

GLOBAL MINERALS EDUCATION AND THE SOCIETY OF MINING PROFESSORS/SOCIETÄT DER BERGBAUKUNDE: A VISION FOR THE FUTURE AND A PLAN OF ACTION

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Abstract

The Society of Mining Professors/Societät der Bergbaukunde was established during a meeting hosted by the Montanuniversität, Leoben, Austria, in 1990. Since then, the Society has primarily functioned as a European entity of senior academics in the mining engineering discipline. The Society is considered the natural successor of the historic Societät der Bergbaukunde, formed in the early 18th century and recognized as the world's first international scientific society.

At the 14th Annual General Meeting of the Society, in Milos, Greece, 2003, a decision was made to examine the role of the Society in global minerals education, to reassess its vision and membership guidelines and to develop the future direction of the organization. A special Planning Subcommittee developed a plan of action to allow the Society to transform and position itself as the premier global voice of the academic minerals disciplines and to lead the effort of restructuring minerals education. The new vision calls for reconstituting the Society as a vibrant global society, representing the majority of minerals academics and making a significant contribution to the future of the minerals disciplines.

This paper will present the history, vision, goals and action plans of the Society to help ensure that the necessary scientific, technical, academic and professional skills are available for the sustainable supply of minerals to mankind.

Introduction

The Societät der Bergbaukunde (Society of Mining Sciences) was established in Schemnitz by Ignaz Von

Born, more than two hundred years ago, in 1786, as the first international professional society. Membership included many great scientists of the day. One notable member and participant in this group, for example, was Sir Humphrey Davy. The Society developed branches and offices in 15 countries and, at its peak, listed 154 members. Unfortunately, after the death of Von Born in 1791, the Society began to falter and eventually became inactive a few years later.

Even without an official Society, the links between the mining professionals in Europe continued to be strong. In 1990, in light of the imminent changes to European laws, which would mean that each member of the EU must recognise the degrees of every other member state, 34 mining professors from 20 countries founded a new Societät der Bergbaukunde under the English name of Society of Mining Professors (SMP). This was the result of an initiative by Professor Gunther Fettweis, who proposed the formation of the Society during the 150th anniversary of his home institution, the Montanuniversität Leoben. The SMP was founded at this time, with some 70 members, representing 39 mining faculties (or colleges) in 27 countries.

The first task undertaken by the modern Society was to agree on the contents of the curriculum for mining engineering degrees, that is, to agree what a student should know upon graduation. Two approaches were taken to this problem. First a comparison was made of the actual curricula of member universities. A database of all curricula sent in by members and also those that could be found on the web, has been developed and now has information on 109 curricula from 96 universities in 49 countries. This enabled the Society to determine what subjects should be included in a mining engineering curriculum.

The second major task of this undertaking was to agree on the minimum content for each of the agreed

subjects included in the established curriculum. After much discussion, this was achieved at the end of Third Annual Meeting of the SMP, where an agreement was reached on core subjects, while providing time in the course of study for “electives,” i.e. allowing each university flexibility to incorporate material of particular relevance to its circumstances. This exercise has been updated and re-discussed at later meetings, but the fundamental core, as originally agreed, remains the same.

Another, and ongoing, initiative of the Society has been to identify all the institutions worldwide which offer a degree in mining engineering. So far, some 270 institutions in 84 countries have been identified, but the list is by no means complete.

One of the Society of Mining Professors’ most important roles for many years has been networking, especially at the Annual General Meeting. On several occasions, more than 50 percent of the members have attended the three to four day meetings and discussions. In addition, many important initiatives have been undertaken through contacts between members. The extensive geographical spread of the membership gives the society a true worldwide character, helping it to communicate easily about educational and research matters.

The initiative for the development of the European Mining Course in 1996 by the mining schools of Delft (Netherlands), London (England), Helsinki (Finland) and Aachen (Germany), having a common year of study, is a good example of a cooperative effort. A similar joint degree program, the European Geotechnical and Environmental Course, was also established in 2004 by the mining schools of Kosice (Slovakia), Miskolc (Hungary), Wroclaw (Poland), and Berlin and Freiberg (Germany). Students from other universities around the world also participate in these joint degree programs.

Research issues are also of importance to the Society. The General Annual Meeting of 1998 in Italy was jointly organized with Eurominerals and Euromines, the professional organizations representing professional institutions and the minerals industry in Europe, where the issue of research in the minerals industry was the main theme. A database of the research interests of all the members is currently under development, though much co-operative research has already resulted from individual member networking.

In recent years, the reduction in the number of institutions continuing to offer mining engineering degrees in the developed world in general, and in Europe and the USA in particular, has become one of the concerns of the Society. Much of the problem results from the very poor image of the mining industry, particularly with the younger generation. The Society has

therefore taken several initiatives to improve the image of the discipline and serve as the global representative of mining engineering academia. For example, in 1999 after the Minetime 99 conference in Düsseldorf, Germany, the Society co-organized an international press conference aimed at improving the image of mining and emphasizing the positive societal contributions of the minerals sector.

The Society maintains close contacts with industry and organizes technical site visits and specialist symposia during the annual meeting. For example, in 2000 “The Port of Rotterdam, the Largest Mine in the World” was offered as a special symposium. In December 2002 a special joint meeting was held with AISEMIN, the association of Spanish speaking mining schools. This organization has members in South and Central America and in Spain. The discussions highlighted the difference in culture between the members of the two organizations. The result of this joint meeting has been a closer link with the South American universities.

At the 2003 Annual General Meeting, in Milos, Greece, the SMP co-sponsored, with many other organizations, including SME, the Declaration for Sustainable Development. Known as the “Milos Declaration” (SDIMI 2005). Endorsed by the major professional and scientific international groups, it is a landmark statement of the role, responsibilities and opportunities of the scientific and professional societies in the transition to sustainable development. Signatories included:

- *The Australasian Institute of Mining and Metallurgy*
- *The Canadian Institute of Mining, Metallurgy and Petroleum*
- *The European Federation of Geologists*
- *The Iberoamerican Association of Mining Education/Asociación Iberoamericana de Enseñanza Superior de la Minería*
- *The Institute of Geologists of Ireland*
- *The Peruvian Institute of Mining Engineers/El Instituto de Ingenieros de Minas del Peru*
- *The Society for Mining, Metallurgy and Exploration*
- *The Society for Mining, Metallurgy, Resource and Environmental Technology/Gesellschaft für Bergbau, Metallurgie, Rohstoff- und Umwelttechnik e.V.*
- *The Society of Mining Professors/Societaet der Bergbaukunde*
- *The South African Institute of Mining and Metallurgy*
- *The Spanish Association of Mining Engineers/Consejo Superior de Colegios de Ingenieros de Minas.*

Over the last 14 years, society membership has increased to 140 members representing 60 mining schools

in 36 countries. The society has acted as a catalyst and platform to develop innovative programs, seek new partnerships, develop joint educational and research efforts and expand to new areas and disciplines. It has also fostered information exchange and dissemination of “best practices” in minerals education and research around the world.¹ However, until recently, the emphasis in membership has been concentrated in Europe and membership was restricted to mining engineering academics holding the rank of full-professor.

A New Vision for the Society

At the Annual General Meeting of the Society in Milos, Greece, 2003, a committee was established with the task of providing a platform for an expanded, global, role of the Society, including a revitalized mission, goals and priorities. The committee was also to address any necessary constitutional changes.

The committee developed a vision statement and a plan of action for the Society of Mining Professors/Societät der Bergbaukunde, in order to transform and position itself as the premier global voice of the academic minerals disciplines and to lead the effort of restructuring minerals education. It was recommended that the Society should be a vibrant global Society, representing the majority of minerals academics and should make a significant contribution to a sustainable future. The main goal of the Society should be to guarantee the scientific, technical, academic and professional knowledge required to ensure a sustainable supply of minerals for mankind.

More specifically, the objectives of the Society² stated:

- Ensure that university-based education at the highest level in those disciplines concerned with the provision of mineral products from the crust of the earth continues to be available to those who wish to avail themselves of it.
- Ensure that advancement, through research, of the scientific and engineering knowledge and processes in the areas of relevance to the provision of mineral products continues.

- Establish a network of academics involved in achieving the above goals.
- Enhance the image of the minerals-producing industries, promote development of educational courses within these disciplines and foster pride in the disciplines.
- Establish and maintain ongoing contacts with the global mineral industry.
- Promote co-operation in educational and research programs and identify co-operative research opportunities.

It was also recommended that the full spectrum of engineers and scientists actively participating in minerals education and research should be eligible to be members of the Society and that there should be five classes of membership, including Associate, Junior, Emeritus and Corporate members. These recommendations were accepted at the Annual General Meeting in Freiberg, Germany, in June 2004 and a final ratification of all constitutional changes will be requested at the Annual General Meeting in Ankara, Turkey, in June 2005.

The main future emphasis of the society will focus on the following major tasks:

Academic Programs

The Society should foster the development of initiatives to ensure:

- Guardianship and leadership of academic knowledge and standards
- Awareness of health, safety, environment, community and sustainability in minerals education programs
- Clusters/networks between universities, industry, governments, NGOs and alumni for the purpose of facilitating exchanges, sharing facilities and course offerings and reviewing and assessing programs of participants
- Establishment of a register and data bank of programs, personnel, facilities and other resources associated with minerals education and research
- Recognition of undergraduate, postgraduate and post academic/CPD programs of participants
- Succession training of future academics in minerals disciplines

Research Programs

The Society will actively seek to enhance the funding base for minerals-related research with governments and industry. The Society will also actively promote coordination of research grants and the undertaking of major research initiatives. The fact remains, however,

¹ Society of Mining Professors/Societät Der Bergbaukunde, Global Minerals Education and the Society of Mining Professors/Societät der Bergbaukunde: *A Vision for the Future and a Plan of Action*, Report submitted to the Society by the Planning Subcommittee, March 2004.

² Society of Mining Professors/Societät Der Bergbaukunde.

that minerals research today requires interdisciplinary approaches and talents and it is, or it should be, driven by the enabling technologies that are fuelling the high technology revolution. To this end, the Society will promote interdisciplinary research and joint research initiatives amongst member institutions, and will play a particular role in assisting colleagues in emerging countries.

Communications

The Society will pursue the resumption of the Mineral Resources Journal and upgrade its current newsletter to a more substantial communication note, published at regular intervals. A program will be developed to feature in each issue one or more minerals engineering departments, with details of staff, student numbers, curriculum, research programs, etc. This is an important tool to keep the members in touch with developments and foster further cooperation. Other communications programs for which the Society is expected to demonstrate leadership include:

- Pride in the minerals industry and protecting and enhancing its image
- The involvement and coordination of external stakeholders.

In 2003, the Society joined the premier minerals-related institutions and societies in drafting and endorsing the “Milos Declaration,” presented at the Annual General Meeting of the Society and SDIMI 2003, in Milos, Greece. The leadership of the Society in this arena was well recognized and such high profile exercises and initiatives should remain prominent in the agenda of the Society in the future

Exchange Opportunities

On July 17, 2002, the European Commission established the Erasmus Mundus program, aimed at enhancing the quality of European higher education and to promote intercultural understanding through co-operation with non-EU countries in higher education. The Erasmus Mundus scheme is intended to strengthen international links in higher education, by enabling students and visiting scholars from around the world to engage in postgraduate study at European universities, as well as by encouraging the mobility of European students and scholars.

The basic features of the program include a global scholarship scheme for third country nationals, linked to the creation of European Union Masters Courses at European universities. These postgraduate courses will involve study at several higher education institutions in

different Member States and be distinguished by their European label.

The Society believes that the Erasmus Mundus would offer a great opportunity for further developments in global education. Furthermore, the network and operating practices described under this program are very similar to those currently used in the joint programs already promoted by the Society (e.g., the European Mining Course, the European Mineral Engineering Course and the European Geotechnical and Environmental Course).

Development of Conferences and Short Courses

The Society will consider supporting with publicity, participation and know-how the development of conferences and short courses to benefit its members. One good example is the Society’s participation and sponsorship of the 1st International Conference on Sustainable Development Indicators in the Mineral Industries (SDIMI)³ held in Milos, Greece, May 21-23, 2003, and its sequel to be held in Aachen, Germany, in May 2005.

Conclusion and Recommendations

This is a unique opportunity for a new beginning and for revitalizing, if not reinventing, the old paradigm of minerals research and education. In cooperation with other domestic and international organizations and institutions, the Society is ready to pursue a new global vision and revitalize its goals, objectives and practices.

The engineers and scientists required to lead the minerals industry into a competitive position in the 21st Century will emerge from innovative educational environments and from institutions that are forming global partnerships and that understand the need to collaborate and share resources irrespective of location. Diverse international partnership opportunities are open, due to the growing demand for anytime, anyplace education that can be provided by information technology. If properly positioned, the Society can provide a vital link for establishing and implementing these global partnerships in the minerals field.

The minerals resources sector has the potential to contribute to wealth creation, quality of life and sustainable development. For this to happen new technologies must be continually developed and innovative educational programs and processes must be

³ International Conference on Sustainable Development Indicators for the Minerals Industry, “Milos Statement: Contribution of the Minerals Professional Community to Sustainable Development,” SDIMI.ORG - Sustainable Development Indicators for the Minerals Industry, <http://www.sdimi.org/milos.html> (accessed 11 January 2005).

instituted. Industry, academia and government must work together to take advantage of new opportunities and a revitalized and inclusive Society of Mining Professors/Societät der Bergbaukunde can play a leadership role in this global effort.

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2. Intl. Conf. on Sustainable Development Indicators for the Minerals Industry, "Milos Statement: Contribution of the Minerals Professional Community to Sustainable Development," Sustainable Development Indicators for the Minerals Industry, <http://www.sdimi.org>.