

**Professor Aleksander Guterch (1936–2023)  
– Eminent Polar Explorer and Seismologist,  
Researcher of the “Gateways” to the Arctic and Antarctic**

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Over the last two decades, the authors of these memoirs worked closely with the late Prof. Aleksander Guterch in organizing Polish polar research, preparing and implementing programs and projects for Arctic and Antarctic research, as well as in representing the Polish polar environment in various organizations and international forums. However, the beginnings and nature of the relationship with this Eminent Scientist of each of us were different (as indicated in the text with our initials: JJ and PG).

My (JJ) first meeting with Prof. Aleksander Guterch took place in the late 1970s, at one of the annual conventions of the, then still young, “Polar Club”. These were combined with scientific Polar Symposia. In 1976, Prof. Guterch entered into extensive seismic studies of the Earth’s crust of the Svalbard region on a grand scale. He used to present high-class papers at polar symposia, showing the progress of his research on the structure of the Arctic crust and the Earth’s upper mantle. These were later extended to the marine region between the Antarctic Peninsula and the South Shetlands archipelago. He often reported the results jointly with his student, Marek Grad (1951–2020), PhD holder at that time, usually on behalf of a larger research team. The subject matter and the great spatial scale, as well as the technical and logistical complexity of these marine studies of the Earth’s crust, were bewildering to me. At that time, I was a young researcher of the geomorphology of Svalbard’s periglacial slopes and a novice glaciologist. These fields of my scientific interests were on a diametrically more modest scale in terms of space, instruments, and, of course, finances as well. I associated Prof. Guterch and his team mainly with large and complicated projects and grand visions of new, huge scientific programs, as well as international cooperation, which was rare in the reality of Poland at that time. It should be emphasized that Prof. Aleksander Guterch headed three Geodynamic Expeditions in the North Atlantic in the Svalbard region in the years 1976–1985, and four such expeditions to West Antarctica in the years 1979–1991. Conversations with participants of these expeditions made me realize how complicated these projects were, with multi-person teams of researchers on research ships and in various locations on land, with seismographs, their power

supply, also at the bottom of the sea. In addition, it involved the cooperation with specialists in explosives detonated in the sea, as a source of seismic waves. Such projects required detailed planning, good communication, and precise coordination of activities and measurements. In the times before the use of satellite positioning (GPS), this must have been additionally very difficult, but always crowned with success. Since those years, I have associated the modest and rather insular figure of Prof. Guterch with great scientific projects. Not only in the Arctic, which is close to my heart.

I (JJ) had more direct contact with Prof. Guterch when I was in the team of the late Prof. Marian Pulina (1936–2005) and participated in the implementation of one of the topics in the large project “Inter-ministerial Nodal Problem of the Polish Academy of Sciences – Polar Research” (1982–1985), of which he was the Coordinator and Manager. During the meetings and reporting sessions, there was an opportunity to observe this outstanding researcher more closely and talk to him. His openness to interact with teams from other disciplines was a positive and pleasant surprise to me. Of course, his priority was the cooperation in research on the Earth’s crust, for example, with the late eminent geologist Prof. Krzysztof Birkenmajer (1929–2019) and younger associates. They cooperated mainly in the South Shetlands and the Antarctic Peninsula, but worked in the Svalbard region as well. The results of geological surveys on land allowed for an appropriate interpretation of the large lithospheric structures of the shelf and seafloor and led to a better understanding of the large-scale tectonic processes.

This resulted in new, globally unique results and publications (e.g. Birkenmajer et al. 1990; Guterch and Perchuć 1990; Sellevoll et al. 1991; Grad et al. 1993).

Within the framework of these central “nodal programs”, the Coordinator also noticed (and incorporated into the plans) the studies on other elements of the natural environment of polar regions, including the domain of our research – glaciology, hydrology, and hydrochemistry. At that time, I (PG) joined the environmental research team as a researcher of the physico-chemical characteristics of water and ice. Then, we observed that the outstanding seismologist was well-versed in priority research directions in other fields of polar research.

In 1999, Prof. Aleksander Guterch, with a team from the Institute of Geophysics of the PAS, in close cooperation with the Alfred Wegener Institute in Bremerhaven (Germany), the Hokkaido University in Sapporo (Japan) and the University of Bergen (Norway), carried out a large field experiment on the “99200” profile as part of the international project “SMORE II”. The work involved the German research icebreaker *r/v* “Polarstern” and the Polish yacht “Eltanin” (as an auxiliary unit). Seismic profiling of the Earth’s crust structure was performed on a 430-km-long profile in the north-western region of Svalbard. This was the area of the Fram Strait – the Atlantic “gateway” to the Arctic. The profile covered the transition zone between the oceanic and continental crust. During this large-scale experiment, ocean bottom seismometers were used, together with a continuously operating, modern broadband seismometer at the Polish Polar Station Hornsund. During this expedition, we briefly came into personal contact with Prof. Guterch directly in the Arctic. His research made it possible to identify an extremely complex basin structure in the central part of the profile. The thickness of the Earth’s crust in the studied area ranges from 30 km on the continent to only about 3 km below the ocean surface, in the rift zone of the Molloy Deep and the Knipovich Ridge. In the following years, the results were processed, by performing 2- and 3-dimensional modeling of the lithospheric structure in this particularly interesting region. On this basis, significant publications were created. Further research into the lithosphere of this “gateway” to the Arctic was developed during the 4th International Polar Year (e.g., Grad et al. 2011).

I (PG) got to know Prof. Guterch better after I moved to work at the Institute of Geophysics of the PAS in Warsaw, around the year 2000. I remember that he was the only person at the Institute who had two office rooms where he could be met. However, we mostly used to talk in

the room on the ground floor next to the library. He always considered all matters, whether minor or major, to be a priority, hence, I often met him in the Institute's director offices, where he discussed plans to implement big projects and large undertakings for field experiments. We began to cooperate more closely while working on the processing of materials and graphic design for the first Arctic and Antarctic Research Programme of Poland in 2002–2010, published in Polish and English. I didn't realize that this cooperation would develop so much and consume an incredible amount of time. However, Prof. Guterch's vision of Poland's active involvement and broad participation in the planned 4th International Polar Year was large enough to storm the offices of various ministers and department directors. The effects were coming slowly, but supported by a lot of optimism and determination, they usually had a happy ending. This culminated in the granting of special funding by the State Committee for Scientific Research for the so-called commissioned project "Structure, evolution and dynamics of the Lithosphere, Cryosphere and Biosphere in the European sector of the Arctic and the Antarctic". The granted funds allowed the active participation of Polish polar explorers from many scientific centers in Poland in the tasks carried out during IPY 2007–2008. I appreciated that in the following years, Prof. Guterch, even though we were in different departments of the Institute of Geophysics, used to come to me at least once a week to share his new ideas and plans.

In the 1990s, Prof. Guterch became more intensively involved in the activities of the Committee on Polar Research [Komitet Badań Polarnych, KBP] at the Presidium of the PAS, becoming its Vice-Chairman (1991–1999) and then Chairman in 1999–2007. We then became his successors in performing this function (JJ in the period of 2008–2018, and PG from 2019 – still). He also became a member of the Editorial Board of the KBP's international quarterly journal "Polish Polar Research". The chairmanship of the Committee on Polar Research also involved representing the PAS and Polish polar researchers in international organizations. In the years 2000–2007, Prof. Guterch chaired the National Committee at the PAS Presidium for the Scientific Committee on Antarctic Research (SCAR) and the International Arctic Scientific Committee (IASC), taking part in their work.

In terms of Poland's representation in SCAR and other organizations and bodies related to Antarctic research, he cooperated and coordinated the initiatives and activities with the late Dr. Seweryn Maciej Zalewski (1932–2019), Prof. Stanisław Rakusa-Suszczewski, Prof. Krzysztof Birkenmajer, Prof. Krzysztof Jażdżewski, Prof. Andrzej Gaździcki, and other members of the KBP. Alongside, we were gradually introduced to participate in the work of IASC and international bodies related to Arctic research by Prof. Birkenmajer and Prof. Guterch since the beginning of the 21st century.

On the initiative of Dr. Odd Rogne, the IASC Executive Secretary, starting from 1999, the annual meetings of international Arctic organizations were cumulated during one period of the year (spring) and held in agreed-upon cities of member countries, under the common name Arctic Science Summit Week (ASSW). They were combined with major scientific symposia. These important gatherings brought together the most distinguished representatives of Arctic researchers and organizers of this research. They had the character of Arctic congresses. Together with Olek, because already at that time Prof. Aleksander suggested that we should be "on first-name terms" (which was a surprise, but a great honor), we participated in several ASSWs: in Kiruna (2003), Reykjavik (2004), Kunming (2005), Potsdam (2006), Bergen (2009), and of course in Kraków (2013), as well as in Helsinki (2014). During our trips to ASSW, we shared the tasks of representing the Committee on Polar Research of the PAS in various international organizations. Professor Guterch focused on his activities at the European Polar Board, EPB (2001–2014) located in Strasbourg. He was elected Vice-President of the EPB during the 2004–2007 term. At that time, the European Polar Board operated within the European Science Foundation. After the reorganization of EPB and a change of membership rules, Olek resigned

from the position of National Representative. Gradually worsening health problems, hampering the mobility during foreign trips, probably contributed to this. For years, we admired how Olek, helping himself, first with an elegant cane and then with crutches, traversed the long corridors of airports, the halls and stairs of conference centers, and sometimes certain distances in cities. He never complained about this, certainly a great and probably painful inconvenience. It emphasized a special trait of his character: stubbornness and striving for a goal.

As already mentioned, at the beginning of the 21st century, thanks to the efforts of Prof. Guterch, the Arctic and Antarctic Research Programme of Poland, put forward by the Polish Academy of Sciences for the years 2002–2010, came into being. His particular interests included seismic characterization of the Earth's crust in the transition zone from the South Pacific to the Antarctic Peninsula in West Antarctica and three-dimensional modeling of the structure of the Earth's crust in the contact zone between the Antarctic Peninsula and the South Pacific based on seismic data. As part of this program, research was also conducted on other components of the polar environment. Professor Guterch's special merit, while he was chairing the Committee on Polar Research of the PAS, was stimulating the Polish research community to actively prepare for the 4th International Polar Year 2007–2008 (International Polar Year, IPY) both in Poland and internationally. Within the authorities of the World Meteorological Organization (WMO) and the International Council of Scientific Unions (ICSU), the initiative to carry out planned and coordinated research on the Arctic and Antarctic on a global scale, 50 years after the International Geophysical Year (3rd International Polar Year) 1957–1958, appeared relatively late – around mid-2003. It was also incorporated into IASC action plans for the preparation of long-term plans for Arctic research. This was the initiation of the process of preparing the International Conference on Arctic Research Planning (ICARP II) at ASSW in Kiruna in the spring of 2003. The ICARP II conference was held in 2005 in Copenhagen.

A group of leading Polish polar researchers, led by Prof. Guterch, began preparations for Polish involvement in the IPY multidisciplinary research program. As a result of these efforts, the State Committee for Scientific Research announced a competition for a “commissioned” research project that would prepare Polish scientific teams for strong cooperation within this huge international undertaking. A well-structured and justified project proposal for the whole polar research environment was prepared, entitled: “Structure, evolution and dynamics of the lithosphere, cryosphere and biosphere in the European sector of the Arctic and in the Antarctic”, which received funding for the years 2004–2007. Its coordinator and manager was Aleksander Guterch. For Polish polar researchers, this was a very important project. The project made it possible to strengthen and consolidate research in many fields of polar sciences. It enabled Poland to be well-prepared for participation in the IPY (2007–2009). This project was one of the factors enabling several teams from various Polish scientific centers to enter into closer cooperation with foreign teams and their large research programs during the IPY. These topics were officially approved by the International Polar Year's steering committee. Professor Guterch was personally involved in the IPY project (Cluster 77): “Plate Tectonics and Polar Gateways in Earth History”, as the head of the Polish team, which later resulted in important publications (e.g., Pirli et al. 2010; Janik et al. 2014).

However, it became somewhat of a paradox that while funding of the equipment and research preparing Poland for the IPY through the aforementioned commissioned project was satisfactory, obtaining national funding for participation in programs during the Polar Year was extremely difficult. The gradual incorporation of an independent government agency, the State Committee for Scientific Research, into the structures of the Ministry of Science (2004–2005) contributed to this. The indefatigable Prof. Guterch and other prominent polar researchers tried to convince ministerial decision-makers of the need to ring-fence the funds for financing Poles' participation in the IPY. Such an effort wasn't successful. Project proposals from individual

teams for research within the agreed plans for the IPY had to compete in general competitions within their disciplines. Fortunately, some of them received grants, although usually with less funding than expected, which significantly limited our capabilities in this international partnership.

Looking back, it should be emphasized that Aleksander Guterch, then the chairman of the Committee on Polar Research of the PAS, as well as the chairman of the Polish National Committee for the 4th International Polar Year, active in the years 2006–2011, greatly contributed to the preparation and realization of Poland's participation in this world's largest research program. It is worth recalling here that over 50,000 researchers, observers, and technical staff from over 60 countries were involved in the IPY 2007–2008. They carried out 228 internationally coordinated scientific projects (see Krupnik et al. 2011). Polish teams were invited to 40 projects, but only 18 received financial support from the Ministry of Science and Higher Education.

It is worth emphasizing that Prof. Guterch markedly contributed to the preparations of IPY on an international scale. He was a representative of Poland in an important steering body – Heads of the Arctic and Antarctic IPY Secretariats (HAIS). During these meetings, we (JJ and PG) used to support Olek or replace him, if needed. The HAIS-5 meeting (26–27 May 2008), organized by us in Poland, in the historic interiors of the former Rectorate of the Jagiellonian University in Kraków, also became part of the IPY's history. A certain measure of the success of Prof. Guterch's efforts for Poland's participation in the Polar Year was the active participation of Polish scientists in the conference formally closing the IPY, i.e., “Oslo Science Conference: Polar Science – Global Impact” (8–12 June 2010). It was the largest-ever gathering of Arctic and Antarctic researchers at a single conference. It brought together approximately 2,300 participants from 53 countries. Apart from the participation of approximately 500 scientists from Norway (as hosts and organizers), the active participation of 71 researchers from Poland made it the 6th largest national delegation (Krupnik et al. 2011). This statistic somehow reflects the scale of Olek's initiatives and efforts. Of course, they were supported by the enthusiasm and commitment of many scientific teams from Poland to the IPY. The most valuable part of the legacy of the activities of that period was the beginning of greater consolidation and cooperation of the hitherto fragmented Polish polar research community. Further good effects of these initiatives and activities can be observed today.

During the organization and implementation of research projects related to the IPY 2007–2008, Prof. Guterch managed to noticeably strengthen contacts and cooperation between the Committee on Polar Research of the PAS and the Polish Ministry of Foreign Affairs. He chaired the National Committee for Polar Treaties at the Presidium of the PAS (Arctic Council, Antarctic Treaty). The intensification of this cooperation was a great merit of H.E. the Titular Ambassador Jakub Wolski, who at that time headed the Legal and Treaty Department of the Ministry of Foreign Affairs of Poland. A line of scientific diplomacy in polar research was then developed and has been continued thereafter. The Ministry of Foreign Affairs established, in cooperation with the Polish Academy of Sciences, an interdepartmental task force called the “Polar Task Force”, which used to meet once a year, engaging and trying to solve substantive and legal problems of the functioning of Polish polar research within the framework of the Antarctic Treaty, the Spitsbergen (Svalbard) Treaty and Poland's participation in the Arctic Council, with a status of an observer state. Professor Guterch used to take a very active part in these activities as an advisor and expert, including meetings of representatives of observer states at the Arctic Council, called “Warsaw Format Meeting”. We owe many initiatives and activities in this field to his work.

The Ministry of Foreign Affairs recognized the importance of promoting Polish science and raising Poland's prestige in the world through achievements in the field of polar research. Professor Aleksander Guterch, together with a group of polar researchers, was awarded the Honor-

ary Badge of the Ministry of Foreign Affairs “Bene Merito” in 2015. This is a very honorable distinction awarded for activities strengthening Poland’s position in the international arena.

The expert report for the PAS on the state of Polish polar research after the IPY (Guterch et al. 2010), edited and published under the supervision of Prof. A. Guterch, is also part of the history of Polish polar research. He then served as the Chairman of the Interdepartmental Expert Team of the Polish Academy of Sciences for Polar Research (2009–2010).

Professor Aleksander Guterch, as an eminent scientist, strengthened the Polish community of polar researchers through his personal prestige as a member of the Polish Academy of Sciences (Corresponding Member since 1989 and Ordinary Member since 1998), the Polish Academy of Arts and Sciences, and other influential bodies and organizations in Poland. Of great importance for the University of Silesia in Katowice, especially the Faculty of Earth Sciences in Sosnowiec, was his participation as a reviewer in the procedure of awarding the highest academic dignity – the *Honoris Causa* Doctorate to an outstanding glaciologist and Arctic researcher – Prof. Jon Ove Hagen from the University of Oslo (see Fig. 1). The ceremony of promoting this Honorary Doctor of the University of Silesia took place in May 2008 in connection with the Earth and Polar Research Festival in Silesia (Guterch 2008).

Professor Guterch clearly cultivated his commitment to polar matters also during the last years of his life. He actively participated in the work of the Committee on Polar Research at the Presidium of the PAS, providing advice and support in engaging in challenges and solving problems. He used to diligently participate in plenary sessions, skipping the KBP meetings very rarely. He used to speak out on important matters. He also attended the December KBP PAS meeting at the Staszic Palace in 2023, three weeks before his unexpected departure to Eternity.

The professor’s personality was a combination of great scientific passion, diligence, and research integrity with courtesy, academic elegance, and modesty in contact with others. These



Fig. 1. Professor Aleksander Guterch (first from the left) – as a reviewer during the ceremony of granting the dignity of Doctor *Honoris Causa* of the University of Silesia to Professor Jon Ove Hagen (third from the right) on 20 May 2008 (photo: Leszek Kolondra).

qualities attracted people willing to cooperate, not only in the field of seismology, but also in broadly understood polar sciences. Moreover, his persistence in pursuing the goals and the ability to convince decision-makers to his plans, all made with a great culture of personal contacts, ensured success in obtaining funds for many large-scale scientific programs. Both in Europe and in the polar regions.

We will remember Olek as an eminent Scientist and Organizer of research into the Earth's polar regions, taking into account their various aspects. He was always prepared substantively and usually had his talks or theses for discussion precisely written down. Despite so many achievements and his high standing in the academic world, he remained a modest man, willing to help and advise younger scientists.

Polish Arctic and Antarctic researchers will always keep in grateful memory his commitment to polar sciences and raising funds for the realization of great scientific projects, especially in connection with our country's participation in the 4th International Polar Year. He used to deepen our knowledge about the lithosphere structure in the maritime "gateways" to the Arctic and Antarctic, thereby widely opening the "gateways" of opportunities for younger researchers from many scientific disciplines to explore the environment of the polar regions.

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