auburn University, Alabama.
- Gerard MISIOŁEK. After studies in Warsaw, he left in 1985. Now at the University of Notre Dame, Indiana.
- Michał MISIUREWICZ. After studies, Ph.D. (under B. Bojarski) and habilitation in Warsaw, he left for the United States. Professor of Indiana University.
- Jerzy MOGILSKI. After studies and Ph.D. (under H. Toruńczyk) in Warsaw, he left Poland in 1985.
- Marek MUSIELA. After studies and Ph.D. (under W. Klonecki, statistics) in Wrocław, he emigrated to Grenoble (France), in 1980 to Australia, and later moved to BNP–Paribas bank in London.
- Tomasz MÜLDNER. After studies and Ph.D. (under W. Żelazko) he left Poland in 1981. Professor at Acadia University, Nova Scotia, Canada.
- Józef MYJAK. After studies, Ph.D. (under A. Lasota) and habilitation in Cracow, he left for Italy. Professor at the University of l’Aquila.
- Edward NEUMAN. After studies and Ph.D. (under S. Paszkowski) in Wrocław, he left the country in 1984. Professor in Carbondale, Southern Illinois University.
- Jacek NIKIEL. After studies and Ph.D. (under J. J. Charatonik) in Wrocław, he left in 1989. For a long time professor at the American University in Beirut. One of a few who came back, professor at Opole University.
- Przemysław NOWICKI. After studies and Ph.D. (under W. Zawadowski, teaching of mathematics), he left the country in the 1980s for the United States.
- Zofia OGRODZKA. After studies and Ph.D. (under C. Bessaga) in Warsaw, she left Poland in 1977. Married to Atkin. Lives in Wellington, New Zealand.
- Anna OLECKA. After studies but without completing her Ph.D. (under Z. Semadeni, teaching of mathematics), she left Poland in the 1980s. In New Jersey, United States.
- Bogdan OPOROWSKI. After studies in Szczecin and Poznań, he emigrated in 1985. After Ph.D. at Ohio State University professor in Baton Rouge, Louisiana State University.
- Marian ORŁOWSKI. After studies and Ph.D. (under K. Borsuk), he left the country in 1978 for the Republic of South Africa.
- Krzysztof OSTASZEWSKI. After studies in Łódź, he left Poland in 1981. In 1985 he got a Ph.D. in Seattle. Professor of Illinois State University.
- Wojciech PAPIEŻ. After studies and Ph.D. in Katowice, he left in 1981 for Canada.
- Adam PARUSIŃSKI. After studies and Ph.D. in Gdańsk, he left in 1988. In Angers, France.
- Bożenna PASIK–DUNCAN. After studies, Ph.D. and habilitation in Warsaw, she left Poland in 1986. Professor in Lawrence, Kansas.
- Andrzej PELC. After studies and Ph.D. (under W. Marek) in Warsaw, he left in 1983 for Morocco, then Canada, and eventually the United States.
- Zbigniew PIOTROWSKI. After studies and Ph.D. (under J. J. Charatonik) in Wrocław, he left the country in 1981. Professor of Youngstown State University, Ohio.

- Eugeniusz PORADA. After studies and Ph.D. (under A. Hulanicki) in Wrocław, he got in 1977 a contract in Algeria and did not come back.
- Teodor PRZYMUSIŃSKI. After studies, Ph.D. (under R. Engelking) and habilitation he left the country in 1981 together with his wife Halina PRZYMUSIŃSKA (née Sawicka) after her studies and Ph.D. (under H. Rasiowa).
- Józef PRZYTYCKI. After studies in Warsaw, he got his Ph.D. (under J. Birman) at Columbia University, N.Y. Professor in Washington, George Washington University.
- Ewa PUCHALSKA. Studies and Ph.D. (under Z. Semadeni) in Warsaw. Imprisoned 1968 for half a year, for taking part in a student strike. She left the country in the 1980s. Professor at Université de Montreal.
- Zbigniew M. RAKOWSKI. After studies and Ph.D. (under T. Maćkowiak) in Wrocław, he left in 1980 for Germany.
- Jan ROSIŃSKI. After studies and Ph.D. (under W. Woyczyński) in Wrocław, he left in 1985. Professor in Knoxville, University of Tennessee.
- Andrzej ROSŁANOWSKI. After studies and Ph.D. (under J. Cichoń) in Wrocław, he left in 1991 for Israel, and then for the University of Nebraska at Omaha.
- Ryszard RUBINSZTEIN. Studies and Ph.D. (under A. Jankowski) in Warsaw. During Martial Law he was interned, and soon after left the country. Professor in Uppsala, Sweden.
- Ludwik RUDOLF. After studies and Ph.D. (under B. Knaster) in Wrocław, he moved to Gdańsk University and then to Nowy Sącz. In 1984 he left for Germany.
- Andrzej RUSEK. After studies and Ph.D. in Gdańsk, he left in 1981.
- Marek RYCHLIK. After studies in Warsaw he left in 1981. Ph.D. in Berkeley. Then in Tucson, United States.
- Krzysztof SOKOLNICKI. After studies and Ph.D. (under A. Wiweger) in Warsaw, he left Poland in 1977 and found a job at Marianopolis College, Montreal, Canada.
- Alfred SCHURMAN. After studies and Ph.D. in Gdańsk, he left for Germany.
- Czesław SIEMASZKO. After studies and Ph.D. (under S. Rolewicz) in Warsaw, he left for Ontario, Canada.
- Anna SIERPIŃSKA. Studies and Ph.D. (under W. Zawadowski, teaching of mathematics). Chief organizer of ICM '83 in Warsaw. She applied for habilitation in teaching but was turned down both by mathematicians (*that is not mathematics*) and by sociologists (*too much of mathematics*) and then decided to emigrate. Professor at Concordia University in Montreal. Chief editor of *Educational Studies in Mathematics*.
- Kostas SKANDALIS. Child of Greek emigrants to Poland after WWII. Studies and Ph.D. (under L. Pacholski) in Wrocław. Married a Polish woman. In the 1980s he decided to return to Greece with his family and became a professor at the University of Crete.
- Zbigniew SŁODKOWSKI. After studies and Ph.D. (under W. Żelazko) in Warsaw, he emigrated in 1980s. Professor in Chicago, University of Illinois.
- Zdzisław SUCHANECKI. After studies in Polytechnic and Ph.D. (under A. Weron) in Wrocław, he left Poland late in the 1980s for Belgium and then for

Luxemburg.

- Jan SUDOLSKI. After studies and Ph.D. (under A. Pleśniak) he left the country late in the 1980s for France.
- Stanisław SZAREK. After studies and Ph.D. (under A. Pełczyński) in Warsaw he emigrated early in the 1980s. From 1983 professor in Cleveland, Case Western Reserve University.
- Wanda SZPUNAR ŁOJASIEWICZ. After studies and Ph.D. (under H. Szafraniec) in Cracow she left the country together with her husband Stanisław Łojasiewicz, Jr. (see above). Professor at Rochester Institute of Technology.
- Jerzy SZULGA. After studies and Ph.D. (under W. Woyczyński) in Wrocław, he left towards the end of the 1980s. Professor of Auburn University, Alabama.
- Andrzej SZYBIAK. After studies, Ph.D. (under S. Gołąb) and habilitation in Cracow, he got a contract in Algeria in 1980, from where he moved, after three years, to Canada.
- Andrzej SZYMAŃSKI. After studies, Ph.D. (under J. Mioduszewski) and habilitation in Katowice, he left Poland in 1985. Professor in Slippery Rock University of Pennsylvania, United States.
- Jan ŚLIWA. After studies and Ph.D. (under W. Narkiewicz) in Wrocław, he left the country in 1981. Lives in Chicago.
- Rastislav TELGÁRSKY. A Slovak by origin, he studied, got his Ph.D. (under C. Ryll–Nardzewski) and habilitation in Wrocław. Together with his family (Polish wife and children) he left Poland in 1983. In Albuquerque, New Mexico, he got a job for Boeing.
- Bronisław TEMBROWSKI. After studies and Ph.D. (under R. Suszko) in Warsaw, he left in 1980s for the United States.
- Jerzy TOMASIK. After studies and Ph.D. (under L. Pacholski) in Wrocław, he left in 1985 for France. Professor in Aubière, Université d’Auvergne.
- Grażyna TOPOROWSKA (later VALY). After studies and Ph.D. (under S. Rolewicz) in Warsaw, she left Poland still during Martial Law in 1982. A lecturer in Örebro, Sweden.
- Andrzej TRZEPIZUR. After studies and Ph.D. (under A. Pelczar) in Cracow, he left Poland after 1985 for Angers, France.
- #Mieczysław WARMUS (1918–2007). After studies at Warsaw Technical University (2 years before WWII), completed in Wrocław University after WWII, he got there a Ph.D. (under H. Steinhaus) and habilitation. After moving in 1958 to Warsaw he obtained there the title of professor. In the 1980s he decided to emigrate and left (together with family) in 1984 for Australia, where he became professor at the University in Wollongong.
- Anita WASILEWSKA. After studies and Ph.D. (under H. Rasiowa) she left in 1981 for the United States.
- Jerzy WEYMAN. After studies in Toruń, he left Poland in 1985. Having obtained his Ph.D. in Boston, he became there a professor.
- Roman WĘGRZYK (later changed the name to WENG). After studies and Ph.D. (under M. Kuczma) in Katowice, he emigrated early in the 1980s to Germany.

- Wojciech WIECZOREK. After studies in Gdańsk, he left the country around 1986. Got a Ph.D. from Michigan State University.
- Dariusz WILCZYŃSKI. After studies in Poznań, he left the country in the 1980s. Professor at State University of Utah.
- Mariusz WODZICKI. After studies in Warsaw and Ph.D. in Moscow (under Manin), he left the country in 1980s. Professor at the University of California in Berkeley.
- Jerzy WOJCIECHOWSKI. After studies in Warsaw, he went in 1987 to Cambridge, UK, where he got his Ph.D. Professor in Morgantown, West Virginia University.
- Zdzisław WOJTKOWIAK. After studies and Ph.D. (under A. Birula–Białynicki) in Warsaw, he went for post–doc studies to Oxford, UK. With martial law proclaimed in Poland he decided to stay in the West. University of Nice Sophia Antipolis
- Wojbor WOYCZYŃSKI. After studies, Ph.D. (under K. Urbanik) and habilitation in Wrocław, he left in 1978. Professor in Cleveland, Case Western Reserve University.
- Andrzej ZARACH. After studies and Ph.D. (under A. Mostowski) in Warsaw, he found a job at Wrocław Technical University. During the period of martial law he was active in the democratic opposition. Several times arrested, he eventually left the country. Professor at East Stroudsburg University of Pennsylvania, Pasadena.
- Tomasz ZASTAWNIAK. After studies and Ph.D. (under A. Pliś) in Cracow, he left Poland late in the 1980s. University of Hull, Great Britain.
- #Andrzej ZIĘBA (1929–1986). Studies, Ph.D. (under H. Steinhaus) and habilitation in Wrocław. Professor at the universities of Wrocław, Opole and Cracow. He left Poland in 1978 (one of the *non–returners*) for Austria.
- Piotr ŻELEWSKI. After studies in Gdańsk, he left in 1984. Got his Ph.D. (under Słate) in Ontario, Canada.
- Ryszard ŻOCHOWSKI. After studies in Toruń and Ph.D. (under E. Szaśiada he emigrated in 1987 to Germany.)

5. Some statistics and comments

While not complete the three lists above offer a basis for a statistical investigation of emigration of mathematicians from Poland.

We start with a table showing the scale of emigration.

Category or period	Numbers	Some names
Found abroad in 1918	7	W. Bortkiewicz, L. Lichtenstein (both Germany), F. Mertens (Austria), Z. Borewicz, B. Młodziejewski, J. Sochocki, C. Russyan (all Russia)
1919–1935	9	W. Hurewicz, S. Mandelbrojt, J. Sפława–Neyman
1936–1939	10	S. Eilenberg, M. Kac, B. Mandelbrot, S. Ulam, A. Tarski
1940–1946	9	O. Nikodym, J. Łukasiewicz, A. Zygmund
1947–1967	23	A. Ehrenfeucht, J. Jaworowski, S. Knapowski, S. Mrówka, S. Świerczkowski
1968 (<i>Zionists</i>)	30	M. and N. Jaegermann, W. and K. Kuperberg, J. Strelcyn
1968–1976	23	K. Apt, J. Bochnak, A. Granas, J. Mycielski, T. Przymusiński
Year unknown	9	G. Świątek
1977–1990	146	H. Iwaniec, T. Iwaniec, M. Klimek, L. Maligranda, J. Przytycki, J. Rosiński, A. Sierpińska, M. Warmus, W. Woyczyński
Family reunification	8	P. Kosmol, J. Włoka

Emigrants of the years 1919–1946 (total 28, less 7 *found abroad*) came mostly from Warsaw (16) and only marginally from other cities (Lwów 5, Cracow 3, Vilnius 1, no affiliation to any university 3). Their first countries of destination were the United States (9), the Soviet Union (8), France (4) and one person each in Belgium, Brazil, Great Britain, Ireland, Palestine, and Peru.

Slow in the period 1919–1935 (less than 1 name in 2 years), emigration quadrupled in the last four years before World War II (2 names per year), that time mainly of accomplished mathematicians who later contributed significantly to the development of mathematics. During World War II emigration went on at the same high rate as immediately before. Somewhat slower in the two decades after the War (1 name per year), emigration suddenly soared in the anti-Zionist campaign topping, in that one year alone, the total number of the two preceding decades. And from that year on the rate continued to be high, from 3 names per year in the period 1968–1976 to 14 names per year in the declining period of 1976–1990. Altogether more than 230 men and women left Poland in the seventy years of 1919–1990. The loss is illustrated by some names in each category.

The next three tables are restricted to the period after 1945. The first one estimates professional qualifications of emigrants: studies and degrees obtained.

	1947–1976	1976–1990	Total
Unfinished studies	5	–	5
M.A.	20	26	46
Ph.D.	44	90	134
Habilitation	11	25	36
Professor (titular)	5	5	10
Total	85	146	231

A word of comments. The category unfinished studies is here inserted for two reasons: all individuals in this category were harmed as they were forced to break their studies and to emigrate, but abroad most of them successfully completed their studies and continued their mathematical career.

In the period 1926–1991 college courses in mathematics at Polish universities lasted 4–5 years and were considered finished only after obtaining a master's degree.

In Poland there are two academic degrees, Ph.D. and habilitation, and one scientific title granted by the President of Poland, that of professor. A university may give a professor's post to a man/woman holding habilitation but such a position does not enjoy the prestige of the scientific title which usually comes later.

In the table it can be seen that a majority of some 70% of emigrants held scientific degrees and titles. That many scholars could, under present regulations in Poland, man 5 full university departments of mathematics (9 people with habilitation or professor's title + 29 Ph.D.'s each).

The second table shows the university centres from which the emigrants came:

	1947–1976	1976–1990	Total
Warsaw	53	61	114
Wrocław	19	31	50
Kraków	4	15	19
Gdańsk	–	11	11
Katowice	2	8	10
Toruń	3	7	10
Poznań	1	7	8
Łódź	2	2	4
other centres	1	4	5
Total	85	146	231

The above table shows that nearly one in two emigrants came from Warsaw, more than 20% from Wrocław, and some 8% from Kraków. Thus the three centres of Warsaw, Wrocław, and Kraków, undoubtedly the strongest ones in

Poland in the period, gave nearly 80% of emigrants, but the remaining 20% usually profited by contacts to those three and their contacts abroad. The distribution shown in the table can easily be explained: it is easier to get a promising contact abroad if one comes from a strong centre which offered opportunities of fast individual development and names of its masters had some *market* value. To illustrate the tremendous loss of talent, let us give just one example: after most individuals from the very active group of talented young students around K. Borsuk in Warsaw emigrated, the group virtually ceased to exist.

The third and last table may come as a surprise. It shows countries of destination:

	1947–1976	1976–1990	Total
United States	30	71	101
Canada	7	14	21
Germany	9	9	18
France	2	16	18
Australia	6	6	12
Scandinavia (Denmark, Sweden)	8	3	11
Israel	9	1	10
Italy	–	5	5
Netherlands	4	–	4
Great Britain	2	1	3
unknown and other countries	8	21	29
Total	85	146	231

The dominant position of United States is indisputable but the domination is not as absolute as one might expect. It rose from 35% in the period 1947–1976 to nearly 50% in the years 1976–1990, totalling 43.7%. Then came Canada, Germany and France which together took 23.8%. *Attractive* were also Australia, Scandinavia (Denmark and Sweden) and Israel, with a total of 14.5%. Then there is a large group of countries such as the Netherlands, Great Britain, Italy and some exotic countries such as Algeria, Nigeria, Venezuela, Mexico, Republic of South Africa or New Zealand, with one emigrant each .

6. Bibliography for specific names

Only deceased people, chosen positions. The following abbreviations refer to general collections:

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PSB – *Polski Słownik Biograficzny* [*Polish Biographic Dictionary*; edited from 1935, since 1953 by PAS].

SBMP – *Słownik biograficzny matematyków polskich [Biographic Dictionary of Polish Mathematicians]*, (eds.) S. Domoradzki, D. Węglowska & Z. Pawlikowska–Brożek, Tarnobrzeg 2003.

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