ISSMGE AFRICA REGION "THE PAST"

Dr Peter Day (South Africa)
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GOING WAY BACK

A 42cm x 2,8m papyrus scroll discovered around 1820 near ancient Thebes in Egypt, and now in the Egyptian Museum in Turin, is purported to be the world's oldest surviving geological map. It depicts the topography and geology of Wadi Hammamat in the mountains of the central Eastern Desert of Egypt, including the aerial distribution of sedimentary and igneous/metamorphic rocks. It also shows the gold workings at Bir Umm Fawakhir, the gold-bearing quartz veins on the adjacent mountains and the lithologically diverse wadi gravels. This map, which was drawn during the reign of Ramesses IV (1151 – 1145 BC) pre-dates the next oldest known geological map by some 29 centuries [1]. Remaining in Egypt, various accounts of the construction of the Giza pyramids refer to the use of massive earth ramps for hauling great blocks of stone to incredible height.

It is therefore clear that Africa's interest in things geological and geotechnical dates back to ancient times.

At the other end of the African Continent, the first comprehensive geological map of South Africa was published by the Geological Society of London in 1856. It was compiled by the Scottish-born pioneer of the Cape mountain passes, Sir Andrew Geddes Bain. He and his son, Thomas, constructed no less than 32 major passes in the Cape Province of South Africa during the 19th Century [2].

Throughout Africa, as in the rest of the world, practical knowledge of the behaviour of soils developed in response to the practical needs of the communities, including irrigation canals, river crossings, roads, mountain passes and building materials. Worldwide, scientific interest in the subject goes as far back as 1776 when Coulomb published an essay on *the application of the rules of maxima minima to settle problems of stability related to architecture* which was the beginning of our modern understanding of earth pressures on retaining structures. Almost a century later in 1857, Rankine explored the same topic when he wrote *on the stability of loose earth*. The first failure criteria for soils was developed in 1882 by Christian Mohr, a German civil engineer and in 1885, the French mathematician and physicist, Joseph Boussinesq, proposed equations for determining the stress distribution within an elastic solid which is still used today for predicting settlement of soils.

Throughout the world, as in Africa, soil mechanics developed as much as an art as a science. The publication by Karl Terzaghi of Erdbaumechanik in 1925 heralded the dawn of modern soil mechanics by recognising the multiphase nature of soil, culminating in the publication of the theory of reflective stress in 1936.

AFRICA JOINS THE INTERNATIONAL SOCIETY

The International Society of Soil Mechanics and Foundation Engineering was founded at the first International Conference of the Society in Cambridge, Massachusetts in 1936. Africa was represented by two of its senior geotechnical statesmen, Professor William Selim Hanna of Egypt and Jeremiah Jennings from South Africa. Hanna presented a paper on his research into Egyptian soils and also a report on studies carried out in the soil mechanics laboratory of the Faculty of Engineering at Cairo University, which was established in 1933. At the time, Jennings was studying soil mechanics at MIT under Terzaghi. He returned to South Africa to head up the National Building Research Institute and later became a distinguished professor of soil mechanics at the University of the Witwatersrand.

ISSMGE AFRICA REGION "THE PAST" (Continued)

It is understood that Egypt was the first African member to join the International Society of Soil Mechanics and Foundation Engineering, as it was then known. South Africa followed in 1948 when the Division of Soil Mechanics and Foundation Engineering of the South African Institution of Civil Engineers was formed at the 2nd International Conference in Rotterdam.

In the years that followed, a further nine African Member Societies were added including Ghana, Kenya, Nigeria, Sudan, Tunisia and Zimbabwe (then Rhodesia), Morocco and Mozambique. Sadly the membership of two of these members has since lapsed and only nine societies remain in the African region.

The membership of the International Society comprises member societies from various countries around the world which are grouped into six regions. The various member societies declare their individual membership numbers to the International Society on an annual basis and these numbers are used in the determination of the fees payable to the ISSMGE by the member society. In terms of the number of individual members, the South African member society has always been the largest society in the Africa region, having more individual members than the rest of Africa combined. However, these figures have been distorted by the approaches adopted by the various member societies in registering their individual membership with the ISSMGE. In South Africa, the practice has always been to enrol all individual members of the Geotechnical Division as individual members of the ISSMGE. On the other hand, some member societies elected only to register their senior members, probably in an attempt to reduce the fees payable to the International Society.

In order to encourage member societies to register their full individual membership with the International Society, the ISSMGE scale of fees was revised by resolution of Council in 2005. The new fee scale, although based entirely on a per capita fee, depends on the purchasing power parity of the member country. This was coupled with an obligation to pay for a minimum of thirty individual members per society and rewards for societies with more than 250 individual members. As a result, the individual membership of certain African societies has increased dramatically with Egypt now being the second biggest member society in the region.

COLONIAL INFLUENCES

The majority of the countries in the Africa region started off as colonies of European powers including the United Kingdom, France, Portugal, Belgium and The Netherlands. Inevitably, this has had an effect on the way in which soil mechanics is practiced within the various countries. Even in countries such as Egypt where there was no such colonial power, the practice of soil mechanics has been influenced by the universities attended by senior academics and practitioners, many of these situated abroad.

One of the most immediate influences is the effect of language. It is perfectly natural for the French-speaking countries of northern and western Africa to adopt methods of investigation and design originating from France, for the Portuguese-speaking countries of southern Africa to look to Portugal and Brazil for technical input and for English-speaking countries to be influenced by British practice and standards. Perhaps the most striking example of this colonial influence is the formation, under French patronage, of the Trans-National Committee of African Geotechnical Engineers in 1996.

Le Comité Transnational des Géotechniciens d'Afrique, or CTGA consists of geotechnical engineers from French-speaking African countries where there is no national representation on the International Society. In many of these countries, technical co-operation with France is further strengthened by collaboration at many levels including universities, testing laboratories, government departments and consulting organisations. A brief contribution on the history of the CTGA is appended to this report.

ISSMGE AFRICA REGION "THE PAST" (Continued)

Even in countries such as South Africa, where most engineering organisations are independent of government and many colonial links have been shaken off, there is still a vestige of colonial influence in the design standards that are used, the methods of testing employed and the overseas universities attended by post graduate students fortunate to study abroad.

REGIONAL ACTIVITIES

1.1 African Regional Conferences

The African region has held fifteen regional conferences as listed below. Nine of these conferences were held in southern Africa, four of them in South Africa.

No.	Year	Venue
1st	1955	Pretoria, South Africa
2nd	1959	Lourenço Marques, Mozambique
3rd	1963	Salisbury, Rhodesia
4th	1967	Cape Town, South Africa
5th	1971	Luanda, Angola
6th	1975	Durban, South Africa
7th	1980	Accra, Ghana
8th	1984	Harare, Zimbabwe
9th	1987	Lagos, Nigeria
10th	1991	Maseru, Lesotho
11th	1995	Cairo, Egypt
12th	1999	Durban, South Africa
13th	2003	Marrakesh, Morocco
14th	2007	Yaoundé, Cameroon
15th	2011	Maputo, Mozambique

In recent years, a concerted effort has been made to ensure a more equitable distribution of conference venues, both in terms of geographical distribution and language. A reasonable alternation of the conferences between countries north and south of the Equator has been achieved since 1975. Since 1999, two of the regional conferences have been held in French-speaking countries and one each predominantly Portuguese and English speaking countries. It is hoped that this process will continue into the future. A similar effort towards achieving equitable distribution is also in place for the selection of Regional Vice-Presidents.

1.2 International Events

Like Australasia, Africa has not hosted many events of the International Society. Resolutions passed by the ISSMGE Council in 2005 sought to address this imbalance.

Prior to this, the only Society-wide event held in Africa was a meeting of the ISSMGE Board in South Africa's Kruger Park in November 2002.

The resolutions passed by Council in 2005 seem to have had the desired effect as a meeting of the ISSMGE Board was held in Tunis in 2007 and the 17th International Conference of the Society was held in Alexandria, Egypt in 2009.

ISSMGE AFRICA REGION "THE PAST" (Continued)

ISSMGE Board and family members in the Kruger Park, 2002 (Photo courtesy of Luiz DeMello)

1.3 Areas of Research

If one goes back into the proceedings of the various African Regional Conferences, there are certain topics that emerge time and time again. These are: tropical and residual soils, laterites, pedocretes and unsaturated soils. Problem soils are widespread throughout the region and include heaving clays, collapsible sands, dispersive soils, soft clays (mainly in the coastal regions) and dolomites (mainly in South Africa). The interest in pedocretes and laterites is often connected with their use as construction materials, mainly for roads, earthworks and railway lines.

One of the joys of the African Regional Conferences is that they tend to be heavily focused on practical issues and directly relevant to the developmental challenges faced in the area. Although there are areas where "fundamental" research is being undertaken, much of the research effort reflected in the proceedings of the Regional Conferences is applied research relative to the region.

WHAT MAKES US AFRICAN?

When one travels around the Region, one becomes acutely aware of how different we Africans are; language, culture, religion, skin colour, dress, modes of transport, standard of living, population density, housing, food and drink preferences, and so on. So what is it that unites as Africans?
In one word - "challenge".

Africa is a vast continent. Apart from Asia, it is geographically the largest of the ISSMGE regions. It is one of the more sparsely populated regions but has the highest population growth rate. It includes extremes of climate and vegetation from desert to equatorial rain forests. It has a mighty rift valley, folded mountain ranges, large kratons of igneous rock, "seas" of quaternary sands and vast sedimentary basins. It is a region rich in both natural and human resources.

The challenge referred to above stems from the necessity for balancing the development requirements of the region with the limitations on available capital. This, coupled with the relative absence of restrictive regulations makes being a geotechnical engineer in Africa a very exciting prospect. This is why our

ISSMGE AFRICA REGION "THE PAST" (Continued)

approach to geotechnical engineering since the early days has always been innovative and intensely practical.

As we look back on our past, we can be proud of what we have achieved. It is hoped that this pioneering spirit will prevail as a hallmark of the Africa Region in the future.

REFERENCES

[1] Harrell, J.A. and Brown, V.M (1992) The world's oldest surviving geological map: the 1150BC Turin Papyrus from Egypt. The Journal of Geology, Volume 100, No. 1, January 1992. University of Chicago Press.
[2] Storrar, P. & Komnick, G. (1984) A Colossus of Roads. Murray & Roberts / Concor, Johannesburg, South Africa.

APPENDIX

Le Comité Transnational des Géotechniciens d'Afrique
by Michel Gambin (France)

In France, after WW II, the Public Work Contractors and the leaders in the Building Industry created two Unions, respectively the FNTP and the FNB. These two Unions joined their efforts to set up a Research Center, the CEBTP, somewhat similar to the BRE in the UK. Rapidly, this CEBTP was the leader for geotechnical site investigations in France and in those French colonies still in existence. When freedom was given back to these colonies, the CEBTP set up Laboratories for both the Building Industry and the Public Works: *i.e.* an LBTP, in each new independent State.

With the aim of a better efficiency, an Association was created between all these National LBTPs, under the logo ALBTP for African Association of the Public Works and the Building Industry. The seat of this ALBTP was at Casablanca, Morocco. Every year an AGM was held in turn in the Capital City of each African Country together with that of the Heads of the Road Departments of the government of these countries (ADAR).

But the CEBTP had to face the expansion of various types of small firms, most of them using Pressuremeter tests for their site investigations and this became a heavy financial burden for the two Unions. The CEBTP was finally sold to some investors. The ALBTP started to decline, since it no longer received any incentive from the CEBTP, now a private company.

Being freshly retired from his main employment in 1992, Michel Gambin started to develop a Francophone lobby within the geotechnical world. He met with some previous employees at the Head Office of CEBTP and collected a list of the last heads of each African LBTP. Within the French Member Society of the ISSMFE, the CFMS, it was decided to support the formation of a CTGA.

A first meeting was held during the Cairo Regional Conference of the ISSMGE in 1995 where the participation of members of the CFMS was especially higher than usual. During this meeting, on the 14th of December 1995, under the Chairmanship of Prof. El Ghamrawy, then Vice President of the ISSMGE for Africa, it was decided to organize an African Francophone Geotechnical Conference in Morocco, more exactly in Marrakech, in September 1996.

This Conference was held on September 17-18, 1996. A Constitutive Meeting of the CTGA was held and the new CTGA was created to gather all the geotechnical Engineers of the 22 or so Francophone African

ISSMGE AFRICA REGION "THE PAST" (Continued)

Countries. Since then, not only professionals of the BTP, but also professors from various Universities joined the CTGA. The ALBTP naturally kept its autonomy.

Among the few activities, AGMs are held each year in one of these countries during the same week as the meeting of members of ALBTP and of AGEPAR (the Road Network Managers Union created by the IMF). Some French Geotechnical Engineers are invited to deliver lectures on specific topics. The CTGA also organized the ISSMGE African Regional Conferences at Marrakech (2003) with the Moroccan Society and at Yaoundé in Cameroon (2007).

Another Institution that has more recently come into the picture is the UISF "Union Internationale des Ingénieurs et Scientifiques utilisant la langue Française" www.uisf.fr. The UISF proposes Seminars and Symposia on various topics adapted to African problems. Surprisingly, the originator of the UISF is the former Scientific Manager of the original CEBTP! This Engineer, now 86, is still very active.

ACTIVITIES OF GEOTECHNICAL ENGINEERING IN AFRICA, PRESENT

Professor Samuel U. Ejezie
Vice President for Africa

Introduction

Africa is a Region where Geotechnical Engineering problems abound, yet the general world-wide perception remains that the profession is relatively not well-developed here. As we celebrate 75 years of existence of ISSMGE, it is therefore necessary that we should take stock and ascertain where exactly we are in this developmental march. I have programmed this presentation to essentially cover the present state of the activities of this International professional body within the region together with special highlights of our key thrusts for the future. My predecessor in office is billed to take us down memory lane by speaking about the past, while a young member will thrill us with future expectations of the Society in the Region.

On my assumption of office in Alexandria last year I did pledge to work towards closer cooperation among African Member societies of ISSMGE from North to South and from East to West. This is with a view to integrating Geotechnical Engineering activities around the continent so that solutions to geotechnical engineering problems experienced in many parts of the Region may be found within Africa itself. To demonstrate our continued commitment to this crusade, African members of ISSMGE were especially motivated and strongly encouraged to participate in activities being organised by sister African member societies. In fact, the present slogan or advocacy is that Geotechnical Engineering should be practised in Africa without boarders so that we can together find local solutions to our ground engineering problems. Isolated cases of border and visa restrictions typical of developing economies did however rear up their ugly heads now and then tending to dampen our enthusiasm. This notwithstanding, the benefits of our cooperation have started manifesting, judging from the wide geographical spread of participants recorded in events organised by member societies in the Region in recent times. Based on this, one can confidently predict that the era of using models developed for soils of other climatic zones to solve problems related to the engineering behaviour of African soils will soon be over. We have to work together to develop appropriate models for soils of Africa.

ISSMGE IN AFRICA REGION TODAY

ACTIVITIES OF GEOTECHNICAL ENGINEERING IN AFRICA, PRESENT (Continued)

Present Platforms for Working Together

ISSMGE members in other Regions frequently collaborate and work closely together under the umbrella of different Technical Committees – some Regional, some International. Until very recently, this opportunity never existed in Africa and members could hardly relate one-on-one or interact to discuss the geotechnical engineering problems in the Region.

At present however, we are happy to report that we now have an International Technical Committee domiciled in Africa. This is the very first time such an opportunity is being placed within the reach of members in Africa Region. The Committee is named "Technical Committee on Laterites and Lateritic Soils". As is evident from the name, this Committee will serve as an ideal platform for studying and proffering solutions for engineering challenges related to problem soils of Africa. The host country is Ghana, while the Chairman is Professor S. K. Ampadu of Kwame Nkruma University of Science and Technology, Kumasi, Ghana.
The idea for the formation of this Committee was initiated a long time ago during the tenure of Prof. P. S. Pinto as ISSMGE President. We are happy that the current indefatigable President, Prof. Jean-Louis Briaud, drove the process to a logical conclusion and helped us realise the dream. It is now left to ISSMGE members in Africa Region to embrace the opportunity created by this Committee. Within it we would be able to work together on common geotechnical engineering problems in the Region by integrating our intellectual resources and professional expertise.

ISSMGE Activities within the Region

At present a relatively high level of activity is witnessed in some ISSMGE member societies in Africa Region. This is a drastic departure from the relatively low levels (of activity) generally observed in the past. The last international quadrennial conference of ISSMGE in Alexandria, Egypt, apparently re-awakened some of the hitherto dormant national member societies. As a result, eleven member societies exist in the Region today though at different levels of activity. They include South Africa, Tunisia, Egypt, Nigeria, Ghana, Mozambique, CTGA (Comité Transnational des Géotechniciens d'Afrique), Sudan, Morocco, Algeria, and Kenya. We are currently making serious efforts to re-energise those of them that are considered to be less active (or inactive). It is also our hope that CTGA would soon give birth to off-springs. By so doing, more independent (or autonomous) national member societies, particularly of francophone extraction, will be formed and admitted into ISSMGE, thus increasing Africa's impact and representation in the International Society.

Since my assumption of office as Vice-President for Africa in October 2009, some of the member societies have carried out various activities which in some cases were international in scope. In fact, landmark Geotechnical Engineering events by member societies have been very noticeable and this has been particularly more pronounced in the two longitudinal extreme zones of the continent, namely North and South. The mid zone (sub-Sahara) is expected to catch up soon though it has peculiar challenges occasioned by unique socio-economic realities.

ACTIVITIES OF GEOTECHNICAL ENGINEERING IN AFRICA, PRESENT (Continued)

Overview of the Present State of Member Societies

The major events and activities in the various member societies since this period are summarised subsequently.

a) SOUTH AFRICA

The South African member Society is very active and helps to keep the fire of geotechnical engineering burning with high intensity in the southern zone of Africa. Under the able leadership of its current President, Dr Eduard Vorster, and his Executive Committee the Society recently organised a well-attended

International Seminar in Pretoria on 30 July 2010. The President of ISSMGE, the Secretary General, the Immediate Past President of ISSMGE, the Vice-President for Africa, the Immediate Past Vice-President for Africa and the one before him were all there to grace the occasion and actively participate. This was preceded on 29 July by hosting of two meetings. The first one was a meeting of the Scientific Advisory Committee (CAC) that nurtured this 15th African Regional Conference, while the second was a meeting of the African Regional Council (comprising representatives of member societies in the Region). Worthy of special mention here is the fact that the South African member society played an outstanding leadership role in the Scientific Committee and this led to the timely adjudication of papers and publication of the Conference Proceedings.

Another attribute of this vibrant member society is that it has in place a regular programme of geotechnical engineering activities which include the Rankine and Jennings lecture series, and Annual Awards scheme for recognising excellence and outstanding contribution to geotechnical engineering in South Africa.

b) TUNISIA

The Tunisian National Member Society is presently very active. Since the last ISSMGE quadrennial Conference in Alexandria, the ATMS has been playing a major role in keeping the geotechnical fire aglow in the northern zone. The present Executive Committee is constituted as follows:

i. Mr. Slaheddine HAFFOUDHI (Hydrosi Foundations) – President
ii. Mounir Bouassida (ENIT & Simpro) – 1st Vice President
iii. Mehrez Khemakhem (ISET Sfax) – 2nd Vice President
iv. Mrs Faten SAIHI (ISTEUB) – Secretary General
v. Mrs Imen SAID (ENIT) – Vice Secretary General
vi. Mrs Samis BOUSSETTA (ENIT) – Treasurer
vii. Mr Wissem FRIKHA (ISSHT) – Vice Treasurer
viii. Mr Kamel ZAGHOUANI (Terrasol Tunisie) – Member

The climax of their activities was the successful organisation of their 2nd International Geotechnical Engineering Conference which took place 25-27 October 2010 in Hammermet, Tunisia. It was the only major international Geotechnical Engineering conference in the whole of Africa throughout the year, 2010. Papers were contributed by about 100 participants from 25 different countries. The ISSMGE President and the Vice-President for Africa were there live. Appointed Board member, Prof. Roger Frank was also there; and so were other keynote speakers. The occasion afforded the Vice-President and the President the opportunity to hold a sensitisation meeting with interested participants on the new TC 107 - ”Laterites and Lateritic Soils”.

ACTIVITIES OF GEOTECHNICAL ENGINEERING IN AFRICA, PRESENT (Continued)

Not long after this conference, the Tunisian member society, along with other French-speaking North African countries, also organised the Mergrebian Conference which took place mid-December 2010.

c) MOZAMBIQUE

The Mozambique national member society is undeniably very active. Its recent activities focused primarily on preparations for this 15th African Regional Conference. The President, Carlos Quadros, Secretary, Saturnino Chembeze, and all members of both the Executive Committee and Local Organising Committee demonstrated outstanding leadership and commitment which contributed immensely to the success story we are witnessing here today.

In addition to the 15ARC related activities the society also engaged in other activities, mainly seminars and workshops, aimed at professional development of the members.

d) NIGERIA

The Nigeria member society (Nigerian Geotechnical Association) is relatively active. It has a new Executive Committee constituted as follows:

Prof Samuel U. Ejezie – Chairman
Engr Fidelis Ejikeme – Vice Chairman
Engr. Scott B. Akpila – Secretary/Programme Coordinator
Engr. Sebastine Ozoamalu – treasurer
Engr. Olaposi Fatukun – Financial Secretary
Engr. Dr. Joseph I. Folayan – Immediate Past Chairman/Ex-Officio
Engr. Enoch George – Ex-Officio

The new leadership has aggressively embarked on revival of professional development activities for members and employees of corporate bodies.

In pursuance of this, an intensive skill-level learning event, in the form of "Geotechnical Engineering training course" was organised for a batch of Civil Engineers in the employment of Shell Petroleum Development Company Ltd. This took place from 22 November to 04 December 2010, with participants drawn from Nigeria and Gabon. The Society has also standardised this programme to run regularly as an annual event.

Presently, the Association is collaborating with the Nigerian Society of Engineers in the preparation of Codes of Practice of Geotechnical Engineering for the country.

e) GHANA

Ghana Geotechnical Society has been very active of recent. The present executive committee is made up of:

President	-	Prof. S. I. K. Ampadu
Secretary	-	Mr Joseph K. Oddei
Treasurer	-	Mr Kweku Mensah Solomon
Member	-	Mr Gordon Van-Tay
Member	-	Mr J. F. Pinkra
Southern Rep	-	Mr Emmanuel Odai
Northern Rep	-	Mr Mike Konadu

The President of Ghana Geotechnical Society, Prof S. K. Ampadu, was recently appointed Chairman of TC 107 "Laterites and Lateritic Soils". The society has pledged full support for this and to cooperate with Prof Ampadu to ensure the success of the New TC.

ACTIVITIES OF GEOTECHNICAL ENGINEERING IN AFRICA, PRESENT (Continued)

Furthermore, Dr Gidigasu of Ghana, a renowned authority on Laterites, delivered a keynote lecture on lateritic soils in this Conference, and we are all witnesses!

Earlier in 2009, the Ghana Geotechnical Society (GGS) in collaboration with ISSMGE organized a well-attended international seminar from 2nd-4th February 2009 at the Engineers Centre in Accra. The seminar was attended by 66 participants including three participants from Nigeria. The participants were drawn from private consulting firms, public infrastructure companies, academia, and construction firms. Locally, the seminar was under the patronage of the Kwame Nkrumah University of Science and Technology, the Ghana Institution of Engineers and the Ministry of Transportation of Ghana. The theme was "Ground Improvement for Accelerated Development" reflecting Ghana's recent move towards rapid infrastructure development as a strategy for poverty reduction and economic development.

The seminar sought to expose Ghanaian engineers to new trends in ground improvement technologies, to provide opportunity for Consultants, Contractors and developers who have applied new technologies in ground improvement to share their experience and finally to help promote professional geotechnical engineering practice in Ghana.

f) CTGA

The Society is relatively active. It recently held a colloquium from 17th to 18th February 2010 in Yamoussoukro, (Ivory Coast) which was well-attended by participants from Franco-phone countries in Sub-Saharan Africa. On the whole, more than 50 members were in attendance. The theme of the colloquium was "Foundations of infrastructures in Sub-Saharan Africa – Design and Case Histories".

It was sponsored by the CTGA and the Association of African laboratories for Buildings and public works (ALBTP). 9 (nine) communications were presented by CTGA experts followed by suitable and fruitful discussions. Almost 70 delegates from 9 countries attended this colloquium.

A general Assembly of CTGA took place on the 19th February 2010 and the following members were elected to implement geotechnical training programme for the entire CTGA geographical region.

- Dr Papa Goumbo lo, Pr Ibrahim Khalil Cissé ;
- Dr Mamba Mpele, Dr Marcelin Etienne Kana ;

Other recent activities of CTGA include:

i) A series of training courses in geotechnical engineering, and laboratory and in situ testing launched by the Cameroonian CTGA national group (CNGC) in April 2010.
ii) A technical colloquium/seminar on the main theme "Soil stability and its impact on constructions in Sub-Saharan Africa", sponsored by the CTGA and the Association of African laboratories for Buildings and public works (ALBTP) from 16th to 17th March 2011 at the conference hall of BUJUMBURA (Burundi). 14 (fourteen) communications were presented by various experts from Cameroon, France, Congo, Burundi, Morocco, followed by fruitful discussions. Almost 70 experts from 9 countries attended this colloquium.

At present, plans are on-going to encourage countries capable of standing alone to form their own national member societies.

g) EGYPT

The Egyptian national member society is relatively active. Since the end of the 17th International Conference of ISSMGE in Alexandria, the Society has been involved in different activities most of which promote the positive impact of geotechnical engineering in the society. The most significant of these activities include:

1. Collaboration with the Governorates of Matrouh and Aswan on mitigation methods of flash floods.

ACTIVITIES OF GEOTECHNICAL ENGINEERING IN AFRICA, PRESENT (Continued)

2. Cooperation with the "Military Technical Academy" on the "Fifth Engineering Conference of the Military Technical Academy, which held from 25th to 27th May 2010.
3. Establishment of the organizational structure for a National Geotechnical Conference that is to take place late 2011 at Tanta University.
4. Co-operation with the "Supreme Council of Antiquities" in projects of restoration of monuments and stability of several archaeological sites all over Egypt.
5. Establishment of a Geotechnical and Geo-environmental Research Centre at the University of Tanta, Egypt.

Present Key Thrusts

With the reorganisation of ISSMGE embarked upon by the present Board led by Professor Jean-Louis Briaud largely completed, the time has come for Africa Region to properly key-in to this progressive framework. Doing so will enable us catch up with the rest of the continents of the world in Geotechnical Engineering practice.

Key thrusts of our present regional agenda have been mapped out, circulated among member societies, freely discussed among members across the Region and adopted in principle. Highlights are summarised as follows:

1. **Promotion of Increased Collaboration among Member Societies as well as their Leaders.**
   The collaboration will usher in an era of increased cross-boarder geotechnical engineering activities. The idea is to promote an atmosphere of good neighbourliness and mutually beneficial professional relationships so that geotechnical engineering events organised by member societies will attract participation from sister societies from all over Africa Region. This collaboration model is operational in other regions.
2. **Formation of Technical Committees Domiciled in Africa Region.**
   Discussions have been on-going for sometime now regarding the issue of domiciling Technical Committees in Africa. The time for actualising this proposal is now. The latest development is that the Technical Oversight Committee (TOC), charged with the responsibility of setting up TCs and coordinating their activities, has decided to form the Technical Committee on “Laterites and Lateritic Soils”. As I stated earlier, this is hosted by Ghana with Prof S. I. K. Ampadu as Chairman. In similar vein, our own Prof. Mounir Bouassida of Tunisia was appointed Vice-Chairman of Technical Committee on GeoEngineering Education.
   I wish to use this medium to repeat my earlier invitation to members from Africa Region to submit expressions of interest to join the new Technical Committee on Lateritic Soils. We owe it as a duty to make this TC succeed. The Chairman cannot do it alone! We need to cooperate with him, pull intellectual resources together and champion the cause of this first-ever Africa-hosted Technical Committee.
3. **Formation of Membership Expansion Committee.**
   The purpose of this Committee is to drive/promote membership expansion in Africa Region – New member societies, Corporate members, etc. At present, African representation on the ISSMGE Council remains the lowest among all the regions. There is need therefore to aggressively pursue a program aimed at increasing the number of member societies in Africa. A laudable idea such as this is better implemented through Committee(s) set up for that purpose. Some countries who do not yet have national societies have indicated interest in forming theirs. They need encouragement and help and this Committee is expected to facilitate the process. Furthermore, the new Corporate Membership programme of ISSMGE needs to be promoted and made more popular in the Region. This again falls under the purview of this Committee.

ACTIVITIES OF GEOTECHNICAL ENGINEERING IN AFRICA, PRESENT (Continued)

4. **Formation of Regional Technical Coordination Committee.**

   Regional events, such as IYGEC, Regional Conferences, and TC activities are better promoted, organised and overseen by a dedicated coordinating Committee. This body needs to be set up in Africa Region to more efficiently coordinate scientific and technical activities to the greater benefit of our general membership.

Concluding Remarks

The above account of the present state of ISSMGE member societies and Geotechnical Engineering profession in Africa reveals that the Region has made appreciable progress in recent times. Catching up

with the developed regions is our ultimate goal. Nevertheless, that is not expected to happen overnight. The reason is easy to adduce. The world of Geotechnical Engineering is very dynamic. The advanced regions in the profession are still advancing even at a much faster rate than the so-called less-advanced regions, the list of which is topped by our dear Africa. So, parity though highly desirable, may take quite sometime to be realised if ever.

As we rejoice with the rest of the ISSMGE family on the occasion of the 75th anniversary of our esteemed professional body, our ambition is to get on board the “Geotechnical Engineering Train” and move with the rest of the world. We do not necessarily have to be at the driver’s seat, even though I would be delighted if we did. Fortunately, from all indications we seem to be already on board! And that is good news indeed.

Future of Geotechnical Engineering in Africa (Continued)

Trevor Green
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Africa is a continent with a large number of countries, varying languages and diverse cultures. Many parts of Africa are relatively undeveloped when compared to the rest of the world, and therefore provision of basic services and infrastructure will be the focus for many years to come. Yet it is this lack of development and future potential growth that provide the greatest opportunities in the coming decades. Given the role that engineers play in economic and infrastructure development, geotechnical engineers will be vital in ensuring that Africa makes the most of it's potential, addressing the challenges that are associated with rapid economic development.

The civil engineering industry is directly related to economic growth, and therefore growth in Africa will provide both opportunities and challenges for geotechnical engineers. It is apparent that Africa's economic pulse had quickened in the last decade. Africa's collective GDP reached $1.6 trillion in 2008, with real GDP rising 4.9% per year from 2000 to 2008.

What makes this growth particularly impressive is that Africa's growth was only partially due to the commodities boom, with similar improvement in inflation, productivity and investment. Africa's average inflation rate reduced from 22% in 1990 to 8% in 2000. Productivity in Africa declined in the 1980's and 1990's, but this trend was reversed improving since 2000 by 2.7% per year. The flow of direct investment increased from $9 billion in 2000 to $62 billion in 2008.

A key driver of the growth in Africa will be the massive population increase predicted over the next 40 years, with Africa population expected to double in that period from approximately 1 billion to 2 billion people. By way of comparison, in the 1980's Africa's population was less than that of Europe's. By 2050, Africa's population is expected to be three times the size of Europe (Figure 1).

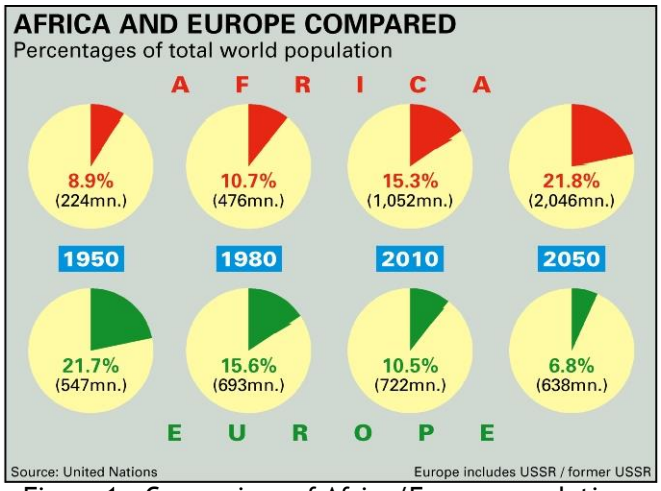

Figure 1 – Comparison of Africa/Europe populations

This economic growth and massive increase in population will have profound impacts on Africa, specifically with regards to demand on commodities and resources, urbanisation, employment, the

Future of Geotechnical Engineering in Africa (Continued)

environment and the scarcity of skills. All of which depend on input from geotechnical engineers and the ISSMGE.

Africa is still strongly associated with natural resources and commodities, and will continue to profit from rising global demand for commodities despite the recent dip. Africa boasts an abundance of resources, including 10% of the world's oil reserves, 40% of the world's gold reserves and 80 – 90% of the chromium and platinum metal groups. Many of these resources are largely untapped due to political instability in various countries across the continent. As these countries stablise, new mining opportunities become feasible, with mining traditionally being a major source of work and projects for geotechnical engineers.

While the rate of urbanisation in Africa has increased dramatically in the last 30 years (i.e. 40% of the population urbanised in 2010, increased from 28% in 1980), the migration of people to cities in Africa still lags the rest of the world. The rate of urbanisation is expected to increase to 50% by 2030. This, along with a concurrent increase in the general population, will result in massive growth of Africa's cities (Figure 2).

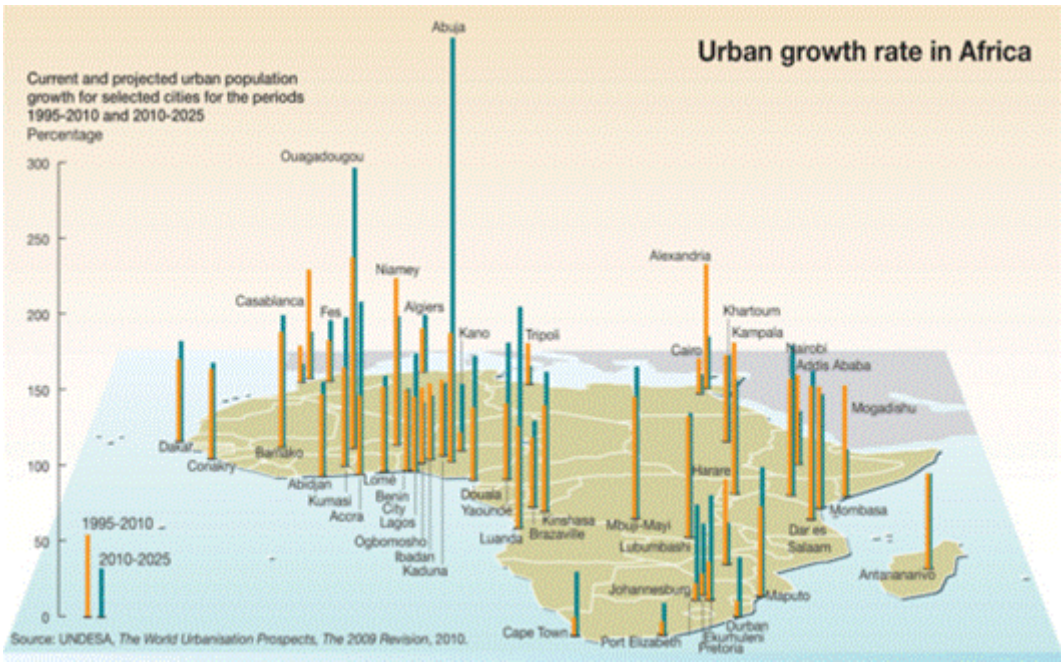

Figure 2 – Urban growth rate in Africa

As cities grow and population densities increase, space become a premium. Structures become larger and heavier, requiring more complex and expensive foundations. Large basement excavations are required with lateral support (Figure 3). More complex and expensive transport systems are constructed. The net result is demand for higher-level, more technical, geotechnical solutions and geotechnical engineers with the required expertise and experience to execute such projects.

Africa currently has approximately 500 million people of working age, and already a high rate of unemployment. The number of people of working age is expected to increase to 1.1 billion by 2040, more than China or India. Construction projects traditionally offer a major source of employment of unskilled and semi-skilled labour.

Future of Geotechnical Engineering in Africa (Continued)

The challenge for geotechnical professionals in Africa is to provide geotechnical solutions that prioritise the use of labour, rather than follow the trend in the developed world that seeks to reduce labour through mechanisation (Figures 4 & 5). Therefore technology and methodologies that may be entirely appropriate in the rest of the world, while still effective in Africa, may not be as appropriate as simpler more labour intensive systems.

Figure 3 – Basement excavation in Johannesburg, South Africa

Figures 4 & 5 – Mechanised vs. labour intensive piling

Projects in Africa are subject to limited resources, limited availability of equipment and skills. Academic institutions are under similar pressures and constraints. Therefore the key challenge is to keep up with the rest of the world in terms of technology and skills, but acknowledge the limitations and work within them to provide the most appropriate solution for each particular project.

Africa still retains much of it's unspoilt natural beauty and wildlife. There is a need to balance desperately needed development and maintenance of the existing environment. While geotechnical engineers may only play a small role, the effect of our industry on the environment cannot be ignored and

Future of Geotechnical Engineering in Africa (Continued)

needs to be factored into design and research wherever possible. For example, the use of stone columns or a soil raft versus piling. Alternatively the use of geothermal foundations versus conventional foundations.

Similarly the development of Africa should not be achieved while compromising on safety. While geotechnical engineers may not necessarily be directly involved in this aspect of construction, many of the structures designed or recommendations provided by geotechnical engineers carry significant risks in terms of potential injury or loss of life. Lateral support failures, slope failures, landslides, sinkhole formation can all result in catastrophic consequences (Figure 6). As the growth in Africa accelerates in the coming decades, the already scarce skills in the continent will be stretched. The ISSMGE and member societies need to ensure that work appropriate for geotechnical engineers remains the preserve of such engineers, and people not qualified or adequately experienced to conduct such work are prevented from making the critical decisions on geotechnical engineering projects.

It is clear that Africa faces many challenges, both currently and in the near future, during what will hopefully be a period of unprecedented growth and economic development. One of the key aspects to mitigating these challenges is the involvement of suitably qualified and experienced engineers. There is already a shortage of skills in Africa, particularly in engineering, which requires a concerted effort to improve the education of current and future engineers.

ISSMGE needs to be part of this education process. There are currently 11 member societies in Africa, out of 50 countries, and most of these member societies are relatively small. In order for Africa to meet demand for appropriately trained geotechnical engineers, the ISSMGE must get more involved in Africa, and Africa must get more involved in the ISSMGE.

Figure 6 – Collapsed retaining wall

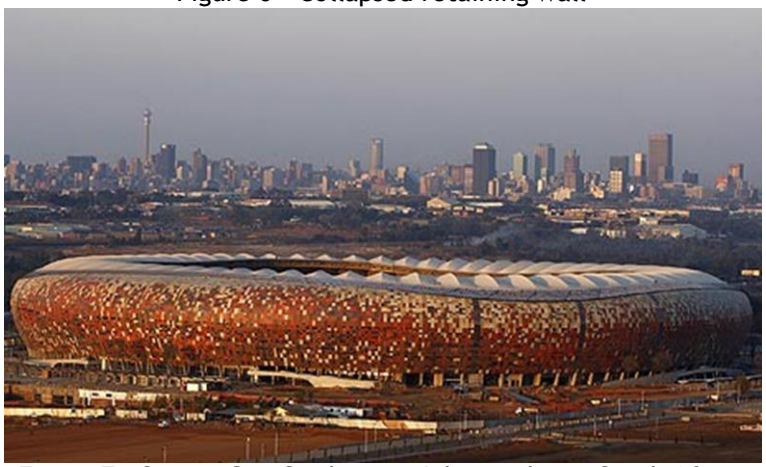

Figure 7 – Soccer City Stadium in Johannesburg, South Africa

EUROPE, THE PAST

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ABSTRACT

This paper is a modification of the author's oral presentation at the 15th ECSMGE in Athens in 2011. It focuses on the European history of ISSMGE and underlines the interaction with other related societies. Presidents/chairpersons and founding data of the European Member Societies are listed, and several details to conferences are given. Though focusing on the Past, the paper illustrates also the links to the Present. A tribute to the late pioneers of soil mechanics and geotechnical engineering will be given within an extended version of this paper (available at ISSMGE).

RÉSUMÉ

Cet article est une modification de la présentation faite par l'auteur présent à la 15e ECSMGE à Athènes en 2011. Il se concentre sur l'histoire européenne de la SIMSG et souligne l'interaction avec d'autres sociétés. Les présidents et fondateurs de données des sociétés membres de l'UE sont présentés, et plusieurs détails concernant les conférences sont aussi introduits. Bien que mettant l'accent sur le passé, le document illustre aussi les liens avec le présent. Un hommage aux récents pionniers de la mécanique des sols et de l'ingénierie géotechnique sera donné dans une version étendue de ce document (disponible auprès de la SIMSG).

1. INTRODUCTION

The history of ISSMGE was formed by outstanding personalities, by international committees and conferences, by particular member societies, and by the worldwide rise of soil mechanics and geotechnical engineering since the 1930/1940ies. Nearly all early work was done by engineers rather than by geologists, for the simple reason that they were in every-day contact with engineering problems, and its value was obvious to them (R. Glossop in [6]). This situation has hardly changed during the decades, but the number of geotechnical engineers and scientists more interested in the solution of theoretical problems has clearly increased. This, on the other hand, has widened the gap between geotechnical practice and the academics.

In 2011 the 75th Anniversary of ISSMGE was celebrated at all Regional Conferences of ISSMGE. Consequently, this paper considers only the European Region, though close links and interactions have existed worldwide since the continental "ISSMGE Regions", were set up. Moreover, many personalities changed from one continent to another, mainly from Europe to North America (e.g. K. Terzaghi, A. Casagrande, J. Hvorslev, G.G. Meyerhof, G.P. Tschebotarioff).

2. FOUNDATION OF ISSMFE (NOW ISSMGE) AND NAMES

The publication of Karl Terzaghi's fundamental book "Erdbaumechanik" with the addendum "auf bodenphysikalischer Grundlage" (Mechanics of Earthwork based on Soils Physics) published in Vienna, 1925, is considered worldwide as the birth of modern Science of "Soil Mechanics". In 1929 K. Terzaghi (Fig. 1) was appointed full professor at the Technische Hochschule Wien (now Vienna University of Technology, i.e. TU Vienna), where he founded the Institute for Soil Mechanics and Ground Engineering as a new branch of the Department of Hydro Engineering. Hence, it was University-internally also called "Hydro-Engineering II", and this underlined from the very beginning the close link and interaction between soil and water, or soil mechanics, hydrogeology and hydro engineering, respectively. Moreover, Arthur Casagrande (1902 – 1981) – Fig. 2, also Austrian citizen, had studied civil engineering at the TU Vienna, and he was assistant at the Institute for Hydro Engineering I. Road engineering was another topic of common interest of K. Terzaghi and A. Casagrande.

EUROPE, THE PAST (CONTINUED)

Figure 1. K. Terzaghi (1883–1963).

Figure 2. A. Casagrande (1902–1981).

Consequently, the World Road Association (PIARC) and the International Commission on Large Dams (ICOLD) become their example to create a similar international association. Meanwhile A. Casagrande was teaching at Harvard University where he organized the First International Conference on Soil Mechanics and Foundation Engineering, June 22-26, 1936 (Fig. 12). This stimulating event was attended by 206 delegates from 20 countries, and K. Terzaghi was elected first president of the "International Society for Soil Mechanics and Foundation Engineering (ISSMFE). ISSMFE owes an enormous debt to A. Casagrande for his conviction, that the time was right for such a conference – a conviction not shared by K. Terzaghi before the event.

It might be of interest, that only two Englishmen attended this 1st ICSMFE at Harvard (L.F. Cooling, J.J. Bryan), whereas K. Terzaghi was accompanied by nine Austrians. In England geology as a discipline important in engineering science had been neglected and therefore soil mechanics as well [14]. However, this was the case elsewhere, except in Austria, the Netherlands and Sweden.

After the first International Conference on Soil Mechanics and Foundation Engineering held in Harvard in 1936, an Executive Committee was set up with Karl Terzaghi as President and Arthur Casagrande as Secretary. At the time of the Third ICSMFE in Zurich in 1953, Donald W. Taylor was Secretary (USA). In 1957 the Secretariat moved to the UK, and the post of Secretary was first held by M.A. Banister (1957 – 1961), and then by A. McDonald (1961 – 1965). Since then, the Secretaries General have been:

1965 – 1981	J.K.T.L. Nash
1981 –	J.B. Burland
1981 – 1999	R.H.G. Parry
1999 – to date	R.N. Taylor

The discussion about the Society's name has been older than ISSMFE/ISSMGE and is still topical in 2011. A mere translation of the short title of K. Terzaghi's fundamental book "Erdbaumechanik" would have over-stressed the term "earthwork", though indicating the interaction of practice (Erdbau) and Theory (Mechanik); but the wide field of foundation was missing. Moreover, the full title of this book included the word "soil", and as no alternative was offered, the term "Soil mechanics" became accepted instead of "Erdbaumechanik".

From about 1850 onwards geology had become more and more neglected in civil engineering practice of most countries. Therefore, Terzaghi's insistence on the importance of the geological background was widely revolutionary. This has stimulated again and again the question about terminologies and the name of ISSMFE/ISSMGE.

EUROPE, THE PAST (CONTINUED)

For instance, in a lecture at the Institution of Civil Engineers in 1945, R. Glossop proposed as an alternative to soil mechanics the term "Geotechnology". This word was already established in Scandinavia and in France, but it was not generally adopted at the time [14].

The first publication ever using the word "geotechnical" was the final report of the Swedish State Railways Geotechnical Commission (1914 – 1922).

To sum up, during the past 75 years the following names were discussed for "Soil Mechanics and Foundation Engineering", starting with "Geo-" in order to underline the strong interaction with Geology (in alphabetical order):

- Geoengineering
- Geomechanics
- Geotechnics
- Geotechnical Engineering
- Geotechnology

Since 1936 "classical soil mechanics", as it is now called, developed fast and was soon making important contributions to engineering practice. Between 1936 and 1961 (5th ICSMFE in Paris) the growth of interest in soil mechanics had been indeed explosive. In 1962 the International Society for Rock Mechanics was founded. Therefore, the term Soil Mechanics has remained until now, lastly also as a tribute to K. Terzaghi and to underline the roots of this society. At the 14th ICSMFE in Hamburg in 1997, the society's name was changed to International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) because its activities had widened significantly since the 1970/1980s, mainly with regard to following aspects (in alphabetical order):

- Ground improvement
- Environmental geotechnics
- Hazard mitigation and prevention
- Land reclaiming
- Landfill and brownfield engineering
- Offshore geotechnics
- Preservation of historic sites
- Traffic and transportation infrastructure
- Tunnelling and underground space engineering
- Urban geotechnics
- Water and resources management

The term "Engineering Geology" goes back to F. Hochstetter (1829–1884), Professor for Mineralogy and Geology at the Technical University of Vienna (1860–1880). On occasion of his inaugurational lecture in 1860 he already coined the term "Ingenieurgeologie", which corresponds exactly to the English "Engineering Geology". At the TU Vienna there had been a close cooperation between the Institute "Art of Lanand Water-Engineering" (founded 1818) and the Institute for "Mineralogy and Geognosy (founded in 1843) leading to an early connection of Engineering and Geology. K. Terzaghi and J. Stini (1880 – 1958), a successor of F. Hochstetter intensified this synergy during their common activities at the TU Vienna (1928–1938). Their early definition of engineering geologists describes geologists cooperating with engineers, while geological engineering is performed by engineers with a geological background or in cooperation with geologists – widely corresponding to geotechnical engineering which is more devoted to the solution of theoretical problems. Meanwhile everything is overlapping, interacting or mixed – leading to the question

What – in the end is a name?

EUROPE, THE PAST (CONTINUED)

3 THE EARLY YEARS OF "SOIL MECHANICS" AND ISSMFE

Scepticism about soil mechanics on one side and growth of soil mechanics on the other side in the 1930/1940s can be described exemplarily when selecting the situation in Austria, Germany, Netherlands, Sweden and the United Kingdom (in alphabetical order). Considering the other countries of Europe, the acceptance varied between mere ignorance, neglect and enthusiasm.

Despite the stimulating effect of the Harvard Conference, soil mechanics was at first widely neglected or considered as an obscure (non-) science. Even K. Terzaghi himself had problems at his home University in Vienna, when P. Fillunger (1883–1937), Professor for Theory of Elasticity severely attacked him. Figure 3 shows the cover pages of P. Fillunger's polemic pamphlet and of the reply booklet of K. Terzaghi and O.K. Fröhlich. Some excerpts of Fillunger's pamphlet illustrate, how strongly some theoreticians attacked the young science of soil mechanics in those days: *"If one consults a specialist in soil mechanics, one of two things may happen: Either we hear what any experienced engineer could tell us with much more authority, or something misleading and erroneous. How could it be otherwise, because the theory is nonsense and the required laboratory experiments are quite impossible*". And finally: *"There would be widely more to tell about soil mechanics, for wherever one opens their books, one finds curiosities"*. This "Terzaghi-Fillunger Dispute" as it is internationally known was indeed a tragedy, because P. Fillunger was a pioneer in porous media, described the equilibrium of a two-phase porous medium system in a complete and correct way, and had already formulated the effective stress principle in 1915. A cooperation between these two pioneers would have been unique and extremely promising.

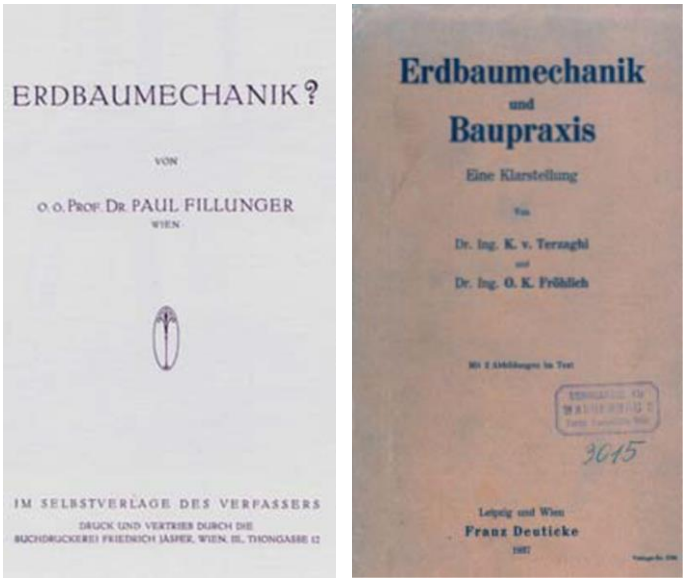


Figure 3. Cover pages of the relevant booklets of the Terzaghi-Fillunger dispute (1936). Left: P. Fillunger's pamphlet; Right: K. Terzaghi's and O.K. Fröhlich's reply.

During the 1930s K. Terzaghi's Institute at the TU Vienna developed into the world intellectual centre of all circles interested in soil mechanics, thus stimulating the foundation of numerous soil mechanics laboratories in Europe and overseas (A. Casagrande: "Karl Terzaghi – His Life and Achievements" and 6th ECSMFE, Vienna 1976).

Due to pioneer works of F. Kögler (18821939) and students or assistants of K. Terzaghi in Vienna, the field for the young Soil Mechanics was well prepared in Germany. The country was intensively widening its traffic and transportation arteries in those years. Therefore, soil mechanics became important mainly for road and highway engineering ("Autobahnen"). For instance, Leo Casagrande (1903–1990), brother of Arthur Casagrande and assistant of K. Terzaghi in Vienna, was strongly involved there. Moreover, the comprehensive 1:1 tests on huge flat foundations in Berlin (performed by DEGEBO) lead to the development of design methods and codes, which were used during decades in Germany and many other countries. In 1936 vibroflotation for deep soil improvement was invented; heavy tamping and soil (peat) blasting and electroosmosis were used for road embankments on soft soil. Artificial ground freezing was applied already since the early 1860s (in mining).

EUROPE, THE PAST (CONTINUED)

The Netherlands had been forced during centuries to deal intensively with the ground, because its stratification consists of soft to very soft soils, and more than half of the country is located below sea level. Therefore, the interest in ground engineering had started rather early, especially after the train disaster in Weesp, 1918. Ground Engineering was taught already in the 1920s. Joosten introduced ground injection with waterglass in 1925 (patented in Germany), and in 1931 the Cone Penetration Test (CPT) came up. In 1934 the Laboratory of Ground Mechanics (LGM) was founded under the Ministry of Roads and Water Management, independent of TU Delft. In the late 1930 a chair for soil mechanics was offered to O.K. Fröhlich at TU Delft. O.K. Fröhlich lectured at the TU Vienna, when K. Terzaghi was outside and was co-author of their fundamental book "Theorie der Setzung von Tonschichten" (Theory of Settlement of Clays), Vienna, 1936. Moreover, he had a consulting office for soil mechanics in the Netherlands ('s-Gravenhage) and spoke perfectly Dutch. When K. Terzaghi went to Harvard, O.K. Fröhlich decided to become his successor at the TU Vienna. For further details, see [1].

Sweden had been also a pioneering country of geotechnical engineering, already before the ISSMFE was founded. The establishment of an interdisciplinary "Geotechnical Commission" in 1914 consisting of geologists and civil engineers initiated the key role of geotechnical engineering in Swedish engineering. Already in 1926 W. Fellenius (1876 – 1957) introduced the concept of safety factors for foundations as they are used today, and he extended the slip circle method to soils with both cohesion and friction. Further details see [9].

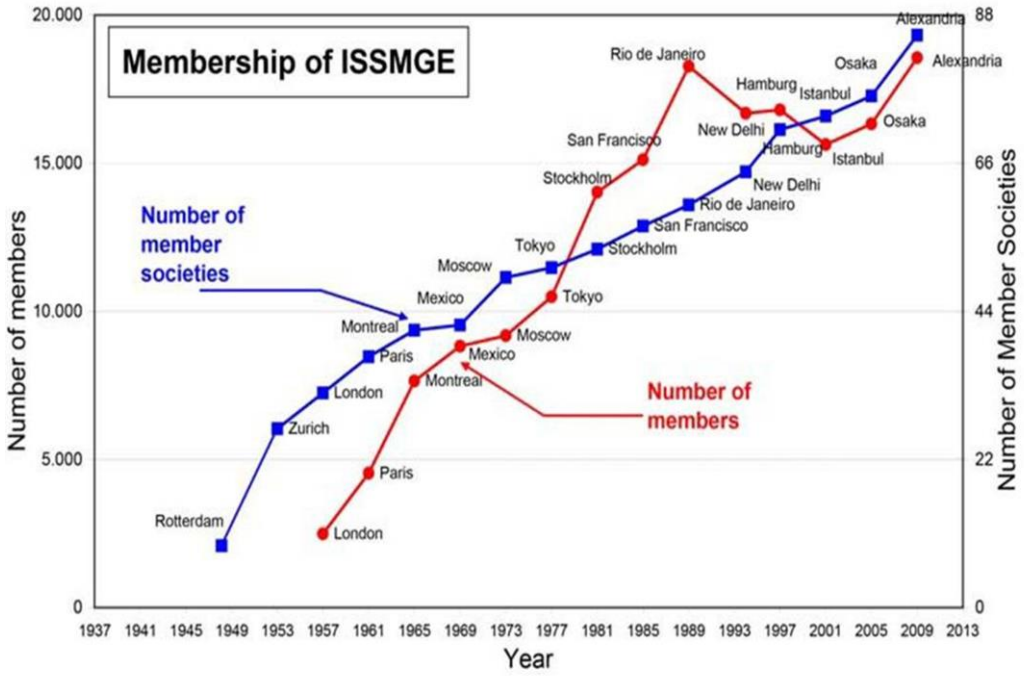


Figure 4. Change in members and Member Societies of ISSMGE (total numbers, worldwide).

EUROPE, THE PAST (CONTINUED)

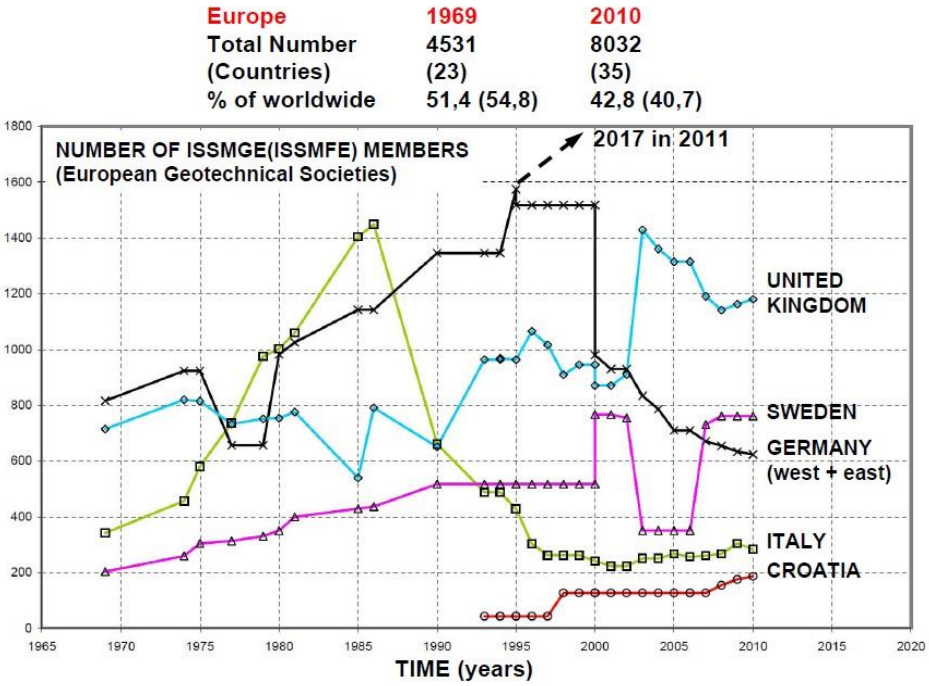


Figure 5. Change in members of some selected European Member Societies of ISSMGE

In the UK a laboratory devoted to research in soil mechanics was set up at the Building Research Station, shortly after the Harvard Conference – and two members of staff were recruited to work there; they were A.W. Skempton (1914–2001) and H.Q. Golder (1911-1990) [14]. Moreover, a slip of a large earth dam then under construction just east of the city of London and the involvement of K. Terzaghi on the Chingford project in 1938 significantly raised the interest in soil mechanics (an Earth Pressure Committee had already existed since 1925, but obviously without influence on the civil engineering community). Further details see [5], [14].

Despite the establishment of related societies as ISRM (1962), IAEG (1964), ITA (1974) and IGS (1983) the number of ISSMFE/ISSMGE members has increased worldwide (Fig. 4). Figure 5 illustrates this for four European Member Societies for the period 1969-2010. Previous data are not available or incomplete or somewhat uncertain. Several Geotechnical Societies/Associations have separate sections, and individual members can choose to either belong to ISSMGE or ISRM, or both. Therefore, Figure 5 represents only ISSMGE members, showing some "characteristics" in the curves, which are commented in alphabetical order:

Croatia, as the youngest member society grew in two main steps, the first one in connection with the 11th Danube-European Conference in Porec, 1998, and then after the 14th European Conference of ISSMGE in Madrid, 2007. About 190 individual members is a high number related to Croatia's population.

Germany had for many years the maximum of individual ISSMFE/ISSMGE members in Europe. Until the year 2000 all members of the German Geotechnical Society (DGGT) had been automatically members of ISSMGE, independently of their membership of particular sections. Actually, DGGT has six sections, and in the year 2000 all members were asked, which international society(ies) they would join. About 1000 persons decided for ISSMGE, thus causing a significant decrease of the hitherto ISSMGE membership number – and a reduction of annual ISSMGE fees for Germany. The other persons joined ISRM, IAEG or IGS, leading to a further increase of DGGT members: 2017 members in the year 2011.

EUROPE, THE PAST (CONTINUED)

Italy experienced a significant increase from 1973 to 1986, and then a large reduction of ISSMGE members during about 10 years; since then the number has stabilized. The reason of the drop lay in the decision of AGI (Associazone Geotecnica Italiana) in 1987, to distinguish between international members (ISSMGE, ISRM, etc.) and national members. Originally, AGI was established in connection with the foundation of ISSMFE: therefore all AGI members were automatically included in ISSMFE lists. This was partly similar to the procedure in Germany, 2000.

Sweden has not only a large tradition in soil mechanics and geotechnical engineering, but also a high number of ISSMGE members. In relation to its population Sweden has clearly the highest per head quota (even worldwide), followed by Norway and Denmark.

The European top ranking of ISSMGE Members per 1 Million inhabitants is:

81 Sweden
69 Norway
64 Denmark
46 The Netherlands
43 Croatia, Slovenia

Most other countries have a clearly smaller ratio (commonly below 10 to 20).

The *UK Member Society* of ISSMGE increased significantly between 2002 and 2003, then it decreased to the previous mean growth rate (since about 1983), but is still the largest in Europe (1180 members in 2011/12).

4. EUROPEAN MEMBER SOCIETIES OF ISSMGE

Table 1 summarizes relevant data of the European Member Societies of ISSMGE. It illustrates, that the founding year of the particular Geotechnical Societies was not always identical with the year of becoming an official Member Society of ISSMFE/ISSMGE. Austria (under K. Terzaghi) and Hungary (under J. Jáky) were forerunners followed by other countries during the 2nd International Conference (ICSMFE) in Rotterdam, 1948. The longest serving founding presidents were H. Peynircioglu from Turkey (35 years) and N.A. Tsytovich from the USSR (28 years).

Sometimes communist authorities behind the “Iron Curtain” ceased to provide financial support necessary for the payment of the national fees to the ISSMFE Secretariat in London. This led to temporary exclusions of ISSMFE Member Societies which are not considered in Table 1.

The Geotechnical Societies of the European Countries have rather different names, not only in their local language but also in English. This depends on historical backgrounds, structural organization, etc. In the following the name “Geotechnical Society” is commonly used by the author as a generic term.

The former Yugoslavia and its succeeding Republics are a special case: The Yugoslavian Geotechnical Society was founded in 1949 and joined ISSMFE in the same year. From 1949 to 1990 the Federal Republic Yugoslavia was represented by a united Yugoslav Society for Soil Mechanics and Foundation Engineering, with members of all Yugoslav Republics: Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Serbia and Slovenia. After the disintegration of Yugoslavia in the early 1990s, the former Part Republics started to establish their own geotechnical societies as illustrated in Fig. 6 and Table 1. They were admitted to ISSMFE/ISSMGE, when the particular Republics had been recognized as independent States.

A similar situation existed in the Baltic Region, when Estonia, Latvia and Lithuania left the USSR.

EUROPE, THE PAST (CONTINUED)

Table 1. European Geotechnical Societies or Member Societies of ISSMFE/ISSMGE, respectively. In brackets: former states.

Country	Year of Foundation	ISSMGE Member	Chairperson / First President	President Current (in 2011)
Albania	2000	2001	Luljeta Bozo	Luljeta Bozo
Austria	1936	1948	Karl Terzaghi	Heinz Brandl
Azerbaijan Rep.	1996	1996	Yagub a Eyubov	Mohammed B. Akhundov
Belarus	2011	2012	Dmitriy Sobolevski	Dmitriy Sobolevski
Belgium	1948	1948	Jacques Verdeyen	Flor de Cock
Bosnia and Herzegovina	2008	2012	Sabid Zekan	Sabid Zekan
Bulgaria	1948	1957	M. Manol Sakelaroff	Dobrin Denev
Croatia	1990	1992	Božica Marić	Antun Szavits-Nossan
Czech and Slovak Reps.	1959	1961	Alois Myslivec	Jana Frankovská
Denmark	1950	1950	Helge Lundgren	Anders T. S. Andersen
Estonia	1992	1993	Valdo Jaaniso	Peeter Talviste
Finland	1951	1951	Per Alenius	Jouko Viitala
France	1948	1948	Albert Caquot	Philippe Mestat
Georgia	2006	2006	Omar Kutsnashvili	Omar Kutsnashvili
Germany	1950	1961	Hans-Werner König	Georg Heerten
(DDR=Eastern Germany)	1973	1973	Gerhard Sperling	(Reunion in 1989)
Greece	1966	1969	Demosthenes Pippas	Christos Tsatsanifos
Hungary	1936	1948	József Jaky	József Mecsi
Iceland	1978	1985	Birgir Jónsson	Ingunn Sæmundsdóttir
Ireland	1977	1977	Frank Motherway	Michael Looby
Italy	1947	1948	Giovanni Rodio	Stefano Aversa
Latvia	1993	1994	Walters Celmius	Valdis Markvarts
Lithuania	1992	1993	Liudvikas Furmonavicius	Jurgis Medzvieckas
F.Y.R. of Macedonia	1999	2001	Vasil Vitanov	Vasil Vitanov
The Netherlands	1948	1948	J. P. van Bruggen	William van Niekerk
Norway	1950	1950	Suerre Skaven-Haug	Vidar Gjelsvik
Poland	1946	1953	Radzimir Piętkowski	Zbigniew Lechowicz
Portugal	1948	1953	Manuel da Rocha	Laura Caldeira
Romania	1966	1975	Emil Botea	lacint Manoliu
Russia (USSR)	1957	1957	Nicolay A. Tsytovich	Vyacheslav A. Ilyichev
Serbia	1980	2006	Milan M. Maksimović	Milan M. Maksimović
Slovenia	1992	1992	Ivan Sovinc	Ana Petkovšek
Spain	1961	1961	D. Federico Turell	César Sagaseta
Sweden	1950	1950	Bernt Jakobsson	Stefan Aronsson
Switzerland	1956	1956	Armin von Moos	Martin Stolz
Turkey	1947	1950	Hamdi Peynircioğlu	Feyza Çinicioğlu
United Kingdom	1947	1948	William Kelly Wallace	Rab Fernie
Ukraine	2002	2003	Petro I. Kryvosheyev	Petro I. Kryvosheyev
(Yugoslavia)	1949	1949	Branko Žeželj	(Separated 1990/1999)

EUROPE, THE PAST (CONTINUED)

Figure 6. Former Yugoslavia with succeeding Republics and neighbouring countries. Year of foundation of National Geotechnical Societies. See also Tab. 1 with official dates of ISSMGE Memberships and Chairpersons.

The ISSMGE Member Society of Israel ("Geotechnical Chapter of the Israeli Association of Civil Engineers") was admitted to the European Region of ISSMGE at the Council Meeting in Toronto, 2011. Before it belonged to the Asian Region: Therefore comments to the pioneering phase of Israel's Geotechnics are given in the particular publication of this ISSMGE-Region.

Detailed information about the European Member Societies of ISSMGE and their pioneers will be given in the extended version of this paper (see ISSMGE homepage and ÖIAV (Austrian Society of Engineers and Architects).

EUROPE, THE PAST (CONTINUED)

5. REGIONAL SECTIONS AND TECHNICAL COMMITTEES OF ISSMFE/ISSMGE

At the meeting of the Executive Committee 1953 in Zürich (3rd ICSMFE) reference was made to other meetings held in the interim, and the first set of Regional Vice Presidents was voted with A.W. Skempton as Vice-President for Europe (Fig. 7). At the 4th ICSMFE in London in 1975 the Vice Presidency of Australasia was added, hence the Board was composed as follows:

- President: A.W. Skempton
- Vice-Presidents:
  - Africa K E B Jennings
  - Asia K.L. Rao
  - Australasia G.D. Aitchison
  - Europe A. Mayer
  - North America R.F. Legget
  - South America A.J. Bolognesi

Table 2 lists the hitherto ISSMFE/ISSMGE Presidents and the Vice-Presidents for Europe.

Figure 7. Prof. Alec Westley Skempton (1914 – 2001): First Vice-President for Europe (1953 – 1957) and Second President of ISSMFE (1957 – 1961).

Victor de Mello (1926 – 2009), ISSMFE President 1981–1985, provided the initiative to get International Technical Committees started and to get many TCs formed. The term "Technical Committee" was used the first time in a Council Meeting in Paris in 1983, and the reasoning behind the new name was to clearly separate technical from administrative issues. The President (V. de Mello) also referred to "Technical Sub-Committees" (for those of a regional basis). Exactly when regional TCs were formed is not clear, but it is most likely that they followed on from the International TCs.

Numbers and names of the International Technical Committees (TCs) and the Regional Technical Committees have changed more or less during the past decades. Presently, there are only five European Regional Technical Committees (ERTCs), because several others have become International TCs during the past 20 years. The presently active ERTCs are as follows:

- ERTC 3 – Piles
- ERTC 7 – Numerical Methods in Geotechnical Engineering
- ERTC 10 – Evaluation of Eurocode 7
- ERTC 12 – Geotechnical Evaluation and Application of the Seismic Eurocode 8
- ERTC 16 – Education and Training

Additionally, new European Regional Technical Committees have been proposed:

- Geothermal Energy,
- Utilization of Large Volume Waste in Geotechnical Applications,
- Ageing of Earth Structures in Transportation Engineering.

Experience has shown that in large Technical Committees only a handful of members are really active. This does not mean that the others are not needed. Commonly, committee members follow and promote the TCs' outputs (guidelines, etc.) in their country; therefore ISSMGE considers membership even without active participation as beneficial and effective.

The period before ISSMFE had Technical Committees is characterized by the formation of separate international Societies, partly coming out from ISSMFE (ISRM, ITA, IGS) Tab. 3.

EUROPE, THE PAST (CONTINUED)

Table 2. Presidents and European Vice-Presidents of ISSMFE/ISSMGE. K. Terzaghi was President from 1936 to 1957. Vice-Presidency for Europe was established in 1953.

Year	President	Vice-President for Europe
1936 1957	K. Terzaghi (Austria, USA)	A.W. Skempton (UK)
1957 1961	A.W. Skempton (GB)	A. Mayer France)
1961 1965	A. Casagrande (USA, Austria)	L. Bjerrum (Norway)
1965 1969	L. Bjerrum (Norway)	J. Brinch Hansen (Denmark)
1969 1973	R.B. Peck (USA)	E.E. De Beer (Belgium)
1973 1977	J. Kerisel (France)	A. Kézdi (Hungary)
1977 1981	M. Fukuoka (Japan)	B.B. Broms (Sweden)
1981 1985	V.F.B. de Mello (Brazil)	A. Croce (Italy)
1985 1989	B.B. Broms (Singapore, Sweden)	N. Krebs Ovesen (Denmark)
1989 1994	N.R. Morgenstern (Canada)	U. Smoltczyk (Germany)
1994 1997	M. Jamiolkowski (Italy)	W.F. Van Impe (Belgium)
1997 2001	K. Ishihara (Japan)	H. Brandl (Austria)
2001 2005	W.F. Van Impe (Belgium)	P. Seco e Pinto (Portugal)
2005 2009	P. Sêco e Pinto (Portugal)	R. Frank (France)
2009 2013	Jean-Louis Briaud (USA)	I. Vaníček (Czech & Slovak Reps)

Table 3. ISSMGE and some related International Societies and Associations. Founding name ISSMFE (International Society for Soil Mechanics and Foundation Engineering) was changed to ISSMGE (International Society for Soil Mechanics and Geotechnical Engineering) in 1997.

ISSMGE	International Society for Soil Mechanics and Geotechnical Engineering (founded 1935)
ISRM	International Society for Rock Mechanics (founded 1962)
IAEG	International Association of Engineering Geology and the Environment (founded 1964)
IGS	International Geosynthetics Society (founded 1983)
ITA	International Tunneling and Underground Space Association (founded 1974)
ICOLD	International Commission on Large Dams (founded 1928)
PIARC	World Road Association (founded 1909)
IABSE	International Association for Bridge and Structural Engineering (founded 1929)
EFIB	European Federation of Soil-Bioengineering (founded 1995)

6. ISSMGE AND RELATED SOCIETIES

6.1 Overview

Tables 3 and 4 give an overview of the memberships of ISSMGE and some related societies per 2011. A direct comparison of all international societies is somewhat difficult, because of partly different kinds of memberships: Individual members (e.g. clearly dominating for ISSMGE, ISRM), corporate members (e.g. clearly dominating for ITA and ICOLD). ISSMGE certainly plays a dominating role – not only in Europe but also worldwide.

The national branches of the international Societies have different names; for instance:

ISSMGE	Member Societies
ISRM, IAEG, IABSE.....	National Groups
IGS	Chapters
ITA	Member Nations
ICOLD, PIARC	National Committees
ISWA	National Members

EUROPE, THE PAST (CONTINUED)

In all societies the number of European members or member societies is worldwide clearly leading – compared to other continental regions. However, the percentage of European members and member societies, respectively, has decreased since the foundation of these international societies. For instance, ISSMFE/ISSMGE, ISRM and IGS had about two third of Europeans in their early phase. In 1965 the 50 % value was reached for the part of European member societies of ISSMFE, and now it is 41 %. IAEG, IABSE and ISWA have still a significantly high percentage of Europeans, clearly exceeding 50 % contrary to ICOLD, which has many international committees from elsewhere (e.g. Honduras, Ivory Coast, Burkina Faso, etc.).

The World Road Association (PIARC comes from its former name "Permanent International Association of Road Congresses") has members in 118 countries, but only 38 National Committees, because several countries have joined to respectively one national committee (similar to early SEAGS of ISSMGE). This leads to a great difference of the European part: The percentage of European members is about 75 %, but the percentage of European Member Societies ("National Committees") is only 40 %.

Regarding ISSMGE, Asian memberships have increased most. A special case is the Southeast Asian Geotechnical Society (SEAGS), founded in 1967 as "Southeast Asian Society of Soil Engineering" (new name adopted in 1982). It was formed to "Cater to the needs of geotechnical engineers in countries of SE Asia which do not themselves have national societies". It does not comprise national groups but is officially only one Member Society of ISSMGE. In recent years, several of the original countries comprising SEAGS have grown to such an extent that they have formed their own national geotechnical groups.

In 1973 at E.E. De Beer's instigation a Permanent CO-Coordinating Secretariat was set up to coordinate the activities of the three sister geotechnical societies ISSMGE, ISRM and IAEG [5]. Since then there has been a strong attitude to enhance synergies. An example is the joint event at the end of the Second Millennium: the International Conference on Geotechnical and Geological Engineering (GeoEng2000) in Melbourne. In 2005 an umbrella organization, the Federation of International Geoengineering Societies (FedIGS) was set up. The agreement was found and signed by the sister societies in 2005, and in 2008 W.F. Van Impe was elected first President. In 2011 IGS joined this federation; however, a merging of these societies is not intended.

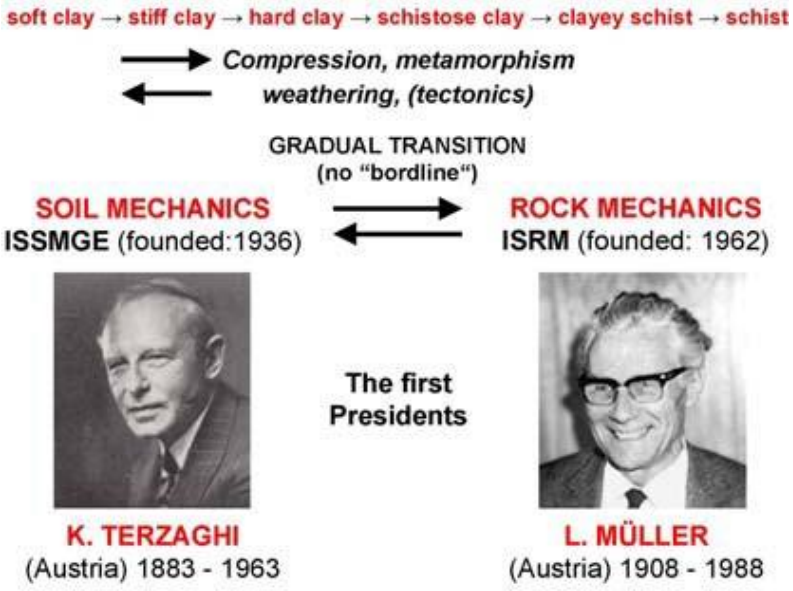


Figure 8. Soil and Rock Mechanics: ISSMGE and ISRM, and their founding Presidents.
Scheme of gradual transition between soil and rock and vice versa; hence no borderline.

EUROPE, THE PAST (CONTINUED)

6.2 International Society for Rock Mechanics (ISRM)

In the 1950s discussions about differences between soil and rock behaviour rose more and more, starting with the meetings of Austrian civil engineers and geologists in Salzburg under Leopold Müller (1908 – 1988). He had studied civil engineering at the TU Vienna (under K. Terzaghi, J. Stini) and was strongly involved in the foundation of dams in mountainous regions. Manuel C.M. da Rocha (1913 – 1981), Director of the National Laboratory of Civil Engineering (LNEC), Lisbon, strongly supported L. Müller's idea of a society exclusively devoted to rock mechanics, outside ISSMFE.

Consequently, in 1962 the International Society for Rock Mechanics was founded, and L. Müller became its first president. He published also as "Müller-Salzburg", using the place of his birth, just as "Müller-Breslau" in Germany, because Müller is a very common German family name. The 1st International Congress on Rock Mechanics was hold in Lisbon in 1966, chaired by M. Rocha.

However, there is no "borderline" between soil mechanics and rock mechanics, and the basic laws of ground physics are identical; moreover discontinuities exist also in several soils (e.g. overconsolidated tertiary sediments). Figure 8 illustrates the gradual transition from soil(mechanics) to rock(-mechanics) and vice versa. Consequently, K. Terzaghi considered rock mechanics a part of soil mechanics (better "ground mechanics"), but not a separate discipline. L. Müller complained of this opinion several times to the author, but meanwhile ISSMGE and ISRM have found together more and more (especially in tunnelling and slope engineering).

6.3 International Association for Engineering Geology and the Environment (IAEG)

ISSMGE, ISRM and IAEG are the primary "Three Sister Societies", in the year 2011 joined by IGS within the FedIGS. All these four societies organize their International Conferences/Congresses every four years, and geotechnical engineering is represented in each of them. Many events have an overlapping character, e.g. ISSMGE's International Symposia on Landslides (Tab. 10).

IAEG was founded in 1964, hence shortly after ISRM. It promotes the advancement of Engineering Geology and the international cooperation among geologists and engineers, focusing not only on engineering geology but also on related environmental issues. The IAEG is affiliated to the International Union of Geological Sciences (IUGS).

Table 4. Number of members and member societies of ISSMGE and some related societies: Total (worldwide) and for Europe; also percentages for Europe. Numbers rounded because changing during the year (2011).

SOCIETY	ISMMGE	ISRM	IAEG	IGS
Members/ Worldwide	19400	6400	3500	3300
Members/ Europe	8100	3100	1900	1500
% European Members	42	48	54	46
Member Societies, Worldwide	86	48	54	35
Member Societies in Europe	35	23	33	17
% European Member Societies	41	48	61	49

EUROPE, THE PAST (CONTINUED)

6.4 International Geosynthetics Society (IGS)

The IGS was founded in 1983, developing from an ISSMFE-Technical Committee for Geotextiles. All main founders and personalities of this society have come from geotechnical engineering. Figure 9 shows the end of the 3rd International Conference on Geosynthetics in Vienna, 1986: The founding President Ch. Schaerer (Switzerland) handed the IGS Presidency to J.P. Giroud (USA). Since the early 1970s J.P. Giroud had been the driving motor behind synthetics in geotechnical engineering. He created the names "geotextiles", "geomembranes", etc. to illustrate that these products are used as "geo-materials". Following the prestigious journal "Geotechnique", IGS established the periodical "Geotextiles and Geomembranes", which combines soil mechanics and geotechnical engineering with topics of geosynthetics. Meanwhile this journal has reached the highest impact factor of all geotechnical and geoenvironmental journals.

6.5 International Tunnelling and Underground and Space Association (ITA)

Since the late 1960s tunnelling has gained increasing importance worldwide. Consequently, the OECD organized in Washington, 1970, a conference for consulting the UNO in the field of tunnelling. On this occasion the establishment of an international organization for tunnelling was recommended. In following this initiative, the ITA was founded in Oslo, 1974, comprising 20 countries. Meanwhile ITA has 65 member societies ("Member Nations"). In 1997 the annual "General Assemblies" were changed at the suggestion of the Austrian Member Nation to "World Tunnel Congress", starting in Vienna. Since then this annual event has attracted an increasing number of delegates, because it favours rather the practitioners' side than the academics' views. The recent World Tunnel Congress 2011 in Helsinki was attended by 1400 persons.

6.6 International Commission on Large Dams (ICOLD)

The foundation of ICOLD in 1928 in Paris gave the main example to establish ISSMFE in 1936, because K. Terzaghi and A. Casagrande were strongly involved in dam engineering and had close contacts to this young international society. K. Terzaghi's Institute for Ground Engineering and Soil Mechanics at the Technical University of Vienna even had the second name "Wasserbau II", i.e. "Hydro Engineering II", and there was an intensive cooperation with "Hydro Engineering I" in the entire field of dam engineering. Typically, the first Rankine Lecture, delivered by A. Casagrande in 1961, was also devoted to Dam Engineering.

Since the late 1960s ICOLD has focused on dam safety, monitoring of performance, reanalysis of older dams and spillways, effects of ageing and environmental impact.

ICOLD has 95 National Committees ("Member Societies") worldwide and different forms of membership; therefore a precise number of individual members is not available. Many European pioneers of geotechnical engineering were members of ISSMGE and ICOLD as well, and there has always been a close cooperation of Technical Committees. From the ISSMGE side this refers to the today's TC 201 ("Dykes and Levees") and TC 210 ("Dams").

6.7 World Road Association (PIARC)

PIARC is the oldest of all international societies with relations to soil mechanics and geotechnical engineering. Founded already in 1909 it was – together with ICOLD (founded in 1928) – an example for the foundation of ISSMFE: K. Terzaghi and A. Casagrande (and others) were intensively involved in road engineering at that time. For instance, A. Casagrande's freezing criterion" is still in use, and L. Casagrande's activities for roads on very soft soil or peat were pioneering works.

EUROPE, THE PAST (CONTINUED)

There have been always excellent synergies between PIARC and ISSMGE, mainly within the World Road Congresses and the International and Regional Conferences of ISSMGE. Even the Danube-European Conferences of ISSMFE started with the title "Soil Mechanics in Road Engineering" (1964).
The European Technical Committee ETC 11 of ISSMFE was another link, already 25 years ago. In 2000 the ETC 11 became the Technical Committee TC 202 of ISSMGE ("Transportation Geotechnics"). This enhancement underlines the cooperation of both societies, which meanwhile comprises also Geotechnics in railway engineering. Furthermore, TC 216 ("Frost Geotechnics") of ISSMGE provides valuable information for road and railway engineering.

6.8 International Association for Bridge and Structural Engineering (IABSE)

This Association was founded in Vienna 1929 (600 delegates from 31 countries), and – as recommended then by K. Terzaghi – it considers also the foundation of bridges and other structures. Consequently, the annual IABSE Symposia (World Congresses) usually contain a special section on geotechnical engineering, just as it is the case at World Road Congresses of PIARC. IABSE's logo is still three-lingual (English, French, German), but meanwhile English has become the only official language. There are excellent synergies between IABSE and the Technical Committee TC 207 ("Soil Structure Interaction") of ISSMGE.

6.9 European Federation of Soil-Bioengineering (EFIB)

The "Father" of Soil-Bioengineering is the Austrian engineer H.M. Schiechtl (1922 – 2002). In addition to his civil engineering education he studied botany in Innsbruck/Austria, and created unique mappings of the Alpine vegetation (covering 30 000 km^2). His developments in the fields of Geobotany and Engineering Biology were first used by the "Austrian Service for Torrent and Avalanches Control", in slope and rockfall engineering, for nature preservation, and then in landscaping and for high highway embankments (Fig. 10). H.M. Schiechtl influenced "Soil-Bioengineering" in several countries, finally leading to the foundation of the EFIB in 1995 with member societies from Austria, France, Germany, Italy, Portugal, Russia, Spain and Switzerland. Its Secretariat General is situated at the University of Natural Resources and Applied Life Sciences (BOKU) in Vienna.

Soil-Bioengineering is of interest for the ISSMGE Technical Committees TC 208 ("Landslides") and TC 213 ("Soil Erosion").

6.10 Snow Mechanics

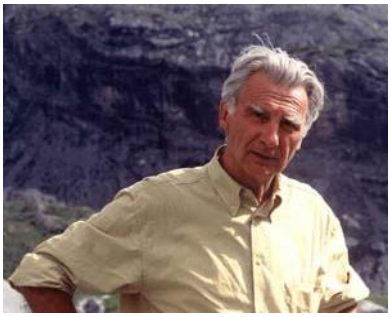
The Alps, mainly regions with glaciers and high potential of avalanches in Austria and Switzerland, raised the interest in the mechanical behaviour of snow and ice. The "Father" of snow mechanics is undoubtedly R. Haefeli (1898 – 1978), who had established a soil mechanics laboratory at ETH Zurich in 1935. There he carried out fundamental studies on the shearing resistance of soil, snow and ice (since 1935), comprising laboratory and field tests. Indeed, his doctoral thesis, published in 1939, was entitled "Snow mechanics with reference to soil mechanics" (Fig. 11). He was appointed a Professor at ETH Zurich in 1947 and lectured on soil and snow mechanics together with avalanche mitigation and preventive measures. Additionally he devoted his interest to glaciers. R. Haefeli was one of the founders of "Geotechnique" [5].

The International Commission on Snow and Ice (ICSI) focuses on glaciological aspects and hardly on snow mechanics in the sense of soil mechanics. This society was founded in 1948, and R. Haefeli served as its President between 1954 – 1957. The precursor of ICSI was already founded in 1894 in Zurich, when the Council of the 6th International Geological Congress decided to create an International Glacier Commission.

EUROPE, THE PAST (CONTINUED)

Until now there is no international society for snow mechanics, but several institutes for soil mechanics have contributed to this topic for decades.

Figure 9. Closing of the 3rd International Conference on Geosynthetics of IGS in Vienna, 1986. More than 1300 delegates. From the right: Founding President Ch. Scherer (Switzerland), Conference Chairman H. Brandl (Austria), Conference Secretary H. Schneider (Austria), 2nd President of IGS J.P. Giroud (USA).



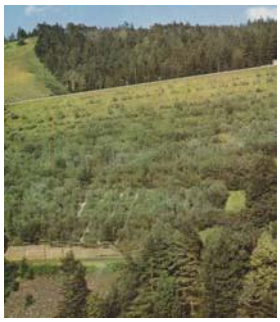


Figure 10. Soil-Bioengineering and its "Father" M. Schiechtl (1922 – 2002), Austria. Examples of living soil reinforcement for highway embankments up to 60 m height (1963).

Figure 11. Snow Mechanics and its "Father" R. Haefeli (1898 – 1976), Switzerland. Cover page of his Doctoral Thesis (English title is added by the author).

EUROPE, THE PAST (CONTINUED)

7. CONFERENCES OF ISSMGE

7.1 International Conferences of ISSMGE ("World Conferences")

The main conferences of ISSMGE are undoubtedly the international ones (ICSMFE/ICSMGE), running in four-years intervals, only interrupted by World War II and lightly delayed in 1994 (see Tab. 5).

Table 5. International Conferences ("World Conferences") of ISSMFE/ISSMGE.

No.	CITY	COUNTRY	YEAR
1	Cambridge, MA (Harvard University)	USA	1936
2	Rotterdam	The Netherlands	1948
3	Zurich	Switzerland	1953
4	London	UK	1957
5	Paris	France	1961
6	Montreal	Canada	1965
7	Mexico City	Mexico	1969
8	Moscow	USSR	1973
9	Tokyo	Japan	1977
10	Stockholm	Sweden	1981
11	San Francisco, CA	USA	1985
12	Rio de Janeiro	Brazil	1989
13	New Delhi	India	1994
14	Hamburg	Germany	1997
15	Istanbul	Turkey	2001
16	Osaka	Japan	2005
17	Alexandria	Egypt	2009
18	Paris	France	2013

After Harvard in Cambridge, Massachusetts, with 206 delegates, mainly from Europe and North America (Fig. 12), Rotterdam organized in 1948 the 2nd ICSMFE, already attended by 596 delegates, despite the difficult post-war situation and political restrictions. This was a tribute to the high level of Dutch geotechnics and it played a key role in establishing European (Member) Societies of Geotechnics and of ISSMFE, respectively.

At the meeting of the Executive Committee in Rotterdam, in 1948, the first set of Statutes were discussed, and the final agreed draft covered the management of the Society (Fig. 13). Thus, the Rotterdam Conference was the official launch of the International Society for Soil Mechanics and Foundation Engineering (ISSMFE).

The number of delegates increased from one conference to another and reached its maximum at the 8th ICSMFE in Moscow, 1973 with about 1500 delegates (Fig. 14). However, the main reason for this "peak value" was hardly geotechnics but rather the political situation, as could be observed by the author personally: The world was in the midst of the "Cold War", and there were severe restrictions to enter the Soviet Union (USSR). This 8th ICSMFE now provided for the delegates from abroad an unique chance to pass the "Iron Curtain", to visit Moscow and attend post conference tours into regions, which normally were "closed" for foreigners. "Accompanying persons" from the KGB were omnipresent practicing a special version of the "observational method".

EUROPE, THE PAST (CONTINUED)

Figure 12. Partial view of the registered delegates at the 1st ICSMFE at Harvard University, Cambridge, MA, June 22 – 26, 1936.

Figure 13. Meeting of the Executive Committee of ISSMFE at the 2nd ICSMFE in Rotterdam, 1948. From the right: E.E. De Beer, A.W. Skempton, K. Terzaghi, T.K. Huizinga.

At the beginning of the Executive Committee on occasion of the 3rd ICSMFE in Zürich, in 1953, reference was made to other meetings in the interim. Already one year before this decision the 1st Australasian Region Conference had taken place in Melbourne. Usually, these Regional Conferences have been organized in four years intervals since the 1950s (see Chapter 7.2).

The 11th ICSMFE in San Francisco, 1985, was held in commemoration of the jubilee year "50th Anniversary of ISSMFE". In the opening session the newly installed awards were bestowed for the first time: The K. Nash Gold Medal on H.B. Seed (1922 – 1989) and the Terzaghi Oration on W. Lambe (1920 –). K. Nash (1922 1981) had been Secretary General of ISSMFE from 1965 to 1981 and Professor of Civil Engineering at King's College, London (Fig. 15).

EUROPE, THE PAST (CONTINUED)

Figure 14. Cover page of the conference proceedings of the 8th ICSMFE in Moscow, 1973 (with the hitherto maximum number of attendees).

Figure 15. J.K.T.L. Nash (1922 – 1981). Secretary General of ISSMFE from 1965 to 1981 and Professor of Civil Engineering at King's College, London.

A special event was the "International Conference on Geotechnical and Geological Engineering (GeoEng 2000)" at the end of the Second Millenium in Melbourne under the auspices of ISSMGE, ISRM, IAEG. On occasion of this joint conference a merging of these societies or at least a series of common international conferences was discussed. However, the international eagerness for a unification has been rather limited until today; FedIGS has been the hitherto maximum of approaches.

Comprehensive details on all 17 International Conferences of ISSMFE/ISSMGE (Harvard, 1936 to Alexandria, 2009) can be found in [8]. The 18th ICSMGE will be again in Paris (2013), which after the 5th ICSMFE in 1961 will be the first capital having organized twice this event.

7.2 Continental Regional Conferences

At the Execution Committee Meeting (now Council Meeting) in 1953 in Switzerland Vice Presidents were elected and urged to organize Regional Conferences in the mid-year between the four-yearly International Conferences.

The European Regional Conferences of ISSMFE/ISSMGE started in Stockholm 1954, (Table 6), in recognition of the pioneering Swedish geotechnics. The 6th ECSMFE took place in Vienna in 1976 on occasion of the 50th Anniversary of K. Terzaghi's fundamental book "Erdbaumechanik" (Vienna, 1925), which is considered the birth of modern soil mechanics. Until now, Madrid is the only capital, that organized two European Conferences (ECSMFE, 1972 and ECSMGE, 2007).

The other Regional Conferences of ISSMFE/ISSMGE started as follows:

- ✧ African Regional Conferences in Pretoria, South Africa, in 1955.
- ✧ Asian Region Conferences in New Delhi, India, in 1960
- ✧ Panamerican Region Conferences in Mexico, 1959.

The name of the Australian Regional Conferences was changed in "Australasia and New Zealand Conferences on Geomechanics" in 1971, and the first of this series was again organized in Melbourne.

EUROPE, THE PAST (CONTINUED)

Table 6. European Regional Conferences of ISSFE or ISSMGE respectively.

No.	CITY	COUNTRY	YEAR
1	Stockholm	Sweden	1954
2	Brussels	Belgium	1958
3	Wiesbaden	Germany	1963
4	Oslo	Norway	1967
5	Madrid	Spain	1972
6	Vienna	Austria	1976
7	Brighton	England	1979
8	Helsinki	Finland	1983
9	Dublin	Republic of Ireland	1987
10	Florence	Italy	1991
11	Copenhagen	Denmark	1995
12	Amsterdam	The Netherlands	1999
13	Prague	Czech Republic	2003
14	Madrid	Spain	2007
15	Athens	Greece	2011
16	Edinburgh	United Kingdom	2015

7.3 Danube-European Conferences

In addition to the continental Regional Conference smaller regional conferences were established with the aim to bring together colleagues mainly from neighbouring countries. The first were the Danube-European Conferences, starting in Vienna, 1964 (Tab. 7), comprising not only the Danube Region but also the countries with tributaries of the River Danube from Switzerland to the Black Sea. This region has had close cultural and historical connections since centuries, and the Danube-European Conferences of ISSMFE became an outstanding example how to overcome political problems (i.e. the Iron Curtain). This required not only reliable personal contacts but also sensitive diplomacy. For instance, the official representatives of all countries were sitting on the podium during the Opening Ceremony of the Conference (Fig. 16).

Commonly, at least one official delegate from another country was placed between the representatives of Western and Eastern Germany; otherwise the eastern colleague could have become political problems at home.

From the very beginning the Danube-European Conferences were attended by high ranking personalities from Eastern Geotechnics as can be seen from the conference proceedings Vienna, 1968 (Fig. 17). Austria was politically neutral, and Vienna the somewhat nostalgic capital of a former Empire that had unified different regions and cultures (like a smaller predecessor of the today's European Community). After Vienna (1964, 1968) until 1986 (Nuremberg) the Danube-European Conferences had taken place always in Eastern countries, which made it easier for their delegates to attend. Moreover, the national language could be used officially. All these conditions created a "geotechnical family" in this region. In 2014 the 50th Anniversary Conference will be celebrated in Vienna.

EUROPE, THE PAST (CONTINUED)

Figure 16. Formal Opening Session at the 8th Danube-European Conference of ISSMFE in Nuremberg/Germany,1986. Official representatives of ISSMFE Member Societies in alphabetical order (in German) on the podium. Krebs Ovensen, Vice-President for Europe had just delivered his Opening Address.

ÖSTERREICHISCHES NATIONALKOMITEE DER INTERNATIONALEN
GESELLSCHAFT FÜR BODENMECHANIK UND GRUNDBAU
IM ÖSTERREICHISCHEN INGENIEUR- UND ARCHITEKTEN-VEREIN

2nd DANUBE-EUROPEAN CONFERENCE

DONAU-EUROPÄISCHE

KONFERENZ

BODENMECHANIK im STRASSENBAU
Soil Mechanics in Road Engineering
Wien, 8. bis 10. Mai 1968

THEMENGRUPPE I Session I

Fundierungen, Setzungsberechnungen, Porendruckmessungen usw. mit allen einschlägigen Versuchen

Generalberichter: General Reporter
Prof.Dr.A.Kézdi,Budapest

Angemeldete Diskussionsredner Registered discussion speakers

Figure 17. Cover page of the Proceedings of the 2nd Danube-European Conference of ISSMFE in Vienna, 1968. English translation (in red) and the enlargement of surnames of dominating personalities added for this paper.

EUROPE, THE PAST (CONTINUED)

Prof. A. Kezdi (1919 – 1983) from Hungary was not only an outstanding geotechnical personality but also an excellent singer, and the wife of Prof. M.V. Malyshev (1922 – 2011) from USSR even an opera singer. Therefore, many Danube-European Conferences were enriched by excellent music performances. Together with dancing evenings this helped a lot to overcome the political barrier of the Iron Curtain and to establish permanent friendship among geotechnical colleagues.

Table 7. Danube-European Conferences of ISSMGE.

No.	CITY	COUNTRY	YEAR
1	Vienna	Austria	1964
2	Vienna	Austria	1968
3	Budapest	Hungary	1971
4	Bled	Yugoslavia (now Slovenia)	1974
5	Bratislava	Czechoslovakia (now Slovakia)	1977
6	Varna	Bulgaria	1980
7	Kishinova	Soviet Union (now Moldavia)	1983
8	Nuremberg	Germany	1986
9	Budapest	Hungary	1990
10	Mamaia	Romania	1995
11	Poreč	Croatia	1998
12	Passau	Germany	2002
13	Ljubljana	Slovenia	2006
14	Bratislava	Slovakia	2010
15	Vienna	Austria (50th Anniversary)	2014

7.4 Baltic(Sea) Conferences and Nordic Geotechnical Meetings

Following the foundation of Danube-European Conferences (1964) the Baltic Republics of the USSR established Baltic Conferences in 1968. The first took place in Kaunas, Lithuania 1982, and Belarus joined this series of geotechnical events (Tab. 8). At the 10th Baltic Sea Conference in Riga, 2005 it was decided to change its name to "Baltic Sea Conferences" which in the future should take place around the Baltic Sea. Consequently, Gdansk (2008) and Rostock (2012) followed; the next will be in Vilnius (2016).

While the Baltic(Sea) Conferences always have taken place under the auspices of ISSMFE/ISSMGE, the Nordic Geotechnical Meetings exhibit rather a private or "family character" with strong links among the Scandinavian countries since 1950. This "team spirit" could have been observed also at ISSMFE/ISSMGE Council Meetings for decades.

7.5 European Young Geotechnical Engineers' Conferences

In 1987 the first Young Geotechnical Engineers' Conference (YGEC) took place in Copenhagen, initiated by N. Krebs Ovesen, Vice President of ISSMFE. It became the precursor of the Regional Young Geotechnical Engineer's Conferences; therefore the 1st YGEC can be also considered the 1st European Young Geotechnical Engineer's Conference (EYGEC) – Tab. 9.

For 25 years now this European conference series has become a successful meeting event of the younger geotechnical generation, enhancing international contacts and cooperation. During his term as Vice-President of Europe the author always selected conference places, where the participants had to stay together (e.g. former military barracks in Estonian woods, mountain monastery in Bulgaria, Island of Santorin, Greece). This made the young geotechnical generation an international family with permanent friendships. Experience of life has confirmed that friendship of one's youth are commonly the most stable ones.

EUROPE, THE PAST (CONTINUED)

Table 8. Baltic (Sea) Conferences of ISSMFE/ISSMGE.

No.	CITY	COUNTRY		YEAR
1	Kaunas	Lithuania	USSR at time of conference	1968
2	Tallinn	Estonia		1972
3	Riga	Latvia		1975
4	Kaunas	Lithuania		1978
5	Minsk	Belarus		1982
6	Tallinn	Estonia		1986
7	Riga	Latvia		1991
8	Vilnius	Lithuania		1995
9	Pärnu	Estonia		2000
10	Riga	Latvia		2005
11	Gdansk	Poland	Name change: Baltic Sea Conference	2008
12	Rostock	Germany		2012
13	Vilnius	Lithuania		2016

Table 9. European Young Geotechnical Engineers' Conferences of ISSMFE/ISSMGE.

No.	CITY	COUNTRY	YEAR
1	Copenhagen	Denmark	1987
2	Oxford	UK	1988
3	Raubichi (Minsk)	USSR (now Belarus)	1989
4	Delft	Netherlands	1990
5	Grenoble	France	1991
6	Lisbon	Portugal	1992
7	Boeblingen	Germany	1993
8	Stara Lesina	Slovenia	1994
9	Ghent	Belgium	1995
10	Izmir	Turkey	1996
11	Madrid	Spain	1997
12	Tallinn	Estonia	1998
13	Santorini	Greece	1999
14	Sts Cyricus und Julitta Monastery	Bulgaria	2001
15	Dublin	Ireland	2002
16	Vienna	Austria	2004
17	Zagreb	Croatia	2006
18	Ancona	Italy	2007
19	Györ	Hungary	2008
20	Brno	Czech Republic	2010
21	Rotterdam	The Netherlands	2011
22	Gothenburg	Sweden	2012

EUROPE, THE PAST (CONTINUED)

7.6 Other Conferences, Congresses and Symposia of ISSMGE

International Symposia on Landslides started in Kyoto, 1972 (Tab. 10), and the International Congresses on Environmental Geotechnics in Edmonton, 1994 (Tab. 11). Both events inevitably overlap with topics of the International Association of Engineering Geology and the Environment (IAEG).

Technical Committees of ISSMGE have increasingly organized their particular conferences or seminars since about 2000. In 2010, for instance, the International Geotechnical Conference "Geotechnical Challenges in Megacities" took place in Moscow, organized by TC 18, TC28, TC32 and TC41.

Forensic Geotechnical Engineering has become another new field for ISSMGE, and since 2003 International Workshops and Symposia were organized by the Technical Committee TC 40, now TC302 ("Forensic Geotechnical Engineering").

The International Conferences on Education and Training in Geotechnical Engineering were established in Sinaia (2000) by the Romanian Member Society of ISSMGE. In the year 2008 the International Conference on Education and Training in Geo-Engineering Sciences followed, organized by the European Technical Committee ERTC 16 also in Romania (Constanza).

7.7 National Conferences, Symposia, Lectures

Many Geotechnical Societies in Europe have organized national conferences, symposia, lectures, etc., sometimes under the auspices of ISSMGE, sometimes not.

National conferences are of great local importance for bridging the gap between theory and practice, and therefore they are mostly combined with exhibitions from universities, research institutes, contractors, consultants, etc.

The largest national conference has been the biannual "Deutsche Baugrundtagung" (literally translated: German Construction Ground Conference), established in 1950 and attracting about 1300 delegates from about 10 to 15 countries.

Frequently, the national geotechnical conferences are combined with a special lecture honouring their pioneers. For instance, the biannual Austrian Geotechnical Conference with the "Vienna Terzaghi Lecture" commonly attracts 500 to 600 persons from 20 – 25 countries.

Table 10. International Symposia on Landslides of ISSMFE/ISSMGE.

No.	CITY	COUNTRY	YEAR	
1	Kyoto	Japan	1972	
2	Tokyo	Japan	1977	
3	New Delhi	India	1980	
4	Toronto	Canada	1984	
5	Lausanne	Switzerland	1988	
6	Christchurch	New Zealand	1992	
7	Trondheim	Norway	1996	
8	Cardiff	UK	2000	
9	Rio de Janeiro	Brazil	2004	
10	Xi'an	China	2008	(Name change in 2008)
11	Banff	Canada	2012	

EUROPE, THE PAST (CONTINUED)

Table 11. International Congresses on Environmental Geotechnics of ISSMFE/ISSMGE.

No.	CITY	COUNTRY	YEAR
1	Edmonton	Canada	1994
2	Osaka	Japan	1996
3	Lisbon	Portugal	1998
4	Rio de Janeiro	Brazil	2002
5	Cardiff	UK	2006
6	New Delhi	India	2010

Sometimes national conferences are organized on occasion of particular anniversaries, e.g. the two days Symposium "70 Years in Soil Mechanics" in Istanbul, 1995, reminding of the publication of K. Terzaghi's book "Erdbaumechanik" in 1925 and on his activities in Turkey.

A recent example was the Geotechnical Memorial Conference, organized at the State's University in Ghent, 2011 honouring the late Prof. E.E. De Beer, Father of Belgian Soil Mechanics, on occasion of his 100 years' birthday.

Additionally, many ISSMGE Member Societies, or National Geotechnical Societies, respectively, have their own Special Lecture named after national pioneers following the Rankine Lecture of the British Geotechnical Association (BGA). This prestigious series started in 1961 with A. Casagrande as first Rankine Lecturer ("Control of seepage through foundations and abutments of dams") and attracts about 600 to 700 persons. In 1984 the M. Rocha Lecture followed in Lisbon with F. Borges (Professor and Past Director of LNEC) as first speaker. Some other examples are (in alphabetical order):

- Croce Lecture – Italy
- Nonveiller Lecture – Croatia
- Šuklje Lecture – Slovenia
- Széchy Lecture – Hungary
- Vienna Terzaghi Lecture – Austria

Besides conferences under the auspices of ISSMGE or national conferences many universities and institutions have established additional conferences, symposia, etc. "with international participation". This splitting reduces the number of participants at major conferences and leads more and more to a repeating of already known. Such activities are widely caused by the main criteria for evaluating the academic career or departments and less by niches for specialists.

7.8 Languages

After the 2nd ICSMFE in Rotterdam in 1948, it was agreed upon that French be officially adapted as the second ISSMFE language. Consequently, English and French have been the official languages since, at least at the International, Continental and Regional Conferences. However, the percentage of French papers in the conference proceedings has decreased significantly during the past thirty years. A similar situation could be observed by the International Society for Rock Mechanics: Due to the strong pioneering group from Austria (under L. Müller) and the then still wide spread of German it became the third founding language of ISRM. In 2010 the ISRM decided to omit French and German, simply for pragmatic reasons. Also IGS, ITA and IABSE use only English as official language. On the other hand, IAEG and ICOLD still use English and French, and PIARC has added Spanish to English and French (at the 24th World Road Congress in Mexico City in 2011). Sometimes countries provide additional conference proceedings translated into their local language.

EUROPE, THE PAST (CONTINUED)

Danube-European Conferences and Baltic Conferences have been special cases: In their early phases German and Russian were widely spread around the Baltic Sea, in Eastern Europe and on the Balkan. The first fundamental books and other relevant papers on soil mechanics (Terzaghi, Fröhlich, Kögler-Scheidig) were nearly exclusively published in German. Consequently, Russian, German and English were official Conference languages in the Baltic countries during USSR-times (Fig. 18), and simultaneous translation was provided. Since the political change English has become the only official conference language.
In the Danube Region German was like the common "Esperanto" until about 2000, and therefore dominating during the first two to three decades of Danube-European Conferences (Fig.19), though English was also official conference language. At that time most eastern colleagues hardly spoke English. Even privately the delegates from different (Eastern) countries preferred to communicate in German rather than in Russian. Furthermore, the national language of the hosting country could be used (also in the proceedings). At the end of the 4th Danube-European Conference (1976) Russian came in as additional official language, remaining until 1983 (Fig. 19). Until 2010 simultaneous translation was provided during the meetings. Meanwhile the English language is clearly dominating, but German is still in use.
At the Nordic Geotechnical Meetings the Scandinavian languages (Danish, Norwegian, Swedish) and English are used.
The National Geotechnical Conferences use their local mother tongue, but invited speakers from abroad commonly use English – sometimes with simultaneous translation.

8. GENERAL REMARKS

Most new disciplines, whether in engineering, medicine, or other sciences pass through stages of development. Often there is a period of early rapid growth, followed by a struggle of acceptance. Even soil mechanics was not spared this. Over-conservative civil engineers and geologists, and pure theoreticians, were rather sceptic until the 1960s. The author still remembers the nickname "magicians" for practicing geotechnicians.

The advances in geotechnical engineering between 1936 and 2011 may be characterized as "*From Revolution to Evolution*" (Fig. 20). The revolutionary period was between 1936 (actually since 1925) and about 1980, when the full potential of this discipline was realized. Since then the advances have had rather an evolutionary than revolutionary character. This should, however, not be considered depreciative (derogative); it is just a normal process of development.

One of the main targets of ISSMGE has been to bridge the gap between theory and practice, between academics and practitioners. It seems, that this gap has rather widened during the past twenty years. Main reasons are, for instance, lack of site experience, over-reliance on numerical methods, the focus on basic research and publication intensity as the only ruling criteria for evaluating the academic career ("publish or perish"); career impact of Journal papers versus Proceeding papers. Already in 1991 R.B. Peck (1912 – 2008) – Fig. 21, predicted: "*Researchers will take refuge in increasingly esoteric investigations, practitioners will pay little attention to the research results. Reading learned journals will become less interesting and profitable to practitioners, scientific oriented workers will find themselves more or less writing to each other.*"

Screening the conference papers by an international expert review committee in order to upgrade the main level of contributions could help the academics career as proposed by H. Poulos in 2005 already.

K. Terzaghi was always concerned, that students, and others, would put too much reliance on the theoretical aspects of Soil Mechanics, at the expense of developing judgement in the manner in which Soil Mechanics should be used to solve real problems in soil engineering. Many of this writings reflect this concern [6].

EUROPE, THE PAST (CONTINUED)

R.B. Peck's well known complaint *"Where has all the judgement gone"* [12] already in 1980 goes in the same direction. And further *"The most fruitful research grows out of practical problems"*. This statement should be combined with a quotation of the famous German philosopher I. Kant (1724 – 1804): *"There is nothing more practicable than a good theory"*.

R.B. Peck addressed at the 8th ICSMFE in Moscow, 1973 a warning on the increasing reliance on computer works.

Over-reliance on pure calculations was already criticized by the German poet J.W. Goethe (1749 – 1832), when in his "Faust II" he has Mephisto saying*: "They think, what cannot be calculated cannot be true"*. Today, a modified sentence could be added: *"They think, what cannot be found electronically does not exist"*. The latter often leads to a "re-inventing of the wheel" like in other disciplines (e.g. structural engineering).

In the 1930s, when the young science of soil mechanics was severely questioned and even opposed by many academics, K. Terzaghi stated: *"The present opponents of soil mechanics will die out; so this problem will solve itself biologically. But the worst harm to soil mechanics will come once it is discovered by pure theoreticians because the efforts of such persons could undermine its very purpose, especially if they don't distinguish between idealization and reality."*

At the Board Meeting in St. Petersburg in 2008 it was decided to label the "International Journal of Geoengineering Case Histories" as a journal of ISSMGE. This journal bridges the gap between theory and practice, as it follows K. Terzaghi's recommendation included in the foreword of the first issue of Geotechnique (1948): *"A well documented case history should be given as much weight as ten ingenious theories"*. Deliberations about this journal started in 2003, the first issue was published in 2006, and it exists only in electronic format.

Since the 1990s the volume of codes, standards, regulations, etc. has increased significantly within the entire civil engineering discipline, hence also in geotechnical engineering. In Germany, for instance, the number of code pages has trebled within the past 15 years. Therefore, they founded in 2011 an association "Initiative Practice-orientated Codes in Civil Engineering" to reduce this excess ("Who shall read all these codes?").

Over-regulations hinder innovation in geotechnical engineering (Fig. 22). They act like a brake, slowing down new development and advancement. Furthermore, there is the danger that our professional activities are going to be degraded to a mere fulfilling of regulations. Overspecifications may also have a detrimental impact and pretend that there is no residual risk left. Furthermore, engineers are increasingly afraid to design outside of standards or codes, because they fear legal problems in case of a failure. This also has dramatically reduced the willingness to take responsibility. Fear of liability or litigation is stifling innovation in civil engineering, especially in geotechnics, and pushing engineers towards over-reliance on standards. But over-reliance on standards or codes hampers also engineering judgement and kills "engineering intuition" – and creative thinking.

Another disadvantage of too detailed codes is that anyone, whether they understand the geotechnical and construction ramifications or not, can perform the calculations (or think so) and effectively come up with a seemingly technically legitimate answer. Too complex codes tend to give the user a false sense of security. Moreover, the onset of computers has made getting results of calculations quickly. However, simply getting an answer to six decimals places does not make it more accurate or precise.
In his K. Nash lecture J.B. Burland stated [4]: *"It is both arrogant and dangerous to believe that ground engineering can be carried out solely on the basis of numbers given from site investigation coupled with codes of practice. It is necessary to study case histories, learn about local experience, examine the soil and visit the site"*. There is nothing to add.

EUROPE, THE PAST (CONTINUED)

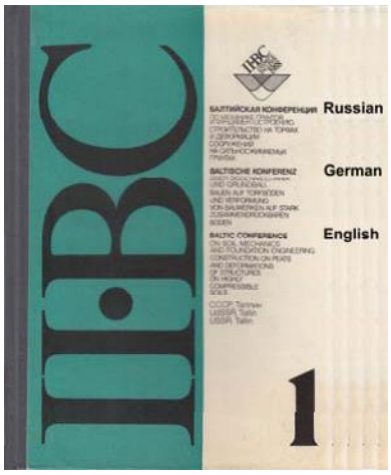


Figure 18. Cover page of the Proceedings of the 6th Baltic Conference on Soil Mechanics and Foundation Engineering (ISSMFE) in Tallinn (then USSR, now Estonia) in 1988. Official conference languages: Russian, German, English.

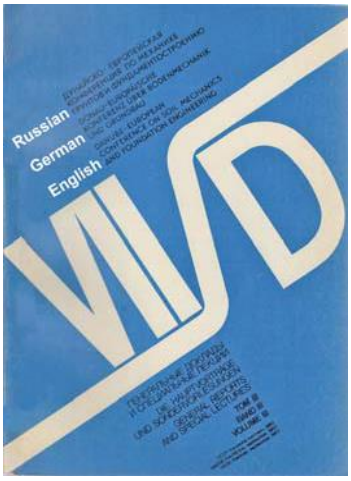


Figure 19. Cover page of the Proceedings of the 7th Danube-European Conference on Soil Mechanics and Foundation Engineering (ISSMFE) in Kishinev (then USSR, now Moldavia) in 1983. Official conference languages: Russian, German, English.

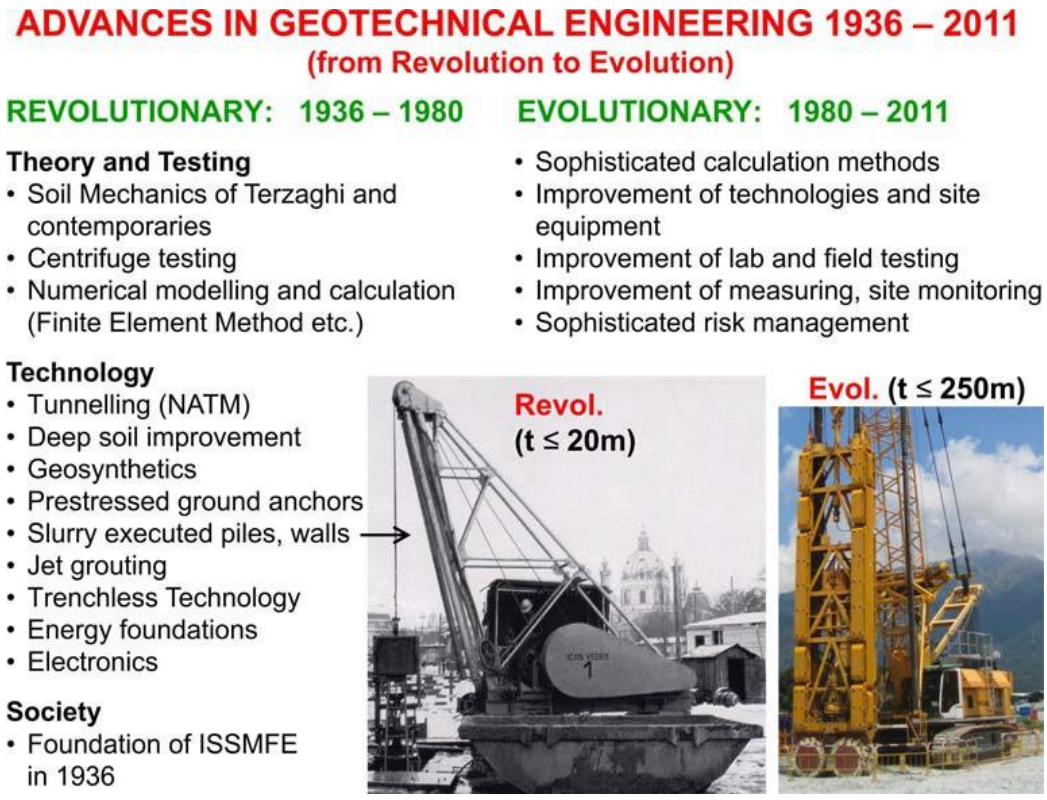


Figure 20. Advances in Geotechnical Engineering 1936 – 2011: "From Revolution to Evolution". Slurry trench wall as an example of technology.

EUROPE, THE PAST (CONTINUED)

Figure 21. Ralph B. Peck (1912 – 2008).

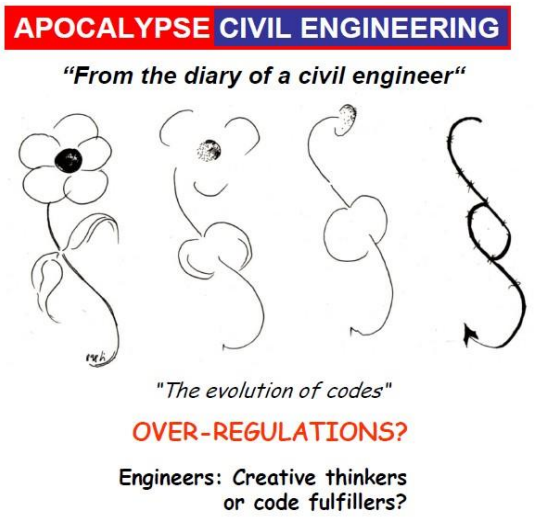


Figure 22. Over-regulations hamper innovation and the willingness to take responsibility (Caricature "The evolution of codes" after K. Stiglat, 2010).

9. CONCLUSION AND OUTLOOK

Since the birth of ISSMFE/ISSMGE in 1936 (formally established in 1948) the development of soil mechanics and geotechnical engineering has been on the road to success. Rarely has the rise of one discipline been so much the result of the efforts of a single individual like K. Terzaghi. Though K. Terzaghi laid the basis, many outstanding personalities contributed to this success and to the meanwhile worldwide acceptance of an engineering branch which is science and art likewise. Therefore, one has to pay tribute not only to the internationally well known late "Giants" of Soil Mechanics and Geotechnical Engineering but – posthumously – also to local pioneers of European ISSMFE/ISSMGE Member Societies (and their precursors). This will follow in the frame of an extended version of this paper, available at the homepage of the ISSMGE and the ÖIAV (Austrian Society for Engineers and Architects). A Russian version will also follow.

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REFERENCES

[1] F. Barends. Introduction to Soft Soil Geotechnique. *IOS Press, Amsterdam, 2011.*

[2] H. Brandl. 100 Years Prof. Dr.Dr.h.c.mult. Karl v. Terzaghi and History of the Institute for Soil Mechanics and Foundation Engineering at the Vienna Technical University. *Mitteilungen für Grundbau, Bodenmechanik und Felsbau*. Technische Universität Wien, Heft 2, Vienna 1983-1984, 11-41 and 43-70.

EUROPE, THE PAST (CONTINUED)

[3] H. Brandl. The civil and geotechnical engineer in society – ethical and philosophical thoughts; *Special Paper, Post-Conference Version*. The Deep Foundations Institute (DFI), Hawthorne, New Jersey, USA. Vancouver, 2004.
[4] J.B. Burland. Nash Lecture: The Teaching of Soil Mechanics – A personal view. 9th ECSMFE, Dublin, 1987, Proceedings, Vol. 3
[5] J.B. Burland. The Founders of Geotechnique. *Geotechnique*, Vol. LVIII, No. 5, 2008, 327-341.
[6] W.R. Ferris. Eng. 266 – Applied Soil Mechanics. K. Terzaghi's course in 1955 at Harvard University. Classroom notes, 1997.
[7] R.E. Goodman. Karl Terzaghi – The Engineer as Artist. *ASCE Press*, USA, 1998.
[8] K. Ishihara, M. Jamiolkowski. The ISSMGE from 1936 to 2011 – A retroperspective on the occasion of the 75th Platinum Jubilee Anniversary. ISSMGE Bulletin, Vol. 5, Issue 4, 2011.
[9] K.R. Massarsch, B.H. Fellenius. Early Swedish Contributions to Geotechnical Engineering. *ASCE GeoInstitute Geo-Congress Oakland March 25-29, 2012. Geotechnical Special Publication 227,* pp. 239-256.
[10] J. Monsees. A universal tunneller. *World Tunnelling*, May 2011.
[11] R.B. Peck. Art and Science in Subsurface Engineering. *Geotechnique,* March 1962, 12. pp. 60-66.
[12] R.B. Peck. Where Has All the Judgement Gone? *Canadian Geotech. Journ.* (1980). 17:4. pp. 584-590, and *Norwegian Geotech. Inst. Publ.* 134 (1980). P. 1-5.
[13] R.B. Peck. The Coming of Age of Soil Mechanics 1920 – 1970, *The First Spencer J. Buchanan Lecture,* Texas A&M University, 1993.
[14] R.E. Williams. Rudolf Glossop and the Rise of Geotechnology. *Whittles Publishing,* Dunbeath, Scotland, UK.

GEOTECHNICAL ENGINEERING IN EUROPE, THE PRESENT

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1 EUROPEAN NATIONAL SOCIETIES

At the moment in Europe is 34 ISSMGE National Societies. Situation is stable; many activities are spread between nearly all national societies. In May 2011 the Israel Society asked to be part of European group, not Asian. Members of the board accepted this proposal which will be on the ISSMGE Council Meeting programme in Toronto. There are two other countries from the last Soviet Union which should be contacted in near future: Belorussia and Azerbaijan.

By the end of June 2013 Belorussia and Bosnia and Herzegovina are new members of our ISSMGE.

	Member Society	No of members
1	ALBANIA	31
2	AUSTRIA	95
3	BELGIUM	231
4	BULGARIA	63
5	CROATIA	186
6	CZECH & SLOVAK REPUBLICS	47
7	DENMARK	345
8	ESTONIA	26
9	FINLAND	187
10	FRANCE	473
11	GEORGIA	38
12	GERMANY	624
13	GREECE	123
14	HUNGARY	115
15	ICELAND	10
16	IRELAND	22
17	ITALY	283
18	LATVIA	31
19	LITHUANIA	40
20	MACEDONIA, FYR	46
21	NETHERLANDS	759
22	NORWAY	360
23	POLAND	334
24	PORTUGAL	214
25	ROMANIA	149
26	RUSSIA	319
27	SERBIA	43
28	SLOVENIA	88
29	SPAIN	372
30	SWEDEN	761
31	SWITZERLAND	208
32	TURKEY	167
33	UKRAINE	100
34	UK	1180
	TOTAL	8070

2 ACTIVITIES IN EUROPE

- International Conference next 18th IC SMGE will be arranged in Paris, September 2013
- European Conference, now we are attending XVth in Athens, next one will be arranged in Edinburgh, September 2015
- Regional Conferences

Danube Geotechnical Conference – the last was arranged in Bratislava, June 2010, next will be arranged in Vienna, 2014 on the occasion of 50 anniversary of these conferences; Serbia declares the intention to arrange 16th Danube Conference in Belgrade, 2018.

Baltic Sea Geotechnical Conference – the last one was arranged in Gdansk and the next will be organized in Rostock, 31 May -2 June 2012, by German Geotechnical Society. At the end of very successful conference in Rostock the Lithuanian national society was selected as society responsible for the next one in 2016.

Nordic Geotechnical Meeting – in May 2012 the 16th NGM was arranged in Copenhagen, Denmark with a great success. Icelandic Geotechnical Society invited professional colleagues to Reykjavik for the 17th NGM in 2016.

GEOTECHNICAL ENGINEERING IN EUROPE, THE PRESENT (Continued)

3 EUROPEAN YOUNG GEOTECHNICAL CONFERENCES

- 20th Brno, Czech Republic – 2010
- 21st Rotterdam, The Netherlands – September (4-7) 2011
- 22nd Gothenburg, Sweden – 2012 (26 – 29 August)

Next 23rd EYGEC will be arranged in Barcelona 2014. British Geotechnical Association is willing to invite young geotechnical engineers to Durham University, UK in 2015 and to combine this activity with EGC in Edinburgh similarly as 20th EYGEC 2010 in Brno was combined with DEC in Bratislava.

4 EUROPEAN REGIONAL TECHNICAL COMMITTEES

After International Conference in Alexandria all existing European Regional Technical Committees declared their wish to continue in work:

- ERTC 10 – Evaluation of Eurocode 7 – UK + Ireland – Andrew Bond, Trevor Orr -
- ERTC 12 Geotechnical Evaluation and Application of the Seismic Eurocode 8 – Italy – Michele Maugeri
- ERTC 7 – Numerical methods in geotechnical engineering - Spain – Cesar Sagaseta –
- ERTC 3 - Piles – Belgium – Noel Huybrecht (Maurice Bottiau)
- ERTC 16 – Education and Training – Romania – Iacint Manoliu (Marina Pantazidou)

For a great significance of the Regional TC the new ones are proposed to establish in Europe. The proposals are for:

- Geothermal Energy
- Utilization of large volume waste in Geotechnical applications
- Ageing of Earth Structures in Transport Engineering

National societies will be informed about this intention and their interest will have the final impact on their establishment. The idea is to propose this new ERTC with some research activity which is also supported from EU.

At the end of 2011 new ERTC Geothermal Energy was established in Darmstadt, Germany and arranged first workshop in July 2012.

5 OTHER ACTIVITIES AT THE INTERNATIONAL LEVEL

- Workshops of Technical Committees.
- International seminars were arranged in countries such as Spain, Russia, Switzerland, Hungary, Italy, Croatia, France, Germany, Ireland, Belgium, Romania, Albania, Estonia, Sweden, Finland and Denmark.
- Conclusion – nearly all European countries are involved in some international activities.

GEOTECHNICAL ENGINEERING IN EUROPE, THE PRESENT (Continued)

6 COMMON SENSITIVE PROBLEMS IN EUROPE

- Geotechnical Engineering Education
- Geotechnical Design – according to EC 7-1
- Risk associated with Geotechnical Engineering Profession and Professional Prestige

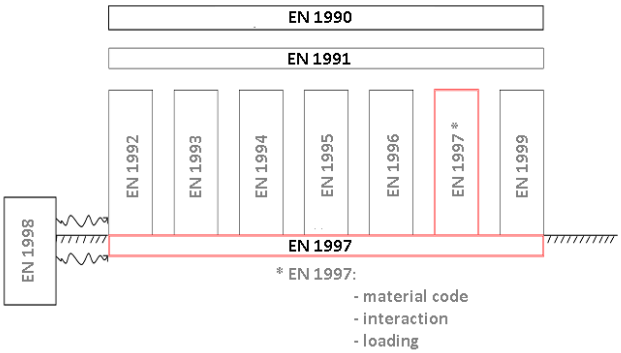
As the first two problems are on the programme of the European Conference the main attention will be given to the problems associated with professional prestige.

7 ATTRACTIVENESS OF THE GEOTECHNICAL ENGINEERING PROFESSION

There are two main aspects which have the significant impact on the attractiveness of our profession. They are;

a) Special position in the frame of Civil Engineering profession, which is expressed e.g. in Eurocode 7-1

b) Special position in society in general, as is able to react on up-to-date society demands



8 SPECIAL POSITION IN CIVIL ENGINEERING PROFESSION

Eurocode 7 unambiguously declares that in comparison with other Eurocodes, EC 7 is not only material code, but also the code for interaction (with practically all other structures), as well as code for loading (loading of soil or rock on other structures).

9 SPECIAL POSITION IN SOCIETY IN GENERAL

Geotechnical Engineering is falling under the limited group of professions which to the high extent are able to react not only on classical construction problems but also to new society demands, namely with respect to:

- Protection against natural hazards – floods, landslides, earthquakes
- Energy savings – especially with respect to Geothermal energy, e.g. energy piles or diaphragm walls;
- Raw materials savings – with high potential for waste and recycled material utilization, e.g. ash, slag, construction and demolition waste
- Protection of greenfields – as GE is playing significant role in the field of "Construction on brownfields"
- Environmental protection in general – where even GE established new branch "Environmental Geotechnics" – in 2010 6th International Congress on Environmental Geotechnics

10 RISK IN GEOTECHNICAL ENGINEERING

Risk connected with Geotechnical investigation is very clearly expressed in EC 7-1: 2.4.5.2.:

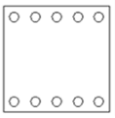
(7) The zone of ground governing the behaviour of a geotechnical structure at a limit state is usually much larger than a test sample or the zone of ground affected by in situ test. Consequently the value of the governing parameter is often the mean of a range of values covering a large surface or volume of the ground. The characteristic value should be a cautious estimate of this mean value.

GEOTECHNICAL ENGINEERING IN EUROPE, THE PRESENT (Continued)

Therefore, there is legal basic question – how large part of ground we can observe and test?? 1: 1,000,000 ???

11 UNCERTAINTIES FOR DIFFERENT STRUCTURES

As we are usually able to examine only limited part of geological environment, let's say one millionth, uncertainties for geotechnical structures are much higher than for other structures. The uncertainties connected with steel structures for simple cases can be in the range of 3-5 %, for concrete structures 5-10%, for timber structures 10-20%, however for earth structures it can be up to 50%. In addition the quality of earth structures during construction is usually not controlled by parameters which are later on used during design, but indirectly, with the help of moisture content and dry density.

Steel Structures		3-5%	E, σ_d, σ_t
Concrete Structures		5-10%	
Timber Structures		10-20%	
Earth Structures	 Embankment (borrow pit) 1/1 000 000 from the whole volume Indirect methods	cca 50%	E_{def}, φ, c, k

12 RISK IN GEOTECHNICAL ENGINEERING

Risk in geotechnical engineering is above all connected with three models through which the geotechnical design should pass.

- Geological Model
- Geotechnical Model
- Calculation - Numerical Model

The responsibility for the high quality of these models is falling on persons responsible for geotechnical investigation and for geotechnical design. Contractor is responsible for the interaction with neighbouring structures (together with designer) and for the construction technology.

Therefore the main question here is – for what is responsible investor?

GEOTECHNICAL ENGINEERING IN EUROPE, THE PRESENT (Continued)

13 ACCEPTABLE RISK

Frequency (rate) of failure is very different for different geotechnical structures. For spread foundations it is roughly 1: 1,000,000, and the probability of failure is 0.0001 %. For large dams according to ICOLD 1900 – 1975, it is roughly 1:80 – 1:100. It means 1.25 – 1.0 %. For shallow city tunnels, especially in soils (soft rock) it is with high probability 1:10 up to 1:20. It means probability of failure is about 5 to 10 %.

14 WHERE IS THE MAIN PROBLEM?

- Society demands only solutions which are able to guarantee 100 % safety
- This condition can not be fulfilled as in principle we are counting with acceptable risk – we are accepting some probability of failures – as it is basic approach of design (limit state approach).

Comparison:
Medical doctor
- is working with high risk – however openly declares probability of failure – and is accepted

Geotechnical engineer
- is also working with high risk – however failures are not accepted

GEOTECHNICAL ENGINEERING IN EUROPE, THE PRESENT (Continued)

15 SUMMARY

- Geotechnical Engineering keeps very good position not only between civil engineers but also in society generally. This reality should be emphasized as much as possible
- The profession of geotechnical engineering is connected with an extremely high risk which is not fully accepted in society
  - This high risk is first of all connected with our ability to realistically model the behaviour of a geological environment due to the changes induced by new construction activity;
  - The natural task of geotechnical engineers is to decrease this risk with the help of new investigation, testing, design and construction methods.

16 POSSIBILITIES FOR IMPROVEMENT OF THE GEOTECHNICAL ENGINEERING POSITION

The general discussion to the point of professional prestige started already and some positive examples can be mentioned, as:

- ISSMGE Bulletin publishes many interesting examples of practical problems, similarly as the International Journal of Geoengineering Case Histories (IJGCH);
- TV Discovery Science Channel under the headline "Building the Biggest" is presenting many specific projects where our profession is playing very important roles, e.g. Busan-Geoje Project, Oresund Bridge and tunnel, tunnel under Amsterdam railway station, tunnel in Singapore under existing metro station, foundation of bridge over narrow sea in Greece with very strong seismic attack etc.

GEOTECHNICAL ENGINEERING IN EUROPE, THE PRESENT (Continued)

- "Geotechnical – Geological Park" areal was opened in Vienna by H.Brandl, describing e.g. activities of K. Terzaghi, O.K. Fröhlich, A. Casagrande, L. Müller, and affiliated the name of the specific way to them; see photos above.
- The Geo-Impuls program started in the Netherlands, in which some 30 large clients, contractors, engineering consultants, universities and institutes do participate. The target of the Geo-Impuls program is halving geotechnical failures by 2015 – with expected savings around 500 Mil. EUR. But there are another positive examples (e.g. from Sweden) of good cooperation of 3 main partners (client- owner-investor + designer + contractor) who are sharing the risk with the main aim to decrease potential risk and to decrease bidding price.

However, to be more successful in our effort we have to combine our forces namely on

a) Information level - two positive examples were mentioned already (ISSMGE Bulletin and IJGCH journal). With respect to the questionnaire to the European societies – most of them positively evaluated ISSMGE webinars, but up to now they are reserved with respect to the other ISSMGE changes as are new web pages and GeoWord network as these activities are still at the opening phase. Nevertheless also the intention of this report should be to help to improve the information level.
b) Professional level – namely on the level of the sister learned societies as IAEG and ISRM or on the level of the sister practical societies as ITA/ITES – International Tunnelling Association, IGS – International Geosynthetic Society, EFFC – European Federation of Foundation Contractors – in Europe). This cooperation is very good at the national level. German Geotechnical Society can be mentioned as a positive example, which has sub-committees working in close contact with these sister societies. Therefore some international activities are arranged together with these sister societies. Again a few examples: ITA/AITES Congress in Finland, Helsinki, 2011 or EuroGeo – geosynthetics, in Spain, Valencia, 2012. However the cooperation at the international level still needs some improvement.
c) Academic and research level - with the main aim to achieve higher recognition of geo-engineered subjects at the university level or to achieve higher recognition of our research activities. All our achievements which are published in different journals, proceedings, books should be evaluated and registered on some official lists (e.g. on the list of Thomson Reuters).
d) National level – not only on the level of our profession but also on the level of National Civil Engineering Institutes, different government departments, information media and policy makers. Activities on our professional level will be described further as are most important parts of our activities.

For Europe a specific problem is connected with common European codes. Eurocode 7 – "Geotechnical design" is playing the most important role and is subject of many discussions. ERTC (European Regional Technical Committee) No.10 – Evaluation of Eurocode 7 – UK + Ireland – Andrew Bond, Trevor Orr – did in this field many positive steps. Very interesting was workshop in Athens during European conference, where also problem of numerical methods applied for the geotechnical design according to EC 7 was discussed. Nevertheless it is recommended for each national society to have some representative on the level of CEN/TC 250/SC7. Many national representatives are also working at many different "Evolution groups" of SC 7 the aim of which is to find some common approach to the new version of EC 7 which is expected to be prepared roughly in 2019.

GEOTECHNICAL ENGINEERING IN EUROPE, THE PRESENT (Continued)

Geotechnical education is discussed under the umbrella of ERTC 16 – Education and Training – Romania (Greece) – Iacint Manoliu (Marina Pantazidou). The main aim is to define basic demands for different levels of study according to the Bologna agreement. Just to help to increase student (and later on engineer) mobility, to be sure that students from each country will know basic principles on which other activity can be based in all Europe. But for an individual country very important question is how to attract best students to study our profession. In this way some activities of ISSMGE can be used, namely with respect to the professional prestige. The proposal to prepare database of short presentations about extremely important projects in which our profession is playing the most important role obtained very strong support in replies to the above mentioned questionnaire. These short presentations (about 5-7 minutes) can be used at the first course level of geotechnical engineering education.

Future Position of Geotechnical Engineering – From the European Perspective

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ABSTRACT
In this paper, the future position of Geotechnical Engineering (GE) is discussed through considering the relevance for the GE profession of four significant societal challenges the world is facing: demographic ageing, urbanization, natural hazards and resource efficiency. It is demonstrated that GE can have significant contributions to these challenges. However, the future position of GE in Europe depends to a significant extent on how the profession deals with the consequences of demographic ageing. Therefore, the GE profession (and the ISSMGE) should have a proper focus on inspiring students, by explaining the added value of GE in these global challenges. Inspiration of young people will require honest communication with regard to the uncertainties in the properties of our profession's building material: soil. Moreover, the significance of the field of GE shall increase if interfaces with relevant scientific disciplines are further strengthened, and disciplines like ICT and social sciences are further explored. This highlights the importance of involving young geotechnicians. Recent and future generations have an inherent affinity with modern technologies and have already been trained to work on a multi-disciplinary level. Therefore, young professionals should have a prominent role in ISSMGE activities. Subsequently, the involvement of young people may lead to vivid commitment, which secures a bright future for GE.

1 INTRODUCTION

As a representative of young geotechnical engineers in Europe, I was asked to share our view on the future of Geotechnical Engineering (GE). While it is impossible to get input from every single young colleague, I build upon the experiences I gathered through my involvement in several international GE-related networks.

1.1 SYMPG of ISSMGE

Professor Jean-Louis Briaud, current ISSMGE President, is active in making the Society more attractive to young geotechnical engineers in the future. In 2010 he established the Students and Young Members Presidential Group (SYMPG), to give students and young members a chance to voice their opinion directly to the President. This working group consists of 18 members from all over the world (3 members per region) and meets directly with the President about 4 times a year by conference call. In addition to the SYMPG, there is a group of corresponding members.

In May 2011 the SYMPG put forward their first detailed ideas for increasing the attractiveness of the ISSMGE and the involvement of students and young members. These ideas were discussed by the Board and, in some cases, have contributed to the task of other ISSMGE parts.

1.2 Young ELGIP

Since 2002, major European research organizations in GE – each with a strong national position and working both in research, development and innovation – have joined forces in the European Large Geo-engineering Institutes Platform (ELGIP, www.elgip.net). One of the aims is to support the interest of young professionals. To that end, a network of young professionals (Young ELGIP, in short YELGIP) was established in 2005, to stimulate the development of mutual understanding between ELGIP members and strengthen the European network. In order to reach their goals, YELGIP meets twice a year and, regularly, they organize thematic workshops: Soil Improvement (2006), Innovative Geo-monitoring (2007) and Landslides (2011).

Future Position of Geotechnical Engineering – From the European Perspective (Continued)

1.3 ECTP; EU Construction Sector and FP7

European Technology Platforms (ETPs) provide an industry-led framework for European stakeholders to define visions, research priorities and action plans on a number of technological areas where achieving EU growth, sustainability and competitiveness requires major research and technological advances in medium to long term.

The European Commission that supported their creation is engaged in ETP's structural dialogues. ETP deliverables constitute valuable input to define the Commission's research funding schemes. Since 2007 the 7th Framework Programme (http://cordis.europa.eu/fp7/) (FP7) has been the main funding scheme for demonstration and European research cooperation, both part of the ISSMGE aims. Its successor Horizon 2020 will be launched in 2013. It is up to all stakeholders (including the ISSMGE) to which extent this funding scheme is used for demonstrating the added value of the GE profession. To create these opportunities in Brussels, knowing how to connect foreseen GE developments to EU policy targets is essential. Currently, (research) policy of the European Commission follows the Europe 2020 Strategy (http://ec.europa.eu/europe2020/).

The ETP for the European Construction Sector (ECTP, www.ectp.org), also representing a major part of GE's research interest in Brussels, is constantly analyzing the major challenges this sector faces in terms of society, sustainability and technological development. Within the ECTP a significant part of the work takes place in discussion groups called Focus Areas (FA) several of which are relevant to GE: FA Underground Construction, FA Networks and FA Quality of Life.

2 FUTURE OF GEOTECHNICAL ENGINEERING

Considering the broad scope of GE, it is not an easy task to briefly present a common view on its future. This scope captures both academics and practitioners, and encompasses state-of-the-art expertise as well as traditions of our profession. The fact that many different GE traditions in soil investigation methods, execution procedures, et cetera, suited to the local subsoil conditions exist, and that many different models have been developed, is to a great extent due to large differences in geology. GE is decidedly linked to tradition. In looking ahead, knowledge on the influence of these traditions on daily practice is essential. As the following example illustrates:

2.1 Influence of GE traditions; Eurocode 7

Focusing on Europe, the attempt to harmonize different European GE design traditions has shown that, up to now, European consensus about geotechnical models is very difficult. According to (Schuppener, 2007) Eurocode 7 is an umbrella code, since analytical geotechnical models are given in informative national annexes instead of in the normative text. Moreover, Eurocode 7 contains a number of options, which have to be decided upon by the national standard bodies, such as the three Design Approaches for the verification of geotechnical Ultimate Limit States and the values of the partial factors.

Although Eurocode 7 has not yet led to a complete harmonization of geotechnical design in Europe, it should be considered as a firm step forward. Most importantly, it is (more or less) a common framework in which countries with substantial differences since decades of national geotechnical traditions speak the same language and use a common safety philosophy.

Future Position of Geotechnical Engineering – From the European Perspective (Continued)

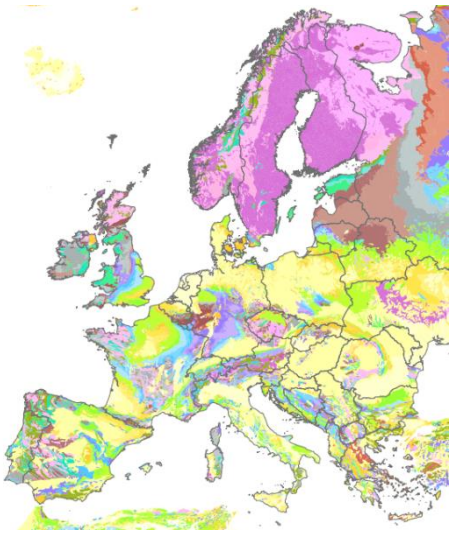

Figure 2.1: Stratigraphic geological map. Continental part of IGME5000 (IMGE5000: The 1:5 Million International Geological Map of Europe and Adjacent Areas, BGR (Hannover)) after Asch, K. (2005)

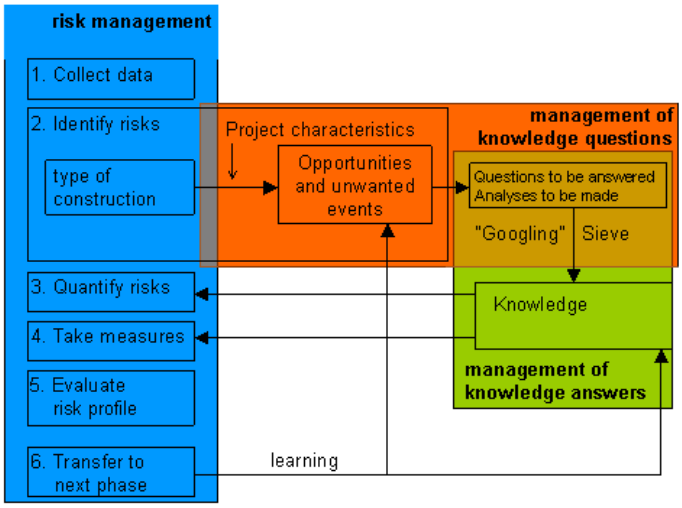

Figure 2.2: ELGIP's EuroGeosystems framework

For the European construction sector, uniform safety levels are of great importance. This originates from its complex and fragmented structure, in which many (small) players have to operate in a heavily regulated environment and have to take account of the 'general interest', i.e. in comfort, health and safety. As a consequence, there is an incremental approach to innovation and the sector needs a long overall clock-time (average 10 years) to come from research to an innovative, marketable and approved product, process or method in the benefit of the end user.

Future GE harmonization efforts could be facilitated by a collective European geotechnical design environment, in which stakeholders can use their common geotechnical language. To encourage international cooperation, this design environment should focus on actual geological differences instead of 'virtual' national borders in geotechnical practice, see Figure 2.1.

2.2 *INSPIRATION: EGS design environment*

Besides supporting the interest of young professionals, ELGIP aims to lead the transition of the GE sector by facilitating the new generation of geo-engineers with the EuroGeoSystems (EGS) framework. Possibly, a framework for facilitating further Eurocode 7 harmonization.

The anticipated EGS framework should aim to clarify the added value of GE. Thus, better explain the soil-related uncertainties and the potential of GE in the context of societal values. Based on risk management thinking EGS should guide its users to ask the right 'knowledge questions' and subsequently give the right 'knowledge answers', see Figure 2.2. This knowledge management system (connected to state-of-the-art methods and systems) could leads to best practices and the expertise required, offer a link between Centers of Excellence and provides a platform for support and quality assessment in construction, maintenance and policy processes, and so combines the best of many worlds.

Future Position of Geotechnical Engineering – From the European Perspective (Continued)

Besides such inspiring ideas on facilitating further Eurocode 7 harmonization, major stakeholders like the industry (e.g. EFFC, ECTP), the European Committee for Standardization (e.g. CEN/TC 250 on Structural Eurocodes, CEN/TC 341 on Geotechnical investigation and testing and CEN TC 288 on Execution of special geotechnical works) and European members of the ISSMGE should take a role in this process.

3 GEOTECHNICAL CHALLENGES

3.1 DEMOGRAPHIC AGEING

Demographic ageing, i.e. the increase in the proportion of elder people, is one of the main challenges that the EU will have to face in the years to come, see (Commission of the European Communities, 2006). A predicted consequence of not taking any measures (e.g. raising the retirement age) would be, that the working-age population (15 to 64) will dramatically fall from about 60% in 2010 to just over 50% in 2060, see Figure 3.1. Particularly, due to an increase of the share of those aged 80 and above: at present around 4% of the total population, but rising to 12% in 2060, see (European Commission, 2011).

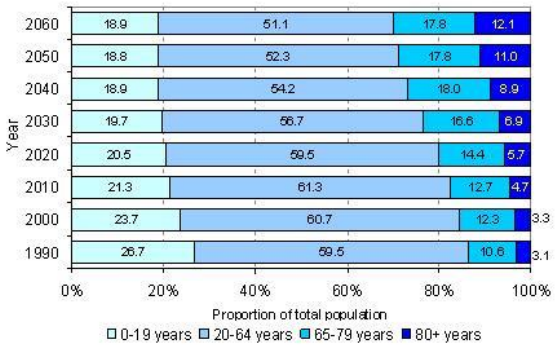

Figure 3.1 Division of EU population per age group, European Commission (2010)

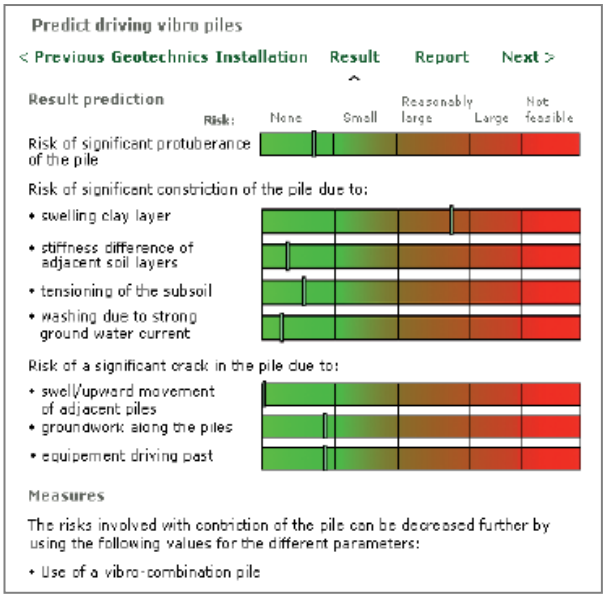

Figure 3.2. GeoBrain prediction model for driving vibro piles

Regarding the future of GE, demographic ageing has influence on the way the profession will need to organize its internal knowledge transfer, and on the emphasis of further GE developments in the coming decades.

3.1.1 Consequence GE knowledge transfer

With the expected decrease in the European labor force in mind, scientific disciplines should feel a proper sense of urgency with regard to attracting young people and, more importantly, efficient transfer of knowledge from experienced workers to young colleagues. The importance of knowledge transfer is particulary true for the GE profession, in which empirical laws still have significant influence on daily practice, and on enabling efficient knowledge transfer to prevent a 'Geotechnical Experience Drain'.

Future Position of Geotechnical Engineering – From the European Perspective (Continued)

Attracting young people to the field of GE in competition with other disciplines will be tough. Therefore, the GE profession should have a clear focus on inspiring young colleagues, i.e. inspiration from projects and initiatives that leads to involvement and commitment of young people (in the ISSMGE).

3.1.2 INSPIRATION: The GeoBrain concept

Until recently, most practical knowledge about several geotechnical aspects of the construction process was locked up in the brains of individual specialists working for contracting companies, engineering consultancies and research institutes. The GeoBrain concept aims to provide engineers centralized and systematic access to this expert knowledge, through which every engineer can make better decisions and hence avoid problems during implementation.

More and more designers are using the Internet every day to tap into this 'collective brain'. Apart from the experience database, the Foundations module also has a prediction model (see Figure 3.2) that can be used to assess feasibility and damage risks.

Validation of the GeoBrain model for sheet piling showed that this 'foundation brain' enables designers to predict risks more accurately than using the current formulae in CUR guidelines (commonly used in the Netherlands).

GeoBrain reduces costs and improves quality. The result is a unique, interactive database that bridges the gap between theory and practice.

3.1.3 Consequence GE development

A substantial increase in the proportion of elder people will lead to an increased pressure on public spending related to pensions, health and services for the elderly. In 2006 it was projected that between 2004 and 2050 age-related public spending will represent an increase of 10% in public spending, see (Commission of the European Communities, 2006). Subsequently, the required increase in public spending will decrease future budgets available for knowledge development. Therefore, like any other profession, GE will be compelled to shift its emphasis in research, development and innovation activities more to cost-effectiveness.

While the uncertainties in the properties of our profession's building material – soil – are much greater than those in other parts of Civil Engineering, further developments in risk management could provide the field of GE a vital step forward in cost-effectiveness.

3.1.4 INSPIRATION: Knowledge management

Knowledge management is an essential component in the implementation of risk management. (Van Tol, 2007) clearly illustrated this aspect in his evaluation of the construction of building pits. Van Tol's analysis of undesirable events (leading to unforeseen costs, not by definition damage) recorded in 40 cases in the Netherlands brought forward that in only 7 cases (18%) the knowledge required for predicting the event was not available. Moreover, in 3 of those 7 cases (8%) the unknown event could have been observed in time by using proper monitoring.

3.1.5 Related ISSMGE activities

Apart from the fact that all TCs aim to disseminate GE knowledge and practice, ISSMGE has developed several specific activities to address the challenges that demographic ageing brings and show the impact

Future Position of Geotechnical Engineering – From the European Perspective (Continued)

that GE can have in solving its negative effects: TC302 (Forensic Geotechnical Engineering), TC304 (Engineering Practice of Risk Assessment and Management) and TC306 (Geo-Engineering Education).

3.2 URBANIZATION

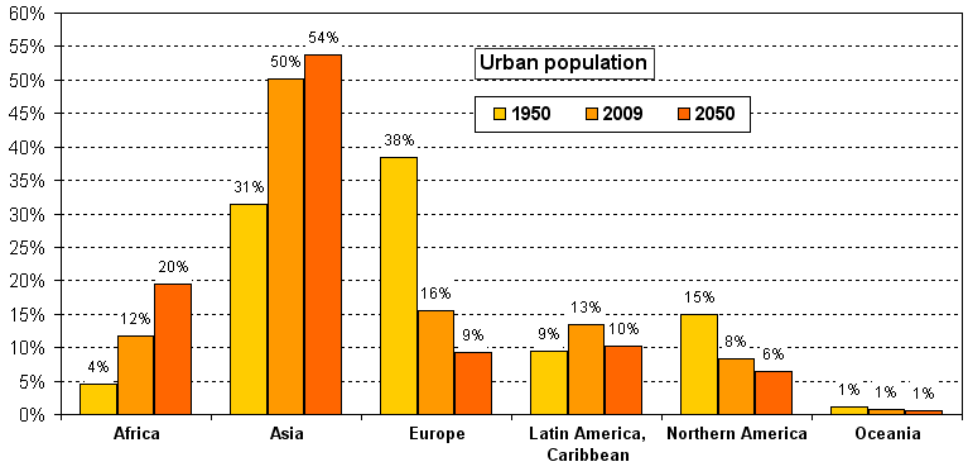

Figure 3.3: Development urban population by major area, (United Nations, 2010)

Table 3.1: Top list of megacities in the world in 2025, including ranking in 2007 (United Nations, 2008)

	Megacity	Continent	People [1)]
1.	Tokyo (1)	Asia	36.4
2.	Mumbai (Bombay) (4)	Asia	26.4
3.	Delhi (6)	Asia	22.5
4.	Dhaka (9)	Asia	22.0
5.	São Paulo (5)	S. America	21.4
6.	Mexico City (3)	N. America	21.0
7.	New York-Newark (2)	N. America	20.6
8.	Kolkata (Calcutta) (8)	Asia	20.6
9.	Shanghai (7)	Asia	19.4
10.	Karachi (12)	Asia	19.0
20.	Istanbul (19)	Europe	12.1
23.	Moscow (18)	Europe	10.5
	1) amount in million people		

According to the United Nations' definition, urbanization is the movement of people from rural to urban areas. At this moment, the world population is currently slightly more urban than rural, since the level of world urbanization crossed the 50% mark in 2009, see (United Nations, 2010). This process is expected to proceed. Figure 3.3 shows that by mid-century, most of the urban population of the world will be concentrated in Asia (54%) and Africa (20%).

Urbanization leads to an increase in so-called megacities, i.e. metropolitan area with a total population in excess of 10 million people. Table 3.1 suggests that the biggest megacities are located outside Europe.

Future Position of Geotechnical Engineering – From the European Perspective (Continued)

3.2.1 *Consequences of urbanization*

From an economical point of view, urbanization is not a negative trend. It occurs naturally when reducing time and expense in commuting and transportation while improving opportunities for jobs, education, housing, and transportation. Historically, productive activities in industry and services cluster in cities. The importance of megacities and other urban areas is further underlined by the estimate from the UN that 80% of the world's GDP is generated in urban areas, see (United Nations, 2010).

However, from an environmental point a view, urbanization can have negative effects. Urban Heat Island effects have a significant impact on citizen's health and the surroundings. Brownfield sites within urban areas require proper remediation before re-use. Furthermore, outward spreading of urban areas often implies inefficient and unsustainable land-use patterns, in which people are highly dependant on their car for transportation, i.e. (sub)urban sprawl. Subsequently, this causes traffic congestion and air pollution in urban areas.

In the future, underground construction will keep improving its ability to contribute in a sustainable way to cost-effective solutions for the negative effects of urbanization. And thereby support more efficient land-use concepts, such as the Compact City and Smart Growth. In many Europe cities (such as the Crossrail route in London) examples of this contribution can be found. An inspiring example of underground construction contributing to the urban quality of life can be found on the other side of the Atlantic Ocean.

3.2.2 *INSPIRATION: Boston's Big Dig (http://www.massdot.state.ma.us/highway/bigdig)*

Recognized as the largest, most complex, and technologically challenging highway project in the history of the United States, the Central Artery/Tunnel Project significantly reduced traffic congestion and improved mobility in Boston, one of America's oldest and most congested major cities. In addition, it helped improving the environment, and established the groundwork for continued economic growth for Massachusetts and all of New England.

Figure 3.4: Boston after completion of The Big Dig (http://www.massdot.state.ma.us/highway/bigdig)

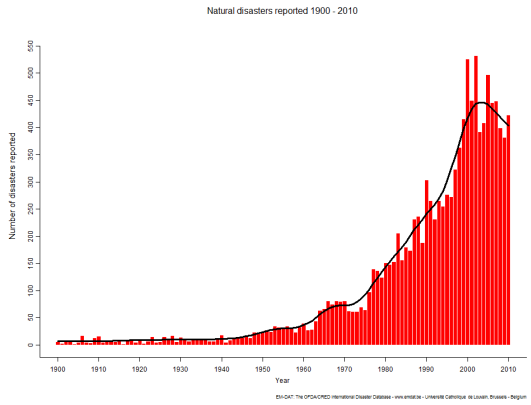

Figure 3.5: Number of reported natural disasters, worlds wide, between 1900-2010 (www.emdat.be)

Future Position of Geotechnical Engineering – From the European Perspective (Continued)

The Project replaced Boston's deteriorating six-lane elevated Central Artery (I-93) with an eight-to-ten lane state-of-the-art underground highway, two new bridges over the Charles River, extended I-90 to Boston's Logan International Airport, and Route 1A, created more than 300 acres of open land and reconnected downtown Boston to the waterfront, see Figure 3.4.

3.2.3 ***Related ISSMGE activities***

ISSMGE has developed several activities to address the challenges that urbanization brings and show the impact that GE can have in solving its negative effects. First of all, TC305 (Geotechnical Infrastructure for Megacities and New Capitals) was established in 2010. In connection to this initiative, the Conference "Geotechnical challenges in Megacities" was organized from 7-10 June 2010 in Moscow.

3.3 ***NATURAL HAZARDS***

A natural hazard is an unexpected or uncontrollable natural event of unusual intensity that will have a negative effect on people or the environment. Further distinction with regard to GE-related natural hazards can be made between geological (e.g. drought, floods, tsunamis, mass movement (landslides, avalanches), earthquakes and volcanic eruptions) and atmospheric hazards (e.g. climate change, storms and heat wave). It is important to understand that atmospheric hazards can trigger geological hazards, and vice versa.

Table 3.2: Top list of natural hazards in Europe, 1990-2010 (www.emdat.be)

	Country	Hazard	Date	Affected people[1)]
1.	Spain	Drought	Sep-1990	6.00
2.	France	Storm	Dec-1999	3.40
3.	Albania	Drought	1989	3.20
4.	Moldova	Flood	Nov-2000	2.60
5.	Ukraine	Flood	Jun-1995	1.70
6.	Russia	Drought	2003	1.00
7.	Lithuania	Storm	Jan-1993	0.78
8.	Russia	Flood	Sep-1994	0.77
9.	France	Storm	Feb-2010	0.50
10.	Albania	Storm	Jan-2005	0.40
	USSR	Earthquake	Apr-1991	0.25
	Italy	Volcano	Dec-1991	0.007
	Italy	Landslide	May-1998	0.004

amount in million people

With this in mind, one may recognize a trend in the development in time of the number of reported disasters caused by natural hazards in the past century (see Figure 3.5). Climate change has clearly led to an increase in the frequency and magnitude of extreme meteorological events. Furthermore, the growing vulnerability to disasters can partly be ascribed to an increasingly intensive land use, industrial development, urban expansion and infrastructure construction (ISDR, Global Trends Report, 2007).

Future Position of Geotechnical Engineering – From the European Perspective (Continued)

To put the extent of a disaster caused by each of these natural hazards in perspective, Table 3.2 shows a top list of the largest disasters in the past 20 years in Europe. This shows that in Europe (just as in the rest of the world, see www.emdat.be), droughts and floods negatively affect the most people.

3.3.1 INSPIRATION: European FP7 projects

The European Commission funds many joint research initiatives on natural hazards in FP7. This research considers a robust and comprehensive framework that supports individual hazards and multi-hazards research and the integration of the risk-reduction chain. Climate change and its effects are also specifically addressed in the Europe 2020 Strategy.

The need to address disasters on a European level are manifold. Most obviously, disasters do not respect borders and may have a transnational dimension. And although EU Member States already have policies aimed at disaster prevention, actions on a European level can complement national actions and focus on areas where a common approach is more effective than separate national approaches, see (European Union, 2009). Some examples of relevant FP7 projects:

- **XEROCHORE (**http://www.feem-project.net/xerochore/**):**
- *An exercise to assess research needs and policy choices in areas of Drought;*
- **MICORE (**https://www.micore.eu/**)**: *Morphological impacts and coastal risks induced by extreme storm events;*
- **FLOODPROBE (**http://www.floodprobe.eu/**):** *Technologies for the cost-effective flood protection of the built environment;*
- **SAFELAND (**http://www.safeland-fp7.eu/**)**: *Living with landslide risk in Europe: Assessment, effects of global change, and risk management strategies*.

3.3.2 Related ISSMGE activities

ISSMGE has (re)established several TCs that address the challenges that natural hazards bring and show the impact that GE can have in solving their negative effects: TC201 (Geotechnical aspects of dykes and levees, shore protection and land reclamation), TC203 (Earthquake geotechnical engineering and associated problems), TC208 (Slope stability in engineering practice), TC209 (Offshore geotechnics), TC210 (Dams and embankments), TC303 (Coastal and river disaster mitigation and rehabilitation) and TC306 (Dealing with sea level changes and subsidence).

3.4 RESOURCE EFFICIENCY

Mankind depends on natural resources for survival. They underpin the functioning of the global economy and our quality of life. This includes raw materials such as fuels minerals and metals but also food, soil, water, air, biomass and ecosystems, see (European Union, 2011). However, the supply of resources is limited and our natural resource base is becoming exhausted. Growing global demand is increasing pressure on the environment, and competition for many resources is increasing. Logically, the need for improving the resource efficiency in Europe is part of the Europe 2020 Strategy.
Fresh water is a well-known example of a fundamental resource, the supply of which is limited. However, the depletion of a limited exhaustible fossil resource like phosphorus is much less known, but at least just as catastrophic. Its depletion threatens the long term nutrition of al humans (and plants and animals) in future, since this element is part of life supporting molecules in organisms.

Future Position of Geotechnical Engineering – From the European Perspective (Continued)

According to (Rijnaarts, 2010), predictions indicate that depletion of easy recoverable phosphorus will be completed within decades to a century, if we continue to flush the quantities to soil and water through our sewers.
Resource efficiency means using the Earth's limited resources in a sustainable manner. Using resources more efficiently will be the key in making progress to deal with climate change. Furthermore, this increases resource security.

3.4.1 INSPIRATION: Nile Basin

Recently, I was involved in the set up of a FP7 proposal on water harvesting technologies in Africa. Although in the end the proposal proved not to be successful, it explicitly illustrated the impact that GE can have on society.
Africa's water resources are scattered throughout the continent. In the desert almost no water falls, while the western part of the continent near the equator receives as much as 4,000 millimeters annually. However, the greatest cause of Africa's lack of water perhaps is that the continent cannot effectively utilize its resources. Though approximately 4 trillion cubic meters of water is available every year, only about 4% of that is used (ThinkQuest 1999, A Global Challenge).


Figure 3.6: Revival of Roman catchment systems

Socio-economic development in the Nile Basin countries depend largely on the basin's water resources. In 1999 the Nile riparian countries took a historic step in establishing the Nile Basin Initiative (NBI, www.nilebasin.org). Based on a shared vision, the NBI provides an institutional multi-national mechanism and a set up of policy guidelines to provide basin-wide cooperation on water resource management. The foreseen project would have been complementary to the NBI. It envisaged the introduction of new low-cost water harvesting technologies (using local experience and materials), and existing technologies proven elsewhere. For example, the revival of Roman interceptor systems for capturing rain runoff and infiltration (see Figure 3.6).

The need for a complementary project arises from the effects of climate change and global changes like population growth, migration, land use, et cetera. These will inevitably increase pressures on the natural resources of the Nile Basin. Its effects will have direct impact on water availability and traditional ways of water harvesting techniques as well as available quantities.

Future Position of Geotechnical Engineering – From the European Perspective (Continued)

3.4.2 Related ISSMGE activities

ISSMGE has established TC215 (Environmental Geotechnics) to address part of the challenges that resource efficiently brings and show the impact that GE can have in solving its negative effects.

4 CONCLUSION

In this paper, the future position of GE is discussed through considering the relevance of four significant societal challenges for the GE profession: demographic ageing, urbanization, natural hazards and resource efficiency. It is demonstrated that the field of GE can have significant contributions to all four of these global challenges.

The future position of GE in Europe significantly depends on how the profession deals with the consequences of demographic ageing. Young people should be attracted, to be able to timely transfer the GE knowledge in which empirical laws still have significant influence on daily practice. While the European labour force is likely to decrease, the regional GE profession shall have to compete with other disciplines in attracting young people. Competition is tough.

Therefore, the GE profession (and ISSMGE) should have a proper focus on inspiring students and young professionals, by explaining to them the added value that GE has in many relevant societal challenges that the world has to face, now and in the future. That will require honest communication with regard to the uncertainties in the properties of our profession's building material: soil. Subsequently, the involvement of young people shall lead to vivid commitment, which secures a bright future for GE.

Nowadays, convincing societies of the significance of a profession's application asks for more than only producing scientific proof within one's own discipline. This certainly applies to GE, which has to deal with relatively high degrees of uncertainty. The significance of the field of GE shall increase if interfaces with relevant scientific disciplines (e.g. mathematics, physics, chemistry) are further strengthened, and disciplines like ICT (e.g. knowledge management, serious gaming) and social sciences are further explored.

To conclude, the developments mentioned above highlight the importance of involving young geotechnicians. Recent and future generations have an inherent affinity with modern technologies and have already been trained to work on a multi-disciplinary level. Therefore, young professionals should have a more prominent role in present and future ISSMGE activities.

Future Position of Geotechnical Engineering – From the European Perspective (Continued)

REFERENCES

[1] Schuppener (2007) "Eurocode 7: Geotechnical design – Part 1: General rules, its implementation in the European Member states", 14th European Conference on Soil Mechanics and Geotechnical Engineering, Madrid, 2007;

[2] Commission of the European Communities (2006) "The demographic future of Europe – from challenge to opportunity", COM(2006) 571 final, 12.10.2006;

[3] European Commission (2011) "A resource-efficient Europe – Flagship initiative under the European 2020 Strategy", COM(2011)21, 26.01.2011;

[4] European Commission (2010) Directorate-General for Employment, Social Affairs and Inclusion, "Demography Report 2010: Older, more numerous and diverse Europeans", ISSN 1831-9440, March 2011;

[5] European Commission (2011) "Third Demography Report: population is becoming older and more diverse", press release MEMO/11/209, 01.04.2011;

[6] European Union (2009) "A Community approach on the prevention of natural and man-made disasters", SEC(2009)202/203, 23.02.2009;

[7] I. Vaníček (2011) "Present day position of Geotechnical Engineering", ECSMGE Athens 2011, 12.09.2011;

[8] A.F. Van Tol (2007) "Schadegevallen bij bouwputten (Undesirable events during construction of building pits)", Cement 2007/6, 01.06.2007;

[9] United Nations (2010) Department of Economic and Social Affairs, "World Urbanization Prospects - the 2009 Revision Highlights", March 2010;

[10] United Nations (2008) Population Division, "An overview of urbanization, internal migration, population distribution and development in the world", 23.01.2008;

[11] H.H.M. Rijnaarts (2010) "The Olympic Game of Eco-Innovation and Technology", Inaugural lecture at Wageningen University, 08.04.2010;

REFLECTIONS ON ISSMGE PAST

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ABSTRACT
This presentation summarizes the evolution of ISSMGEE, from its first International Conference with 206 delegates to its current status with nearly 19,000 members. Three phases are defined: Infancy, followed by Adolescence and Maturity. Personal reflections accompany the discussion of each phase. On this 75th Anniversary of ISSMGE, the Society can look back on its achievements with considerable pride.

RÉSUMÉ
Esta presentación resume la evolución del ISSMGE, desde la primera Conferencia Internacional con 206 delegados, hasta su situación actual con casi 19,000 miembros. Tres fases son definidas: Infancia, seguida de Adolescencia y Madurez. La discusión de cada fase esta acompañada por reflexiones personales. En este 75 aniversario del ISSMGE, la Sociedad puede mirar atrás y contemplar sus logros con orgullo.

1 INTRODUCTION

The web site of our Society provides a brief summary of its history and its current status. It records that 206 delegates attended the First International Conference on Soil Mechanics and Foundation Engineering held at Harvard in 1936. The Society now has 88 Member Societies worldwide representing nearly 19,000 individual members and operates 30 technical committees working on a wide range of topics. Its aim is, and has always been, the promotion of international cooperation amongst engineers and scientists for the advancement and dissemination of knowledge in the field of geotechnics, and its engineering and environmental applications.

On this occasion, we celebrate the 75th anniversary of the Society which is a matter of very considerable achievement. All of our membership has benefitted from the remarkable success of this organization and it is appropriate to take this opportunity to reflect on our history and recognize the contributions of those who have guided it through its continued success.

Table 1 lists the Presidents of ISSMGE and this chronology provides a useful reference basis for identifying key phases in the evolution of our Society. No less significant are those who have served the Society as Secretary/Secretary General and they are listed in Table 2.

My own involvement with the Society began in 1957 when I was a graduate student at Imperial College and attended the 4th International Conference. This was the last that Terzaghi attended and marked a significant new phase in the maturing of the Society. My sense of the phases are:

- 1936-1957 Infancy
- 1957-1977 Adolescence
- 1977-Present day Maturity

Reflections and reminiscences follow below under these headings.

REFLECTIONS ON ISSMGE PAST (Continued)

Table 1. ISSMGE Presidents

Years of Service	ISSMGE President	Phase
1936–1957	K. Terzaghi (Austria, USA)	Infancy
1957–1961	A.W. Skempton (UK)	Adolescence
1961–1965	A. Casagrande (USA, Austria)	Adolescence
1965–1969	L. Bjerrum (Norway)	Adolescence
1969–1973	R.B. Peck (USA)	Adolescence
1973–1977	J. Kerisel (France)	Adolescence
1977–1981	M. Fukuoka (Japan)	Maturity
1981–1985	V.F.B. de Mello (Brazil)	Maturity
1985–1989	B.B. Broms (Singapore)	Maturity
1989–1994	N.R. Morgenstern (Canada)	Maturity
1994–1997	M. Jamiolkowski (Italy)	Maturity
1997–2001	K. Ihihara (Japan)	Maturity
2001–2005	W. Van Impe (Belgium)	Maturity
2005–2009	P.S. Sêco e Pinto (Portugal)	Maturity
2009–2013	J.-L. Briaud (USA)	Maturity

Table 2. ISSMGE Secretaries/Secretaries General

Years of Service	Secretary/Secretaries General
1936 – 1945?	A. Casagrande (USA)
1948	T.K. Huizinga (Netherlands)
	D. Taylor (USA)
1957 – 1961	A. Banister (UK)
1961 – 1965	A. McDonald (UK)
1965 – 1981	J.K.T.L. Nash (UK)
1981	J.B. Burland (UK)
1981 – 1999	R.H.G. Parry (UK)
1999 – 2013	R.N. Taylor (UK)

2 INFANCY

The actual father of our Society was Arthur Casagrande who conceived of and organized the First International Conference on Soil Mechanics and Foundation Engineering with Karl Terzaghi as President and Daniel Moran as Vice-President. This perceptive contribution went a long way to establish Casagrande's international reputation and the Soil Mechanics program at Harvard University as a destination of choice. Richard Goodman (1999), in his intimate memoir on Terzaghi, provides some details on the interchange between Casagrande and Terzaghi at the time. At first, Terzaghi was fearful that the subject was not adequately mature to warrant an international congress and worried that dissatisfaction with the congress would be retrograde for the development of the subject. Ultimately, he

REFLECTIONS ON ISSMGE PAST (Continued)

accepted the concept with enthusiasm and Goodman records his close interaction with Casagrande working on the details of the Conference.

Finally the Conference began on June 19, 1936 with an event at Rockefeller Centre in New York, prior to continuing at Harvard. The Conference was a great success with 206 delegates from twenty countries. A resolution adopted at the First Conference expressed that the Second Conference be called to meet at a time and place to be selected by the President of the International Conference (Karl Terzaghi), with the advice of the International Committee. This resulted in preparations for the Second International Conference to be convened in the Netherlands in 1940 in honour of the opening of the Maas tunnel at Rotterdam. However, all of these plans were interrupted by the Second World War.

Soon after the war, and notwithstanding their straightened circumstances, the Dutch regained the initiative to plan for the next Second International Conference on Soil Mechanics and Foundation Engineering in Rotterdam in 1948.

This must have been a remarkable event. There was an explosion of material published, culminating in six volumes. Planning was based on 300 participants but, ultimately, there were 596, together with representatives of 23 National Committees. It is of interest to note that in his Opening Address, Terzaghi (1948) observed that the boundary between Soil Mechanics and Engineering Geology appeared to be artificial and "that the time may come when it will be appropriate to combine soil mechanics and engineering geology into one unit, under a name such as "geotechnology". These issues are still with us! This address was also visionary in emphasizing the regional variations in soils requiring regional variations in practice. Distinctions were made between the cohesionless and soft organic clay soils of the Netherlands, the varved clays of Sweden and Northern North America and the residual soils of Brazil, thereby presaging the rapid expansion of the subject and our Society on a regional basis.

The formalization of the Society actually occurred at the Second Conference. On June 22, representatives of 23 National Committees assembled to discuss proposed statutes with Karl Terzaghi as President and Chair. A comprehensive record of discussion exists in Volume VI of the Conference Proceedings. The statutes were presented to the Conference on June 24 and approved with modifications arising from the discussions. These original statutes are included as Appendix A. The major activities of the Society centered around the assembly of Annual Reports from National Committees and the organization of the next Congress.

In 1951, the Executive Committee of the Society decided to hold the Third Conference in Switzerland in 1953 and with the support of the Swiss National Committee it was convened in Zurich in August of that year. This Conference attracted about 700 participants and the membership of the International Society had grown to 27 National Societies. A comprehensive report on the Executive Committee meeting appears in Volume III of the Proceedings of the Third International Conference on Soil Mechanics and Foundation Engineering. The revised statutes are also presented. The value of creating permanent Research Committees had now been identified as a valuable activity for the International Society.
The Fourth International Conference was convened in London, in 1957. At that time National Society membership was up to 30, representing an individual membership of 2525. Additional countries were in the process of joining. As before, members of the Executive Committee meetings are published in Volume III of the Proceedings of the Fourth International Conference on Soil Mechanics together with revised statutes reflecting discussions at the meeting. It is of interest to note that the organization of technical

REFLECTIONS ON ISSMGE PAST (Continued)

sub-committees now appeared within the mandate of the International Society. The following sub-committees were appointed:

- Classification of Geotechnical Literature
- Notations and Symbols for Use in Soil Mechanics
- Methods of Static and Dynamic Penetration Tests
- Undisturbed Sampling

At the time of the 4th International Conference in 1957, Terzaghi was still President of the Society, but was approaching the age of 74 years. It was his view, and that of others, that it was time to elect a successor. Arthur Casagrande appeared to be the logical successor in the minds of many, but he declined the nomination. Casagrande held the view that the President ought to be elected from the continent in which the Conference will be held. This view prevailed and Alex Skempton (UK) was elected President by acclamation.

This marked the end of the period of Infancy of the Society.

3 ADOLESCENCE

WIKIPEDIA describes adolescence as "usually accompanied by an increased independence allowed by the parents or legal guardians and less supervision…..". The Adolescent period of the Society began with Skempton's presidency.

In the 1950's the value of Regional Conferences became recognized. The first was the Australian Conference held in Australia in 1952. Other regions followed resulting in a quadrennial pattern for Regional Conferences set off by two years from the quadrennial sequence of the International Conferences. This 14th Pan-American Conference reflects regionally based activities of the Society. In addition, nationally-based technical activities proliferated. For example, the 64th annual Canadian Geotechnical Conference is being held in conjunction with this Pan-American Conference.

The value of convening conferences on subjects of special and current interest also became recognized. The European Conference on the Stability of Earth Slopes in 1954 and the Brussels Conference on Earth Pressure in 1958 established the technical value of such meetings. Peck (1985) has chronicled the first quarter-century of the Society and observed by 1961 "The growth of interest in soil mechanics has indeed been explosive".

In my view, the period of Adolescence ended in 1977 with the convening of the International Conference under the presidency of Masami Fukuoka. The appointment in 1965 of Kevin Nash as Secretary-General was transformative for the Society. It brought a knowledgeable and caring person to the administrative helm of the Society and, without this change, it is unlikely that the Society could have matured as it did.
One excellent outcome of this strong administrative guidance was the new constitution and by-laws published in the Proceedings of the 7th Conference in 1969. They guided the organizational structure of the Society for many years and stand in fascinating contrast with the first Statutes reproduced here in Appendix A.

A limitation of the Society during the period of Adolescence was its failure to recognize the emergence of both Rock Mechanics and Engineering Geology as disciplines that required their own societal structure. This arose notwithstanding the recognition of Terzaghi and subsequent Presidents of the Society of the

REFLECTIONS ON ISSMGE PAST (Continued)

need to embrace both in Geotechnical Engineering. Morgenstern (2000) recounts the historical evolution of the sister societies and their specialized perspectives.

4 MATURITY

My dictionary defines "mature" as "complete in natural development; with fully developed powers of body and mind".

The transformation to Maturity began with the award of the International Conference to Tokyo in 1977 and the subsequent election of Masami Fukuoka to President at that time. It was, to a large degree, completed by the next two Presidents, Victor De Mello and Bengt Broms. In my acceptance speech of the Presidency (Morgenstern, 1989), I commented on the evolution of the Society as follows:

> "With Past President Fukuoka the responsibilities for guiding our Society left its Euro/N. American roots. The fledgling had grown up. The bird was ready to leave its nest. The Society began to operate in a truly international manner.
>
> With Past President de Mello we were challenged to raise our ambitions, to increase our level of activities and to open and regularize our organizational systems. This was a watershed experience for the Society after which there was no turning back.
>
> With Past President Broms, we were directed to become a more caring Society. The Model Library Project and the Young Engineers Conference, concepts initiated by Dr. Broms, are two examples that illustrate our direction."

Society management and ambitions during its Adolescent phase were primarily custodial. With the beginning of the Mature phase the desire to do more technically is seen to emerge and the potential to utilize Technical Committees in a more pro-active manner can be discerned. An early example was the establishment of a Technical Committee on Landslides with, among other things, a mandate to convene an International Symposium on Landslides every four years. This was a perceptive and timely act of leadership whose success is beyond doubt. However, it began a process of weakening the content of the International Conference in its traditional mold. In the following years much of the technical leadership of the Society was driven by the work of these Committees with spectacular results. The publications on Environmental Geotechnics, Geotechnical Earthquake Engineering and others provide compelling examples.

In my own Presidential Address to the XIII – ICSMFE Conference in New Delhi (Morgenstern, 1994), I was able to express my satisfaction with the growing capacity of the Society to meet the needs of its membership and reflect on efforts taken and needed in the future to:

- Be financially secure
- Provide technical leadership (the Technical Committee complex had become remarkably productive)
- Collaborate (the need for collaboration with both ISRM and IAEG was emphasized)
- Communicate
- Care for our members

REFLECTIONS ON ISSMGE PAST (Continued)

The Society has continued to attend to these and other matters under the effective leadership of subsequent Presidents.

5 ISSMFE-ISSMGE

The limitations associated wit the traditional name of the Society had long been an issue of contention within the Society and proposals to change it had been deflected on a number of occasions. Agreement to change the name to ISSMGE was finally reached in 1997 when Michele Jamiolkowski was President. The discussions leading to this agreement reflected the widespread view that ISSMFE no longer reflected the breadth of activity of its membership but there was a need to avoid a clash with ISRM and IAEG. The resulting change was accepted as a necessary step in the right direction, notwithstanding some criticism from Presidents of ISRM and IAEG.

At the same time, following a suggestion of Jamiolkowski, there was agreement that the three Sister Societies should jointly sponsor a major conference in the year 2000. This culminated in Geo Eng 2000, held in Melbourne, which was an enormous success. My keynote address to the Conference traced the development of the three sister societies and spoke to the value of more formal collaboration (Morgenstern, 2000). This has yet to be achieved in a meaningful manner, although the increased evolution of National Societies to be umbrella organizations, and the increased complexity of the technical issues of our times, which transcends simple discipline boundaries, emphasize the need to continue to address the challenge.

6 CONCLUDING REMARKS

We have much to be proud of as we celebrate the success of ISSMGE, both at the technical and the operational level. I wish it continued success as it continues to evolve.

REFERENCES

Goodman, R.E., 1999. Karl Terzaghi: The Engineer As Artist. ASCE Press, Reston, Virginia.

Morgenstern, N.R., 1989. Address to closing ceremony. Proceedings 12th International Conference on Soil Mechanics and Foundation Engineering, Vol. 5, p. 2789-2790, Rio de Janeiro, Balkema.

Morgenstern, N.R., 1994. Presidential address. Proceedings 13th International Conference on Soil Mechanics and Foundation Engineering, Vol. 6, p. 7-9, New Delhi, Oxford and IBH Publishing Co. Ltd.

Morgenstern, N.R., 2000. Common ground. Proceedings GEO-ENG, Vol. 1, p. 1-20, Melbourne.

Peck, R.B., 1985. The last sixty years. Proceedings 11th International Conference on Soil Mechanics and Foundation Engineering, Golden Jubilee Volume, p. 123-136.

REFLECTIONS ON ISSMGE PAST (Continued)

APPENDIX A:

INTERNATIONAL SOCIETY OF SOIL MECHANICS
AND FOUNDATION ENGINEERING

STATUTES

I. NAME, AIM, SEAT AND LANGUAGE OF THE SOCIETY.

Art. 1. The name of the Society is the "International Society of Soil Mechanics and Foundation Engineering".

Art. 2. The aim of the Society is to promote International cooperation among scientists and engineers, interchange of knowledge, ideas and the results of research and practical experience in the sphere of Soil Mechanics and its practical applications.

The Society ensures the progress of Soil Mechanics and its practical applications by:
a. holding congresses
b. publishing annual reports containing a review of the contributions to Soil Mechanics which every country has made during the last year.

Art. 3. The Executive Committee determines the seat of the Society, until otherwise determined the seat of the Society shall be at the Harvard University, Cambridge (Mass).

Art. 4. The official languages of the Society are English and French.

II. MEMBERS, NATIONAL COMMITTEES, CONTRIBUTIONS.

Art. 5. The International Society is composed of National Committees. Each National Committee may organize a National Society or affiliate to existing Societies.

Art. 6. Every member of one of the aforementioned national organizations is at the same time a member of the International Society. Membership of the Society may be acquired by any person or Society who is interested in Soil Mechanics or its practical applications, subject to approval by the National Committee.

Art. 7. Annual contributions will be collected by the National Committees only. They should be determined such as to cover the business expenses of the National Committees.

Art. 8. In the last month of every year the Chairman of each National Committee should send in duplicate to the Secretary of the Executive Committee the names, addresses and professional affiliate of all its members. He should also provide the Secretary of the Executive Committee with the Statutes of his national organization in duplicates and he should inform him on any amendments to the Statutes which are made in the course of time.

After all the membership lists have arrived, the Secretary of the Executive Committee will make an estimate of the cost of printing of the membership list of the International Society and inform the Chairman of each National Committee on the price. The Chairman will place an order for the number of copies he desires for his country, accompanied by payment in U.S.A. currency whereupon printing will be started.

III. MANAGEMENT OF THE SOCIETY.

Art. 9. The management of the Society consists of the Executive Committee.

Art. 10. The Executive Committee consists of:
1. The President
2. The Secretary
2. A delegate of each National Committee.

The president of the present Congress will also be president of the Executive Committee.
The Secretary of the Executive Committee will be appointed by the President.
Until this appointment can be made, the functions of the Secretary will be carried on by the Secretary of this Congress.

Art. 11. During the interval between two Congresses the Executive Committee has all the powers of the Congress.

IV. THE ANNUAL REPORTS.

Art. 12. Every member of every National Organization should submit before the end of June of each year to the Chairman of his National Committee a statement of his activities in the field of Soil Mechanics and its applications and a brief abstract of all his publications during the last 12 months. The scope of this statement is left to the discretion of the member.

Art. 13. The National Committee prepares a summary of all the individual statements which have been received. This summary should contain a comprehensive picture of all the activities which have been carried out during the last twelve months in the country represented by the National Committee.
In this summary the material should be divided into sections corresponding to the sections covered by the Proceedings of the Second Congress and each section should be followed by the abstracts of all the papers which belong to this Section.

Art. 14. The Chairman of the National Committee should send before the first of October of each year to the Secretary of the Executive Committee

REFLECTIONS ON ISSMGE PAST (Continued)

100 copies of the annual report of his National Committee. The size of the annual reports shall be the same as that of the Proceedings of this Conference. The Secretary arranges these reports into 100 annual reports each of which contains a complete set of the National reports.
After the reports are assembled into sets the Secretary of the Executive Committee sends at least two sets to the Chairman of each National Committee.

V. THE CONGRESS.

Art. 15. Time and place of the next Congress will be decided by the Executive Committee.

Art. 16. One year before the next Congress the Executive Committee will appoint a general reporter for each one of the 12 sections covered by the annual report. The National Committee to which a general reporter belongs shall appoint one or more assistants to the general reporter. On the basis of the contents of the annual reports and of any additional information which he can secure, each general reporter will prepare a report on the progress which has been made since the last congress in the field covered by his section. The general reports will be assembled in the first volume of the Proceedings of the Congress and every participant of the next Congress will receive a copy of this volume not later than 6 months before the Congress starts. The printing and mailing of the Proceedings will be carried out by the National Committee of the country in which the Congress is to be held.

Art. 17. During the Conference the presentation of the general reports will be followed by discussions. These discussions, together with written discussions, to be presented two months in advance to the General reporter should contain contributions to the subjects covered by the general raports, and the Congress will be ended by the formulation of conclusions to be based on the contents of both the general reports and discussions. The conclusions will be prepared by the general reporter. The discussions together with the conclusions will be published in subsequent volumes of the Proceedings.

Art. 18. These statutes are drawn up in the closing meeting of the Second International Conference on Soil Mechanics and Foundation Engineering at Rotterdam.

Rotterdam June 26th 1948

The President : K. Terzaghi.
The Secretary : T.K. Huizinga.

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REFLECTIONS ON THE PRESENT STATE OF ISSMGE AND GEOTECHNICAL ENGINEERING IN NORTH AMERICA

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ABSTRACT
On the occasion of the 75th anniversary of the International Society for Soil Mechanics and Geotechnical Engineering some reflections on the present state of ISSMGE and Geotechnical Engineering in North America are presented.

RÉSUMÉ
A l'occasion du 75ème anniversaire de la Société Internationale pour la Mécanique des sols et la Géotechnique, on présente quelques réflexions sur l'état actuel de la SIMSG et de la Géotechnique en Amérique du Nord.

RESUMEN
Con motivo del 75avo aniversario de la Sociedad Internacional de Mecánica de Suelos e Ingeniería Geotécnica se presentan algunas reflexiones sobre el estado actual de la SIMSIG y de la Ingeniería Geotécnica en America del Norte.

1 INTRODUCTION

ISSMGE is now a respectable 75 years old lady, with the magic power of renewing herself constantly through the inflow of new young members and the reluctant fading away of old warriors. An anniversary is always a good time for reflection. It is an appropriate occasion to look back to the past but also to assess the present in order to prepare the future.

The author of this short contribution has had the privilege of occupying the position of ISSMGE Vice-President for North-America, for the 2009-2013 period. During this lapse of time, he had the opportunity to appreciate the buoyant energy of the Member Societies of the region and the enthusiasm and creativity of their individual members. This experience inspired him some reflections on the present state of ISSMGE and Geotechnical Engineering in North America.

2 THE NORTH AMERICAN REGION

2.1 Member countries of the region

The North American region of ISSMGE includes only three member countries: Canada, USA and Mexico, a small number when compared to other regions such as South America, Asia and Europe. The individual membership in the ISSMGE represents however close to 20% of the grand total membership (approximately 19,000) of all Member Societies around the globe. It has already been pointed out in the past that the impact of the three votes of the region (out of about 86 countries) in the major issues under consideration on the floor at ISSMGE Council meetings is far from proportionate to the number of individual members and their fee contributions.

REFLECTIONS ON THE PRESENT STATE OF ISSMGE AND GEOTECHNICAL ENGINEERING IN NORTH AMERICA (Continued)

The three member societies of the region are extremely active and have a strong presence and influence in the engineering community and in the society in general in their respective country as well as internationally.

These activities have been performed under the leadership of outstanding engineers that occupied the Presidency or other key positions in their respective Society. It was a privilege to collaborate in particular with the following colleagues: **Canadian Geotechnical Society**: Michel Aubertin, Bryan Watts and Richard Bathurst; **GeoInstitute, ASCE, USA**: Edward Kavazanjian Jr., Larry P. Jedele, Philip G. King, Craig H. Benson and Robert D. Holtz; **Sociedad Mexicana de Ingeniería Geotécnica**: Walter Paniagua, Juan de Dios Alemán and David Yañez Santillán.

2.2 Activities of member countries

Detailed information regarding the activities of each of the three member societies of the region can be found on their excellent individual web sites:

Canadian Geotechnical Society (CGS, Canada): www.cgs.ca
GeoInstitute (GI, USA): www.geoinstitute.org
Sociedad Mexicana de Ingeniería Geotécnica (SMIG, Mexico): www.smig.org.mx

These activities will also be summarized in the final report on the North American region that will be prepared by the Vice President of the region at the end of his tenure.

In the three countries, a large number of high quality technical events are being organized to respond to the needs of practitioners and of Society at large.

The annual (Canada and USA) or biennial (Mexico) national meeting is generally the main technical event in each country. Special meetings are also frequently organized by national or International Technical Committees on different topics. Conferences for Young Geotechnical Engineers and Geoscientists also take place periodically. Short courses and lectures are offered with an increasing frequency to students and engineers wishing to improve their knowledge and abilities in different realms of Geotechnical Engineering. Honorary lectures occupy a very special place within the activities of each Society.

Prestigious technical journals are being published in the region. Special technical publications, books and guidelines are also produced by the member societies. A special mention should be made of the excellent commemorative volume on the history of Soil Mechanics in Mexico untitled: "*El Siglo de la Mecánica de Suelos* (Soil Mechanics' century)" published by SMIG.

A review of the state of our profession in the North American Region should also include an assessment of many activities in the academic and practical fields that are not necessarily presented in Conferences. In spite of the lack of easily available information and reliable statistics on these activities (theses, new technical developments, outstanding geotechnical structures, etc.) their large contribution to the advances in our field and to the prestige of Geotechnical Engineering is obvious.

2.3 International relations

Formal international relations between the three member countries have been reinforced.

REFLECTIONS ON THE PRESENT STATE OF ISSMGE AND GEOTECHNICAL ENGINEERING IN NORTH AMERICA (Continued)

An agreement of cooperation was signed between GI (USA) and SMIG (Mexico) on October 7th, 2009 in Alexandria, Egypt. To follow up on this agreement, Juan de Dios Alemán, SMIG President, and G. Auvinet, ISSMGE VP for North America, were invited to attend the GI board of governors meeting in Dallas (March 12th 2011). A proposal to organize a joint technical event in 2012 on "Geotechnical Hazards" has been approved. G. Auvinet was also kindly invited to attend the board of governors meeting of CGS in Calgary, on September 12th, 2010.

Contacts were also established in an informal manner taking advantage of personal relations. Typical were the lectures given in Mexico by Jorge Zornberg (GI, USA) on *Geotextiles* and by Serge Leroueil (Canada) on *Compacted soils*

An important international event for both regions of the American continent is the Pan-American Conference. This conference enhances opportunities for interaction between academics, practitioners, designers, contractors and owners from North, Central and South America. This is accomplished through a combination of invited speakers for plenary sessions, including keynote presentations such as the prestigious Casagrande Lecture, specialist technical breakout sessions and exhibits.

Meetings of the Pan-American Committee were organized in Gramado, Brazil (during COBRAMSEG2010), in Toronto (during the 14th PCSMGE organizing committee), and in Cancun, Mexico (during the Mexican National meeting, November 2012).

The "Agreement for the Pan-American Committee" a document that set some rules for the interaction between the member countries of America and for the organization of the Pan-American Conference was updated and clarified. It is now available on the ISSMGE web page.

To foster participation of members of all countries of the continent, including some that may not be able to attend the Pan-American Conferences, and respecting a tradition inherited from previous Conferences, it was decided to include all technically acceptable papers in the Proceedings of the future Pan-American Conferences.

3 PRESENT TRENDS IN SOIL MECHANICS AND GEOTECHNICAL ENGINEERING IN NORTH AMERICA

To assess the health, as well as any potential weakness, of Soil Mechanics and Geotechnical Engineering in the region, a review of the main topics treated during recent Conferences or published in well known regional and international journals can be helpful.

The topics covered by ISSMGE technical committees of the region are also indicative of the themes that are in the front line of geotechnical research and engineering practice in North America:

Fundamentals:
TC102 Ground Property Characterization from in-situ tests (hosted by USA).
Applications:
TC 206 Interactive Geotechnical design (Canada)
TC 208 Stability of Natural Slopes (Canada)
TC 209 Offshore Geotechnics (USA)
TC 214 Foundation Engineering for Difficult Soft Soil Conditions (Mexico)

REFLECTIONS ON THE PRESENT STATE OF ISSMGE AND GEOTECHNICAL ENGINEERING IN NORTH AMERICA(Continued)

Among the most recurrent topics dealt with in geotechnical conferences and journals, the following should be mentioned:

Geotechnical testing.

The classical approach consisting of sampling and laboratory testing for defining soils properties to be taken into account in design is more than ever being challenged by *in situ* testing. This trend presents evident advantages since it can help shortening the duration of geotechnical surveys and avoiding the problem of disturbance of soil samples. However, these advantages should not be overblown and used as a justification to reduce the cost of geotechnical surveys. An adequate balance between *in situ* and laboratory testing should always been looked for, especially in the case of soft soils.

Site Characterization. Variability and uncertainty

Oversimplified assumptions regarding homogeneity of soils tend to be substituted by explicit consideration of soil heterogeneity. Spatial variability can be idealized recurring to mathematical models such as random fields and be taken explicitly into account in analyses by analytical or numerical methods. Variability is now recognized as the main source of uncertainty in geotechnical engineering although other factors such as limited representativity of laboratory or field tests must also be taken into account.

Management of Geotechnical data

Geographical Information Systems have proven to be useful to collect, display and process large amount of geotechnical data. An important work is being achieved in most countries on the elaboration of risks maps including detailed geotechnical zoning.

Physical and numerical modeling

Simultaneous approaches combining physical and numerical models based on different constitutive laws are now commonly used, at least for large projects. Powerful available commercial softwares allow sophisticated analyses of complex sequential construction procedures. The danger may lie for geotechnical engineers in trying to adapt their analyses to the available commercial softwares and not the other way around. Better interaction between soil and structural scientists and engineers is also evidently required to correct the simplistic assumptions regarding the soil behavior found in most popular commercial structural softwares.

Geohazards

Many classic soil mechanics problems, such as landslides, soil erosion, ground subsidence, soil fracturing and behavior of natural or artificial geotechnical structures in seismic conditions are now being classified as *geohazards*. This has been helpful to attract the attention of responsible authorities towards geotechnical problems.

Reliability and risk analysis

Taking into account explicitly variability and uncertainty in Geotechnical engineering makes it possible to perform risk analysis but also to assess the probability of good behavior of geotechnical structures, i.e. their reliability (Reliability is of course a more popular concept than its complement to unity: the probability of failure). Many engineers still don't fill comfortable with explicit consideration of probability in geotechnical design, but they tend to accept it in an implicit form as in limit state and load and resistance factor design (LRFD).

Ground improvement

Much more than in the past, geotechnical engineers' strategy now frequently consists of improving poor soils rather than accepting their properties and taking them into account as such in geotechnical design. When the soil bearing capacity is inadequate it is improved or substituted by a more competent material. New improvement techniques are constantly being developed. Bio improvement is one the most recent stabilization techniques.

REFLECTIONS ON THE PRESENT STATE OF ISSMGE AND GEOTECHNICAL ENGINEERING IN NORTH AMERICA(Continued)

New concepts in foundations

A blurring frontier now exists between deep foundations and soil improvement methods as in the case of rigid inclusions. The concept of Energy foundations combining the mechanical function of foundations with an efficient management of energy is fascinating and will certainly be developed further in the future. A new technical Committee dealing with this type of topics will soon be created. It will be hosted by the USA (GeoInstitute, ASCE)

Geoenvironmental engineering

Geoenvironmental preoccupations have had a considerable impact on the geotechnical profession. Geotechnical engineering has come up with many practical solutions for site remediation, construction of sustainable barriers, reuse of dredged sediments and bio waste to cite just a few topics. At some point, in the 1990's, it looked like attention to geoenvironmental problems would become the main business of geotechnical engineers. This has not completely materialized, but this type of problem still represents a significant percentage of their activity.

Sustainability

Quantitative benefits of sustainable construction using recycled materials have attracted a lot of attention. Life cycle analysis (LCA) and life-cycle cost analysis (LCCA) are being performed to quantify the benefits of green construction in geotechnical applications. Concepts of sustainability will certainly be soon introduced into geotechnical engineering standards and practices.

Land subsidence

Land subsidence is a problem affecting an increasing number of cities. A foremost example is the case of Mexico City but many other problematic cases have been identified in the North America region. The associated phenomena, especially soil fracturing, are taking worrying proportions and this will certainly be an important subject for geotechnical engineers in the coming years.

Geosynthetics

New synthetics materials are taking an important place in geotechnical practice. The merits and limitations of these materials are now well established. A healthy equilibrium is being reached between promotion by manufacturers of these products and reasoned and critical appraisal of their actual usefulness by geotechnical engineers.

Underground structures

A large part of the future development of many cities will take place in their subsoil. Tunnels are increasingly necessary for drainage, transports and many other uses. The challenges met to build intricate underground networks are requiring and will require participation of Geotechnical engineers.

Offshore engineering

With the increasing exploitation of oil fields in deep sea, new sophisticated techniques are being developed for geotechnical surveys in these difficult conditions. This is one of the most challenging areas of the profession.

Geoeducation

Diffusion of Soil Mechanics and Geotechnical Engineering principles and techniques is fostered in this very moment by fast developing new communication techniques. Internet is an unlimited source of information. *Webinars* on geotechnical subjects are being organized and will soon be an important part of the educational process. Furthermore, the development of *Geoworld*, a new social network for geotechnical engineers will certainly improve considerably the flow of data and opinions. A collective brain is being created that will profoundly modify Geotechnical Engineering research, education and practice.

A large number of topics could be added to the above list. Some of them are still vying to be accepted as significant contributions to Geotechnical Practice. This is the case of some sophisticated approach such as Micromechanics studies on soils or soft computing applications. The importance of basic research on this kind of topics should however be recognized since future progress may depend on them.

REFLECTIONS ON THE PRESENT STATE OF ISSMGE AND GEOTECHNICAL ENGINEERING IN NORTH AMERICA(Continued)

4 FINAL COMMENTARY

The brief overview presented shows that Soil Mechanics and Geotechnical Engineering in North America is a buoyant many-faceted specialty. Its brilliant and creative activities in the present are a guarantee of a promising future.

5 ACKNOWLEDGEMENTS

The author would like to thank Patricia López Acosta for her assistance in the preparation of regional reports during this period and Walter I. Paniagua, past SMIG president, for his valuables opinions regarding the present state of ISSMGE and Geotechnical Engineering in North America.

The Present of ISSMGE and Geotechnical Challenges in South America

R.E. Terzariol
ISSMGE Vice President for South America

ABSTRACT
This is a brief account of the present of our society in the South American region and the current most important aspects of the geotechnical activity, both in industry and in academia. All of it, within the framework of the celebration of the 75th anniversary from the creation of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE).

RESUMEN
Esta es una breve reseña del presente de nuestra sociedad en la región y de los aspectos más relevantes de la actividad geotécnica actual, tanto en la industria como en la Academia. Todo ello en el marco de la celebración del 75 Aniversario de la creación de la Sociedad Internacional de Mecánica de Suelos e Ingeniería Geotécnica.

1 INTRODUCTION

The ISSMGE South American Region is one of the geographically larger regions with a significant number of member societies. For this reason there are many soils types involved in regional geotechnical activities, as well as numerous universities involved in the geotechnical engineering education.

Currently, there are thirteen member societies, predominantly speaking Spanish and Portuguese, but soon this number may increase with the incorporation of, for example, French and English Caribbean islands.

Geographical and geotechnical conditions are different from one point to another in the region. Figure 1 shows the geographical division in South America, from coral islands with karst problems in the north, passing through mountainous areas with high prevalence of rock engineering aspects and fly ash soils, large semi-arid regions and tropical materials with unsaturated soil problems, to seashores and glaciers in activity in the south.

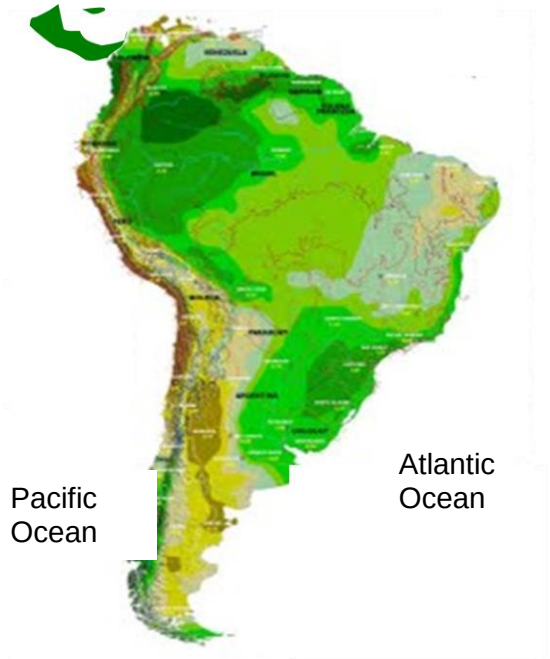

Figure 1. Geographical zones in South America

The Present of ISSMGE and Geotechnical Challenges in South America (Continued)

Therefore, the natural disasters involved are also very diverse. There are areas of intense volcanic and seismic activity, regions with large landslides, salty deserts, collapsible and expansive soils territories, areas with large heavy jungle rains causing flooding, broken glaciers to generating large-scale mudflows.

Finally, South America has some of the most populated cities in the world with the attendant urban geotechnical problems, as well as huge areas with low population density which may need the supply of appropriate infrastructure for development.

The GINI number represents the income distribution in each country. A GINI value near "1" shows a maximum inequality in distribution and that number near "0" an excellent income distribution. Figure 2 shows the distribution of GINI number throughout the world. In South America that number varies between 0,44 to 0,55 which is similar to all other countries on the America continent.

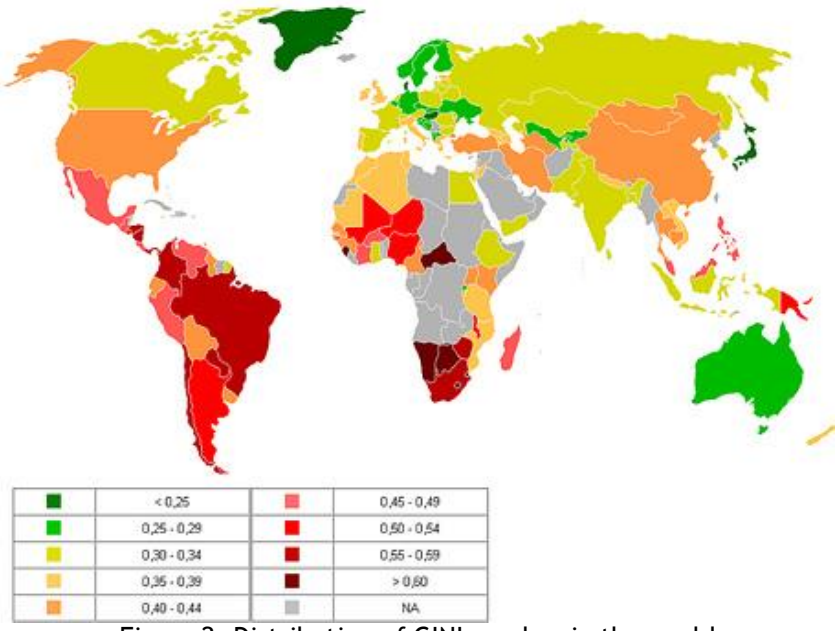

Figure 2. Distribution of GINI number in the world

2 THE SOUTH AMERICA REGION AS PART OF ISSMGE

The ISSMGE South American Region is located from the Central to the Southern part of the American continent. The region includes countries from Central America, the Caribbean and South America, both speaking both Spanish and Portuguese. The distance to the other regions ranges between 8,500 and 18,000 kms, and the maximum distance from one end to the other of the region is 8,000 km (Figure 3). This is a problem that threatens the easy communications and exchanges among the member Societies. Our continent is the only one that is subdivided into two regions.

The region has more than 1300 members in the ISSMGE, and they contributed approx. the 6% of the ISSMGE`s Subscriptions in 2009. Members of the region, from Argentina, Brazil, Chile and Peru, are involved in more than ten TCs, such as "Unsaturated soils", "Laboratory testing", "Underground construction", etc., with a significant involvement in each one.

The Present of ISSMGE and Geotechnical Challenges in South America (Continued)

The chair of the TC on "Megacities", is located in the region (Prof. A. Negro of Brazil). Prof. Victor De Melo, President of the Brazilian Society and formerly VP for South America, was one of the most representative presidents of the ISSMGE.

As is shown in Figure 4, the region is composed of 13 member Societies representing as many countries. Some of them are very old such as the Argentinean Society which is 63 years old, and some very recent societies such as the Dominican Society that was created just 4 years ago.

There are now three Countries that have expressed interest in joining the ISSMGE. Guatemala has already completed the paperwork and from next year is hoped to become a new member.

Figure 3. Location of the South America Region

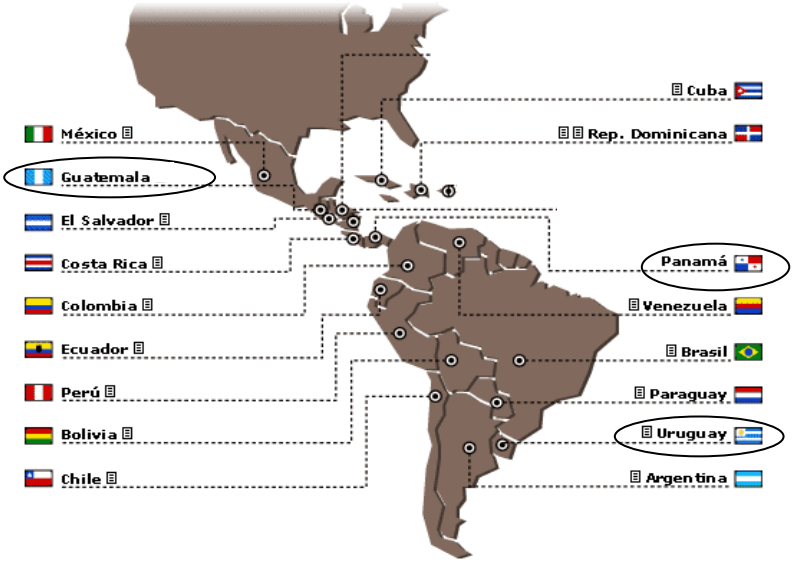

Figure 4. Geographical distribution of Member Societies

The Present of ISSMGE and Geotechnical Challenges in South America (Continued)

The number of members on their own is not a reliable indicator. In this order, Table 1 shows the members of each society per million of inhabitant by country.

The average for South America is 3,5 while for the whole ISSMGE is approx. 11. In one sense this index measures the degree of geotechnical engineering development of a particular region. Table 2 is a summary of the Situations, Issues and Challenges in SA Region.

Table 1. Member per million of habitants

Country	Member per million of habitants	Average for South America
Cuba	1.8	3.5
Rep. Dominicana	3.4	
El Salvador	5.3	
Costa Rica	6.7	
Venezuela	0.9	
Colombia	0.5	
Ecuador	3.4	
Peru	0.9	
Brazil	3.7	
Bolivia	2.6	
Paraguay	9.5	
Chile	4.3	
Argentina	2.0	

Table 2. Regional challenges

Situation	Issues	What To do
2011 Pan Am Conference (Only Regional Conf. for 2 regions)	Low participants from the non host region. Economic asymmetries	Work together. PanAm Commitee Meeting in August 2010
Poor interaction between Societies of the region	Overlay of Conferences. Not optimized itinerant seminars and courses	Build up a calendar of events. Improve personal contact. Regional events.
Lack of communication between authorities	Misunderstanding and wariness among societies	Meetings of Presidents of South American Societies
No official web page	Poor interaction between VP and member societies	Web page, with information, calendar of events, reports of TC members, etc.
Unbalanced participation in TC´s Committees	Some Societies are not aware of these activities	Promote societies. Publish reports of TC´s members
Countries not members ISSMGE	Many Geotechnical Engineers not integrated	Promote the creation of local societies (SGG-SUG-CPG)

The following is a list of the activities in the region during 2010 and the first months of 2011:

- 4 National Conferences (Argentina, Brazil, Colombia, Venezuela)
- 2 International Conferences (Brazil, Chile)
- 8 International Seminars and Courses (Argentina, Brazil, Chile, Colombia, Ecuador, Perú, Dominican Rep.)
- >20 National Seminars and Courses (Argentina, Brazil, Chile, Colombia, Ecuador, Dominican Rep.)

The Present of ISSMGE and Geotechnical Challenges in South America (Continued)

- 2 Reports on Chile's Earthquake (SoChiGeo-GREE / CICCba-SAIG Argentina)
- 1 International Publication (Soils & Rocks in English and Portuguese) + 8 Local Publications (hard copy and e-versions in Spanish) (Argentina, Brazil, Colombia, Costa Rica, Ecuador, Perú, Venezuela)
- Annual Meeting of the Pan-American Committee (Brazil)
- First Meeting of Societies from South America (Brazil)
- First Web Page of the Vice president.

A special mention is made of the meetings of the region´s societies in August of 2010. All the representatives of the Member Societies could discuss their issues, and found the solutions together.

3 THE PRESENT IN THE GEOTECHNCIAL ENGINEERING ACTIVITIES

3.1 Professional Aspects

The South American region in recent years generally shows a sharp increase in government involvement in the development of local infrastructure, all of which is due to the increase of the prices of commodities.

The economic activities with most development currently are those related to mining, in Chile, Peru, Colombia, Dominican Republic, Brazil, and more recently Argentina. Figure 5 shows the distribution of mining production in the world, and relative incidence of South America.

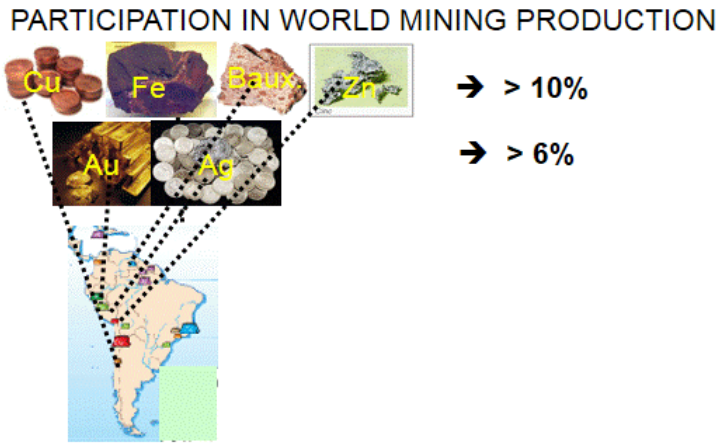

Figure 5. World distribution of mining production

It is important to investigate the use of energy resources like hydroelectric projects or oil and gas exploitation in different zones such as forested areas in Ecuador and Venezuela, mountains in Bolivia, the Patagonian desert in Argentina or the continental shelf in the case of Brazil and the export of industrial products and agri-food in all countries of the region. Figure 6 shows the distribution of oil and gas deposits, and the use of hydroelectric energy in the region.

For these activities it is necessary to build extensive infrastructure including railways, roads, ports, factories, tunnels and large excavations.

Currently there are projects in development for two tunnels over 40 km long to cross the Andes, linking Argentina and Chile, the enlargement of the Panama Canal (Figure 7), new ports and steel plants in Brazil, Argentina and Venezuela, large hydroelectric plants in Ecuador and Colombia. Figure 8 shows one of this. New sections of international roads are under construction in El Salvador, Nicaragua and Panama.

The Present of ISSMGE and Geotechnical Challenges in South America (Continued)

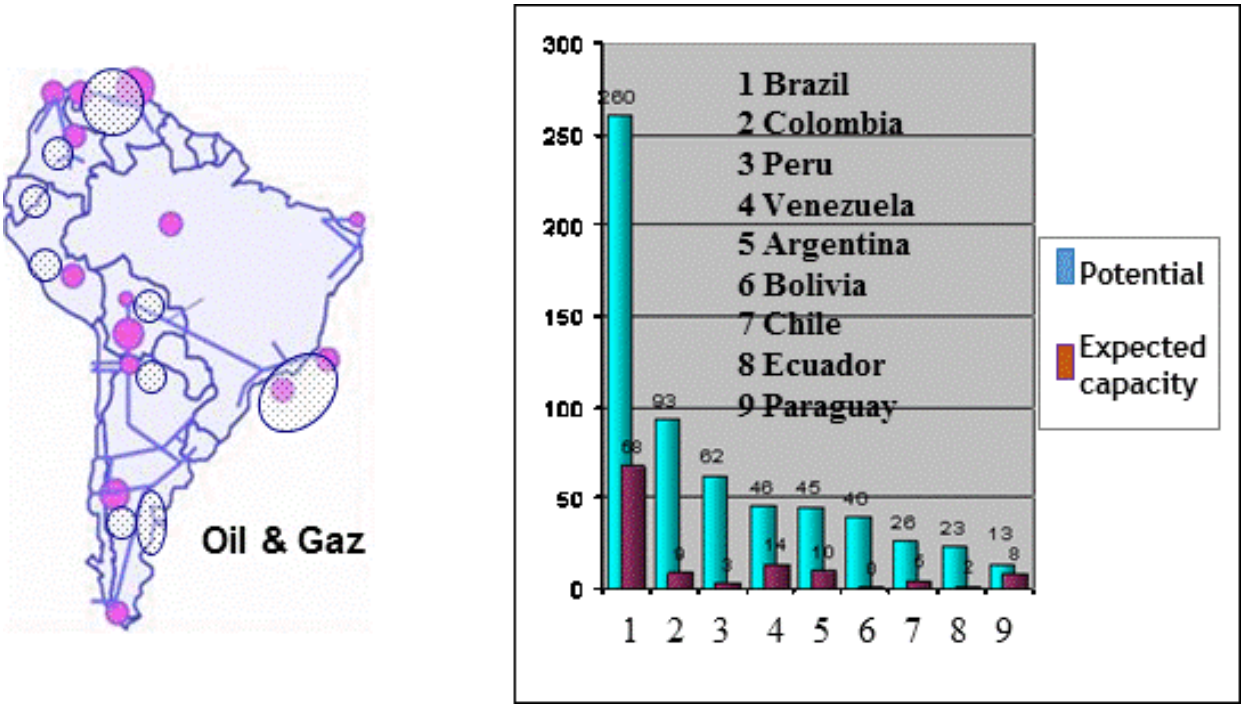

Figure 6. Oil and Gas deposits & use of hydroenergy

Figure 7. Enlargement of Panama Canal.

The Present of ISSMGE and Geotechnical Challenges in South America (Continued)

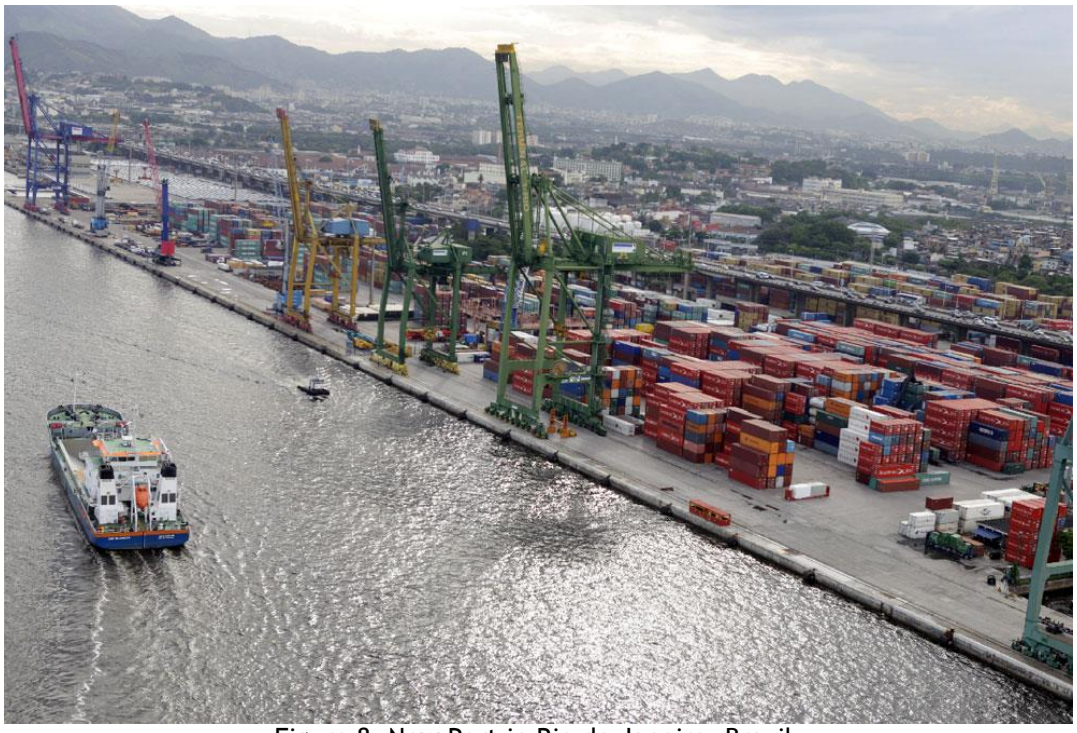

Figure 8. New Port in Rio de Janeiro, Brazil.

The region has more than 70 cities with populations of over one million inhabitants, which need to be provided for. Figure 9 shows the distribution of largest cities.

There are a number of mega urban development projects involving the construction of large buildings with several levels of basements that occupy the area equivalent to a small town. Figure 10 shows an excavation for basements in an office building.

The Present of ISSMGE and Geotechnical Challenges in South America (Continued)

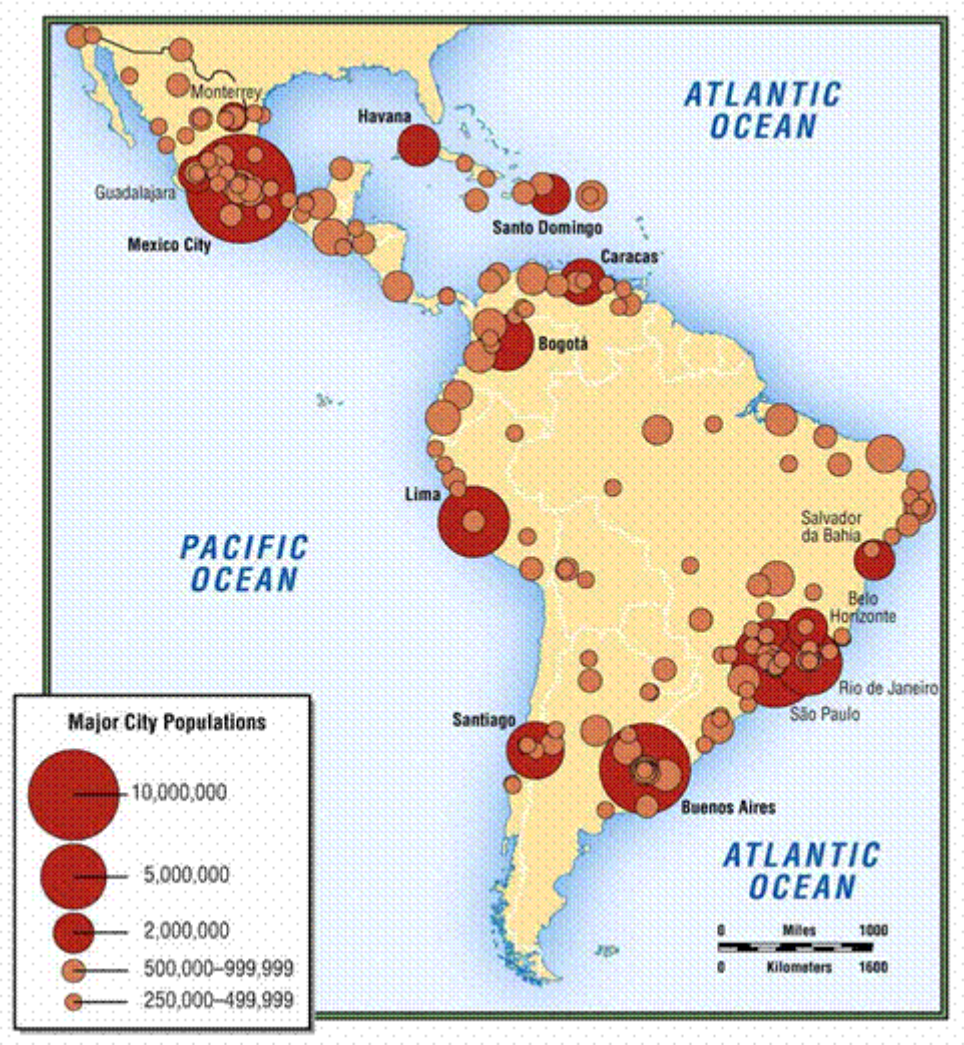

Figure 9. Distribution of main urban areas

Figure 10. Seven level basement excavation in Lima, Perú.

The Present of ISSMGE and Geotechnical Challenges in South America (Continued)

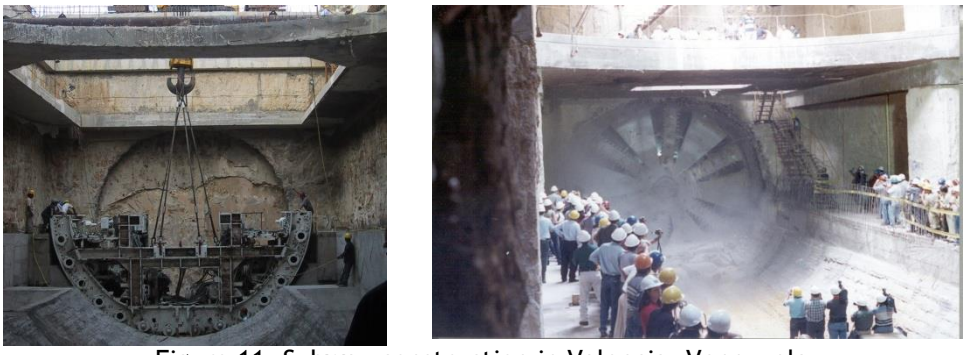

Figure 11. Subway construction in Valencia, Venezuela

The new urban development needs mass transportation, subways and urban trains in Venezuela (Figure 11), Argentina, Brazil, Panama, and Peru.

Construction of new power plants is high in Argentina, Brazil and Venezuela. Figure 12 shows a new thermoelectric power plant.

Figure 12. Timbues Power Plant in Santa Fe, Argentina.

New water supply networks and sewage in Panama, Peru and Venezuela, and oil & gas pipelines between Bolivia, Argentina, Brazil and Chile is important as well. Figure 13 shows the excavation of a shaft for a sewer tunnel.

Figure 13. Shaft excavation for sewer pipeline in Panama

The Present of ISSMGE and Geotechnical Challenges in South America (Continued)

Finally, the natural disasters in the region are very diverse, ranging from volcanic and very strong seismic activities (Chile, Peru, Haiti and Nicaragua), to hurricanes affecting the Caribbean islands and Central American countries, as shown in Figure 14.

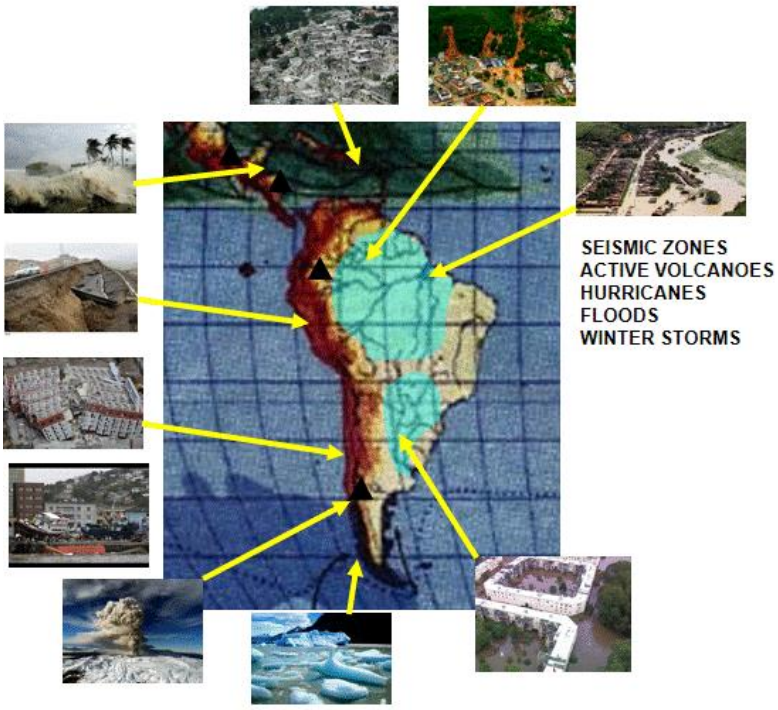

Figure 14. Volcanic, Seismic and Hurricane Zones

Several of the megacities such as Rio de Janeiro, Santos, Valparaiso, Lima, Buenos Aires, Panama, Guayaquil, Recife, Havana, etc., are located at sea level and subject to conditions related to global climate change.

All these activities must be accompanied by studies, design, consulting, engineering projects that test the capability of regional specialists and even requires support from colleagues from other ISSMGE regions.

3.2 Academic and Research Aspects

There are among 100 universities in the region teaching civil engineering. Nine of them are among the best 400 in the world as ranked by the Academic Ranking of World Universities (ARWU), which takes into account the quality of education, quality of schools, published research and the size of the institution. Table 3 shows the best ranked universities.

The Present of ISSMGE and Geotechnical Challenges in South America (Continued)

Table 3. Best Ranked Universities in the region (No.2 is skipped because it is not interesting in the region)

RANKING	INSTITUCIÓN	PAÍS
1	Universidade de São Paulo	BRA
3	Universidade Estadual de Campinas	BRA
4	Universidad de Chile	CHI
5	Universidade Federal de Santa Catarina	BRA
6	Universidade Federal do Rio Grande do Sul	BRA
7	Universidade Federal do Rio de Janeiro	BRA
8	Universidad de Buenos Aires	ARG
9	Universidade Federal de Minas Gerais	BRA
10	Universidade Estadual Paulista	BRA

Several engineering schools in South and Central America have graduate studies granting doctorates and master's degrees in geotechnical engineering. There is an important exchange of graduate students from several of these universities, especially in South America. This is being extended by scholarships in countries like Brazil, Argentina and Chile, aiming at students from the rest of the South American region.

The geotechnical investigations are varied as they take into account local soils, structural requirements and natural hazards cited in the previous section, as well as actions related to them. In year 2006 the International Journal of Natural Disasters and Civil Infrastructure (RIDNAIC), edited by the University of Puerto Rico, published a compilation of the most important research carried out in regional soils in South American research institutes. It is shown in Table 4.

The list should also include the studies in terms of landslides in Central America and Brazil, tropical and soft soils in Brazil and Colombia, seismic problems in Chile, Dominican Republic and Peru, and rock engineering in Costa Rica, Argentina and Peru.

Table 4. Research on regional soils

Research	Authors	Institution
GEOTECHNICAL ASPECTS OF THE PARANA RIVER DELTA AND RIVER PLATE ESTUARY	Victor Rinaldi and Ernesto Abril	National University of Cordoba, Argentina
GEOTECHNICAL CHARACTERISTICS OF THE LOESS OF ARGENTINA	Ricardo Rocca, Emilio Redolfi and Roberto Terzariol	National University of Cordoba, Argentina
SOILS DERIVED FROM VOLCANIC ASH IN COLOMBIA	Arsenio Lizcano, Mario Herrera and Carlos Santamarina	University of Los Andes, Colombia
GEOMECHANIC CHARACTERIZATION OF COARSE GRAINED SOILS	Ramón Verdugo and Karem de la Hoz	University of Chile, Santiago de Chile
DYNAMIC ALLUVIAL DEPOSITS IN COLOMBIA	Adolfo Alarcón, Jesús Garcia and Fernando Díaz Parra	National University of Colombia

A remarkable fact was pointed out during the GeoFlorida 2010 conference, when D. Laefer and D. McHale, in their paper "America`s research active, geotechnical faculty members - a snapshot of the community" showed that 11% of geotechnical teachers in USA come from abroad, emphasizing the South American contribution.

The Present of ISSMGE and Geotechnical Challenges in South America (Continued)

In particular, the National University of Cordoba, Argentina that provides 4 faculty members, surpassing even other Asian and African universities. Some of these professors currently teaching, are Carlos Santamarina, Jorge Zornberg, Dante Fratta and Pedro Arduino, all from Argentina, Rodrigo Salgado from Brazil, Giovanni Cascante, from Costa Rica, and Juan Pestana, from Venezuela, among others.

4 FINAL REMARKS

- This article shows the reality of the geotechnical community in the South American region of ISSMGE.
- It has attempted to highlight the strength and show the great efforts being made to overcome the weaknesses
- The region has countries that have reached a great maturity in the development of geotechnical engineering, and others that must be supported to encourage their growth.
- Professional work as well as the academic and research activities show a development in keeping with the global context of geotechnical engineering.
- All this shows the strength and the maturity of the Geotechnical Engineering in the region and the efforts of each Member Society.

ACKNOWLEDGEMENTS

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REFERENCES

Terzariol R.-Rocca, R.- Redolfi, E., 2006. Características geotécnicas de los loess de Argentina. Revista Internacional de Desastres Naturales e Infraestructura Civil, Vol. 6 Nº 2, 2006.

Terzariol, R. – 2011. Message to ISSMGE members from Vice President for South America. ISSMGE Bulletin Vol. 5 - Issue 2, 2011.

Sayao, A., et al., 2010. Historia da Engenharia Geotecnica no Brasil. Ed. ABMS. Rio do Janeiro, 2006 – ISBN 978-85-88742-41-8

Justiparan, A. – 2010. Coeficiente de GINI y distribución de ingresos - www.siemprehistoria.com.ar

Rudnick, H., Moreno, R., Tapia, H., Torres, C. – Abastecimiento de gas natural – Informe Nº IEE3372 - Pontificia Universidad Católica de Chile – Mayo, 2007

Laefer, D., and Mc Hale, D., 2010. America`s research active, geotechnical faculty members - a snapshot of the community. Geo Florida 2010.

Rinaldi, V., and Abril, E., 2006. Geotechnical aspects of the Parana River delta and River Plate estuary. Revista Internacional de Desastres Naturales e Infraestructura Civil, Vol. 6 Nº 2, 2006.

Lizcano, A., Herrera, M. and Santamarina, C. Soils derived from volcanic ash in Colombia. Revista Internacional de Desastres Naturales e Infraestructura Civil, Vol. 6 Nº 2, 2006.

Verdugo, R. and de la Hoz, K. Geomechanic characterization of coarse grained soils. Revista Internacional de Desastres Naturales e Infraestructura Civil, Vol. 6 Nº 2, 2006.

Alarcón, A., García, J. and Díaz Parra, F. Dynamic alluvial deposits in Colombia. Revista Internacional de Desastres Naturales e Infraestructura Civil, Vol. 6 Nº 2, 2006.

The future of ISSMGE in North America

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ABSTRACT
With over 18,000 members and the 75th anniversary this year, the ISSMGE is continuing to thrive and move forward. The role of ISSMGE in North America is unique to other regions because geotechnical engineering is relatively mature. Elements to ensure the viability of ISSMGE in North America, including visibility, communication, collaboration, and students and young members are also discussed. Ultimately, the future lies with students and young members. Since the ISSMGE depends on the activity of its members, this paper also describes the role of NA in ISSMGE.

RÉSUMÉ
Con más de 18,000 miembros y el 75° aniversario este año, la ISSMGE es seguir creciendo y seguir adelante. El papel de la ISSMGE en América del Norte es único a otras regiones ya que la ingeniería geotécnica es relativamente maduro. Elementos para garantizar la viabilidad de ISSMGE en América del Norte, incluida la visibilidad, la comunicación, la colaboración, y los estudiantes y los jóvenes miembros también se discuten. En última instancia, el futuro está con los estudiantes y los jóvenes miembros. Desde la ISSMGE depende de la actividad de sus miembros, este documento también describe el papel de la NA en ISSMGE.

1. INTRODUCTION

The International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) originally began in 1936 with Karl Terzaghi residing as President (ISSMGE, 2011). With over 18,000 members and the 75th anniversary, the ISSMGE is continuing to thrive and move forward. Its aim of international cooperation is essential to ensure more rapid dissemination of knowledge that will ultimately advance the state-of-the-practice (SOP) to the state-of-the-art (SOA) across the world.

Even though the challenges faced by geotechnical engineers are common throughout the world, the role of ISSMGE is unique to each of the 6 regions (Africa, Asia, Australasia, Europe, North America, and South America) because each region is at a different stage of development. In North America (NA), geotechnical engineering is relatively mature. To some degree, however, this is a disadvantage for NA with policies and procedures firmly in place that can often result in only incremental advancements to the SOP.

This constraint is less pronounced in other more developing regions because geotechnical engineering is not as established. Therefore, these regions have the ability to adapt quickly without the burden of strict rules limiting deployment of the SOA. In this respect, developing nations can advance at a more rapid pace with implementation of new, innovative technologies within geotechnical engineering.

While standard specifications ensure consistency and safety, a streamlined process to update guidance should be in place to move forward in the deployment of the SOA. The ISSMGE cannot specifically do this within NA, but it can work with its partners in industry and academia to achieve this goal.

2. RESPONSIBILITY OF ISSMGE IN NORTH AMERICA AND VICE VERSA

The ISSMGE has several responsibilities. It should steer the direction of geotechnical engineering practice and research and foster international and interdisciplinary relationships within NA. Promotion of innovations should also be a duty of ISSMGE.

The future of ISSMGE in North America (Continued)

Note that while the ISSMGE serves its constituents, its progress is a function of the activity of its members. As the current President of ISSMGE, Dr. Jean-Louis Briaud, cites, in the spirit of John F. Kennedy, Jr., "Don't ask what the ISSMGE can do for you, ask what you can do for the ISSMGE" (Briaud, 2008). It is therefore imperative that the NA member societies (Canadian Geotechnical Society, CGS; Geo-Institute, G-I; and Sociedad Mexicana de Ingeniería Geotéchnica, SMIG), along with academia and industry, collectively contribute to maintain ISSMGE's relevance and success. The achievements of ISSMGE, however, depend on visibility, effective communication, collaboration, and students and young members (S/YMs).

2.1 Visibility

Visibility of any organization is important for membership, public appreciation, and credibility. For the ISSMGE to be considered a resource, geotechnical engineers must be aware of the role and significance of ISSMGE. In NA, this can be achieved through the member societies who should actively disseminate information to their members.

For the ISSMGE to obtain greater visibility, the image of geotechnical engineering must first be refreshed. This can be accomplished through various mediums from simple brochures to bold moves such as interviews on scientific television programs. Other means to circulate information to our discipline include technical committees (TCs), webinars, and journal articles. The ISSMGE's International Journal of Geoengineering Case Histories is a great source of information that is freely available to everyone. Industry groups and academia within NA should take advantage of this widespread distribution and submit to this journal.

Another opportunity to improve the profession is by deploying innovative, cost-effective solutions to the problems facing NA. One common problem shared by the countries of NA is the aging transportation infrastructure where many of the region's bridges are either structurally deficient or functionally obsolete. The deteriorating infrastructure, along with reduced budgets to rehabilitate the region's roads and bridges, is the principal civil engineering problem faced in NA.

In the USA, the Federal Highway Administration (FHWA) is actively promoting the Geosynthetic Reinforced Soil Integrated Bridge System (GRS-IBS). This system will save transportation agencies between 25 and 50% in time and cost compared to conventional bridges. While the spotlight for bridges is typically reserved for structural engineers, the GRS-IBS highlights the achievements in geotechnical engineering. Similar types of innovations by geotechnical engineers not only advance the image of our practice, they also provide solutions to the problems.

2.2 Communication

Effective communication is essential for the global exchange of information and ideas. Currently, the ISSMGE is employing the Bulletin, listservs, and a website to disseminate important news and material. While these modes of communication are helpful, they are only as good as their distribution and outreach.

The ISSMGE's Innovation and Development Committee (IDC) offers a promising solution to modernize the ISSMGE website and generate collaboration between different groups through the development of Geo-World. This enhanced website will improve the current, more static version. Through Geo-World, ISSMGE content will be incorporated with an aspect of social networking that will propel the website and guarantee its use by many.

TCs are another avenue of information exchange. Unfortunately, the work of many TCs is internal and largely unknown to the general community. ISSMGE needs to actively circulate and promote the efforts of TCs. Geo-World can provide the forum for TCs to share their agendas and solicit feedback. An additional method is for NA member societies to include special sessions at their annual conferences.

The future of ISSMGE in North America (Continued)

Webinars can also be used to distribute information and promote technologies to a widespread audience on various geotechnical engineering topics. The ISSMGE has access to top subject matter experts who can deliver these webinars. The prevalence of webinars in NA makes this option easily implementable and accessible.

2.3 Collaboration

For the ISSMGE to have an impact on NA, it must establish solid connections with industry, academia, professional organizations, and students and young members (Figure 1). Industry is important because, for the most part, it works within the SOP while academia works to develop the SOA. ISSMGE can be the link between the two to help make the SOA the SOP.

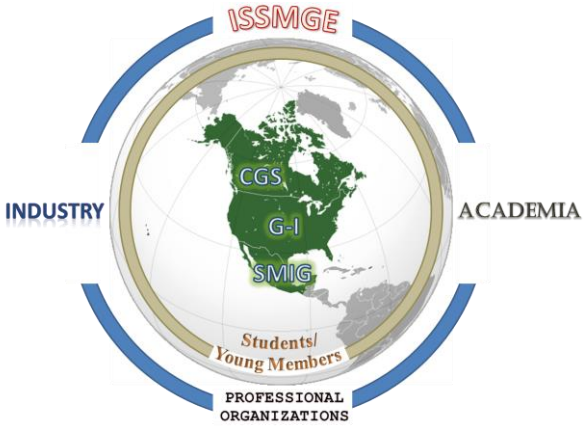

Figure 1. Relationship between ISSMGE and its partners

The ISSMGE recently created the Corporate Associates Presidential Group (CAPG) to promote issues directly related to the practice of the profession. The number of corporate associates will increase as the ISSMGE gains greater visibility. Hopefully the CAPG will assist in bridging the gap between the SOP and the SOA. Their insights on the deficiencies of the SOP will encourage not only academia, but students and young members, to become more engaged in the issues facing geotechnical engineering.

The field of geotechnical engineering, however, interacts with many other disciplines of civil engineering. For example, scour is an issue related to both geotechnical engineering and hydraulics; intelligent compaction is a technology related to both geotechnical and pavement engineering. While the ISSMGE already has close relationships and affiliations with several international organizations related to geotechnology, it needs to form relationships with professional organizations associated with other disciplines. This will ensure cross-collaboration and efficient technology transfer without competing efforts.

The future of ISSMGE in North America (Continued)

2.4 Students and Young Members

The future of ISSMGE and NA member societies largely depends on the next generation of geotechnical engineers (i.e. S/YMs). They have a fresh perspective on the problems facing geotechnical engineering. S/YMs are also adept with various forms of communication, social

networking, and learning. Their activity must be cultivated. Supporting ISSMGE membership fees is one way for NA member societies to increase participation by S/YMs. In the long term, this investment will reap great rewards not only nationally, but globally.

NA is the only continental region that does not have its own Young Geotechnical Engineers Conference (YGEC). While the CGS has a national YGEC conference, cooperation between all NA countries is needed to unite the bright, open minds of our region. It will also connect S/YMs to establish personal and professional relationships that can last a lifetime.

Youthful insights on trends in the field should also be encouraged by the ISSMGE through involvement in TCs and ISSMGE events. This exposure is mutually beneficial to ISSMGE and S/YMs who will learn from more established professionals. The ISSMGE is reaching out to S/YMs through the recently created Student and Young Member Presidential Group (SYMPG) whose mission is to promote ISSMGE to the next generation. Ultimately, S/YMs will be responsible for the future needs in geotechnical engineering.

3. SUMMARY AND CONCLUSIONS

Realizing that all parts of the world are at a different stage of geotechnical practice helps define the role of ISSMGE in each region. For NA, geotechnical engineering is mature and the gap between the SOP and the SOA can be large. While the aim of the ISSMGE is to promote the use of innovative technologies, it can work with its partners in industry, academia, and other professional organizations to create change and close the gap.

Change is more easily accomplished with S/YMs. While the established professionals in ISSMGE recognize the needs, involving energetic S/YMs early on will help effectively address the solutions to these problems. S/YMs have the ability to learn from the collaborative relationship between the ISSMGE and its partners while bringing a fresh perspective that is less inhibited by current policies and procedures. This will lead to more rapid deployment of innovative technologies in NA and help bring the SOA to the SOP. The future of ISSMGE in North America is, therefore, very promising.

REFERENCES

Briaud, J.-L. (2008). “President of ISSMGE Candidate: Professor Jean-Louis Briaud.” 13 June 2011. <https://ceprofs.civil.tamu.edu/briaud/ISSMGE/Briaud-English-7Oct2008.pdf>
ISSMGE. (2011). “History.” 13 June 2011. < http://www.issmge.org/web/page.aspx?refid=6>

THE AUSTRALASIAN REGION – THE PAST

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1. INTRODUCTION

The Australasian region of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) and its predecessor, the International Society for Soil Mechanics and Foundation Engineering (ISSMFE) has been active since the 1950's. Given its relatively sparse population, this region has made some notable contributions to both research and practice in soil mechanics and geotechnical engineering. This brief paper attempts to identify some of the persons who pioneered the subject in Australasia and some of the outcomes that have led to the development of two of the most energetic national societies within ISSMGE, the Australian Geomechanics Society and the New Zealand Geotechnical Society.

Some brief statistics on the Australasian Societies will be presented first, and then the origins of the two Societies will be traced, together with their office-holders. Some brief comments on earlier influential personalities will be made, and then a summary will be presented of past conferences and Society awards that have been developed to recognise the achievements of the members of the Societies.

2. SOME STATISTICS

Figure 1 shows the number of members in the Australian and New Zealand Societies since the 1960's. Of particular note is the steep rise in membership since the late 1990's.

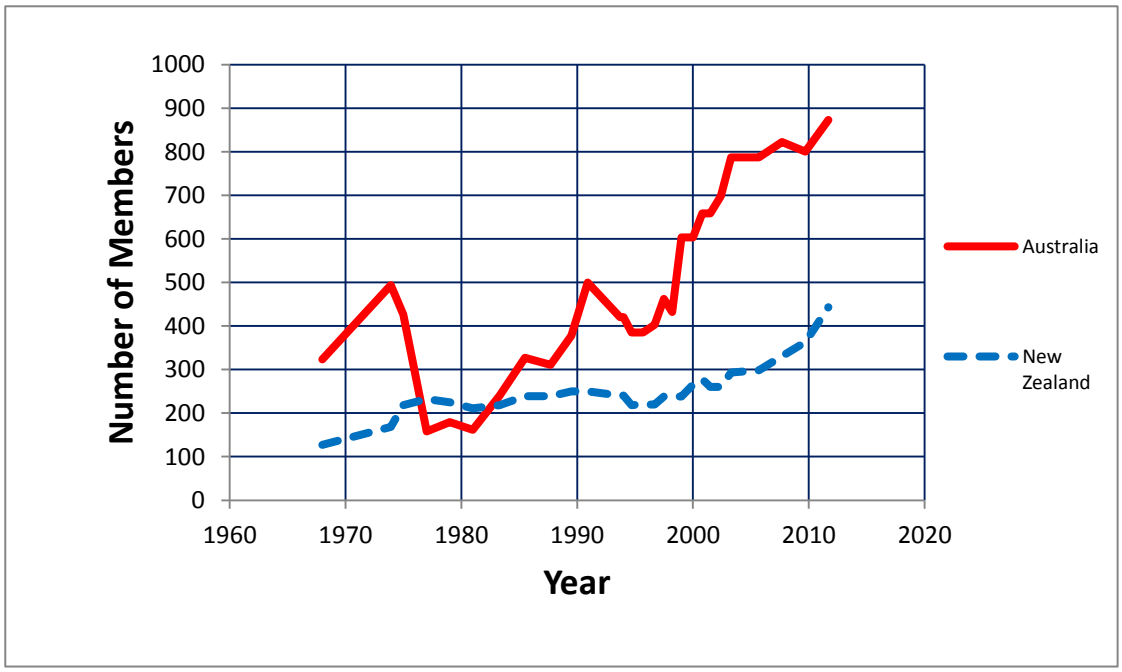


Figure 1 Australasian membership of the Society

Figure 2 shows the Australasian membership of ISSMGE and its predecessor, ISSMFE, as a percentage of the total membership. This has been as low as 2.7% in the early 1980's, and as high as 7% in the early 1970's. The current membership is again in the vicinity of the historic high value.

THE AUSTRALASIAN REGION – THE PAST (Continued)

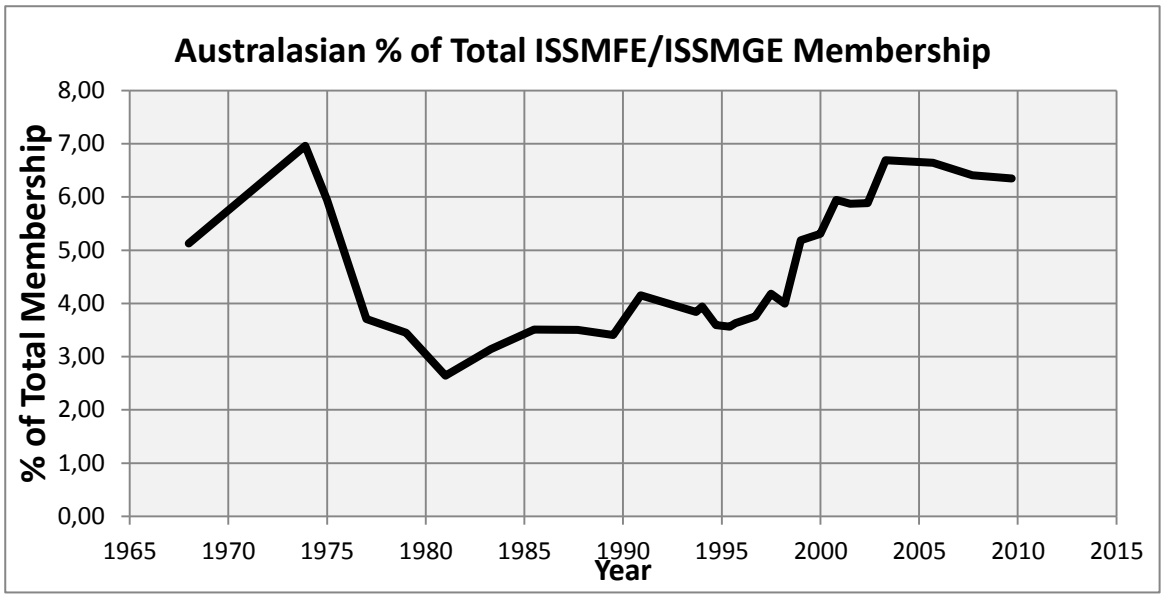


Figure 2 Australasian membership of ISSMFE/ISSMGE as a percentage of the total

3. ORIGINS OF THE AUSTRALIAN SOCIETY

The Australian Society started via local groups of interested people in soil mechanics. The first National Committee on Soil Mechanics and Foundation engineering appears to have been formed in 1947, and in the second International Conference held in Rotterdam the following year, six Australians presented a total of nine papers.

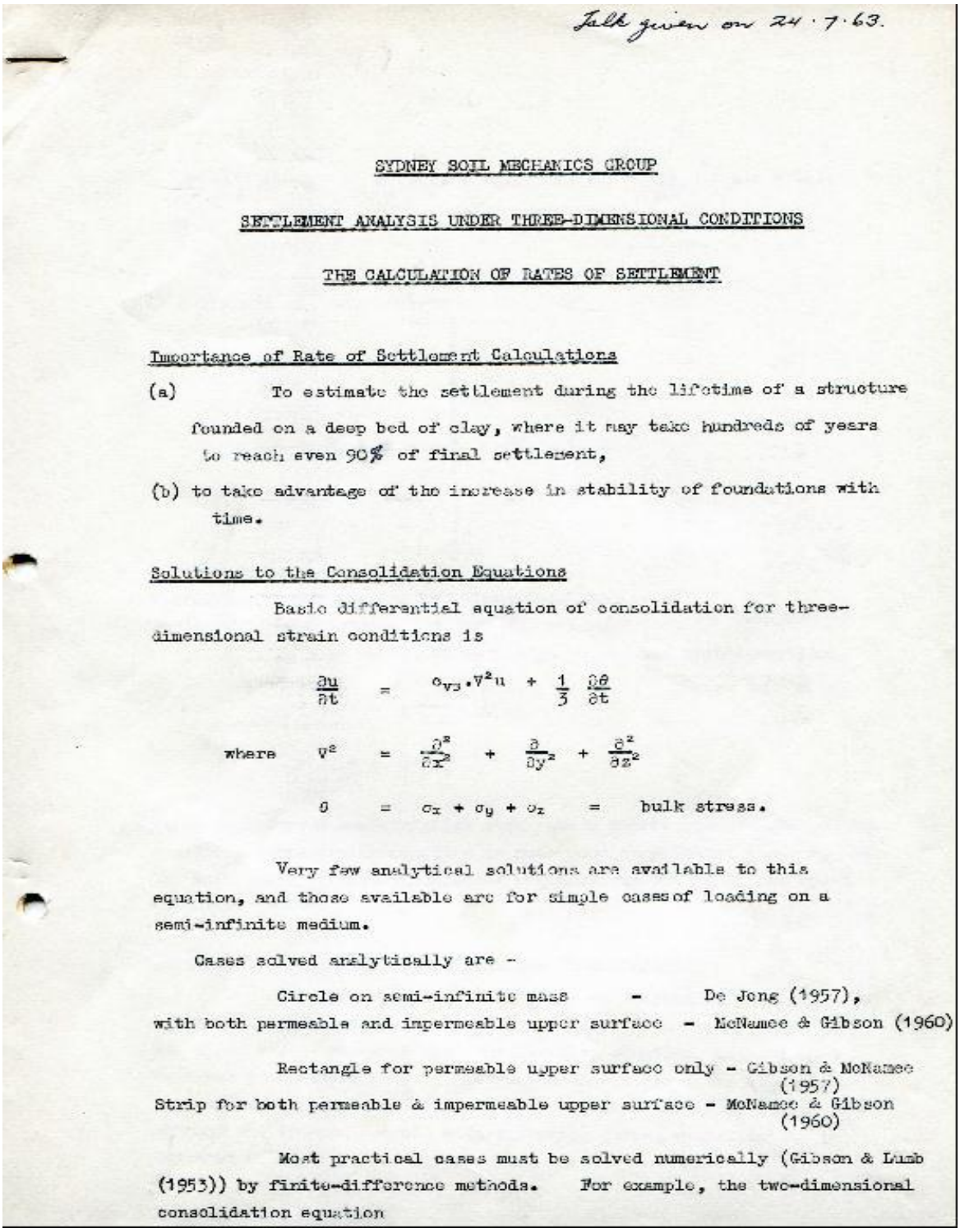
In the early 1950's, systematic teaching of soil mechanics as a university subject commenced, in 1950 at the University of Melbourne under D.H. Trollope, and in 1952 at the University of Sydney under E.H. Davis. Both Trollope and Davis had migrated from the United Kingdom to Australia to take up academic positions (Brown, 1991). Under their guidance, local groups began to hold technical meetings in Sydney and Melbourne, and the protégés of Trollope and Davis began to participate in these meetings. Examples of the talks given by the leaders and their protégés are:

- "Settlement analysis under three-dimensional Conditions", given in Sydney by H.G. Poulos, 24th July, 1963 (see Figure 3);
- "Non-linear theory of consolidation", given by E.H. Davis on 29th July 1963;
- "Foundation design with particular reference to the Melbourne area", given in Melbourne by I.K. Lee in 1968;
- "Soil shrinking and swelling characteristics", given by I.B. Donald in Melbourne in 1968.

The latter two papers were part of a Specialty Seminar on Foundation Design, organised in Melbourne in 1968, a precursor to specialty seminars which are now commonly organized in various cities within Australia.

The Australian Geomechanics Society (AGS) was officially formed in 1970 and served as the National Society not only of ISSMFE, but also as the National Society for its sister Societies, ISRM and IAEG. This integrated approach was quite unusual in those days, and remains so even today. The AGS was sponsored jointly by the Institution of Engineers Australia and the Australasian Institute of Mining and Metallurgy. Table 1 lists the Chairmen of the AGS since its inception in 1970.

THE AUSTRALASIAN REGION – THE PAST (Continued)



Talk given on 24·7·63.

SYDNEY SOIL MECHANICS GROUP

SETTLEMENT ANALYSIS UNDER THREE-DIMENSIONAL CONDITIONS

THE CALCULATION OF RATES OF SETTLEMENT

Importance of Rate of Settlement Calculations

(a) To estimate the settlement during the lifetime of a structure founded on a deep bed of clay, where it may take hundreds of years to reach even 90% of final settlement,

(b) to take advantage of the increase in stability of foundations with time.

Solutions to the Consolidation Equations

Basic differential equation of consolidation for three-dimensional strain conditions is

$$\frac{\partial u}{\partial t} = c_{v3} \cdot \nabla^2 u + \frac{1}{3} \frac{\partial \theta}{\partial t}$$

where $\nabla^2 = \frac{\partial^2}{\partial x^2} + \frac{\partial}{\partial y^2} + \frac{\partial^2}{\partial z^2}$

$\theta = \sigma_x + \sigma_y + \sigma_z$ = bulk stress.

Very few analytical solutions are available to this equation, and those available are for simple cases of loading on a semi-infinite medium.

Cases solved analytically are –

Circle on semi-infinite mass – De Jong (1957), with both permeable and impermeable upper surface – McNamee & Gibson (1960)

Rectangle for permeable upper surface only – Gibson & McNamee (1957)

Strip for both permeable & impermeable upper surface – McNamee & Gibson (1960)

Most practical cases must be solved numerically (Gibson & Lumb (1953)) by finite-difference methods. For example, the two-dimensional consolidation equation

Figure 3 Front page of a handout at a seminar given by H.G. Poulos in July 1963.

THE AUSTRALASIAN REGION – THE PAST (Continued)

Table 1 Chairmen of the Australian Geomechanics Society

Name	*Period of Office*
D.H. Trollope	1971-72
C.R. Longworth	1972-73
A.D. Hosking	1974-75
W.E. Bamford	1976-78
P.C. Hollingsworth	1979-81
H.G. Poulos	1982-84
P.W. Mitchell	1985-87
N.S. Mattes	1988-90
M.C. Ervin	1991-93
G.R. Mostyn	1994-95
A.B. Phillips	1996-97
C.M. Haberfield	1998-99
J.P. Carter	2000-01
A.R. Leventhal	2002-03
M.B. Jaksa	2004-05
M.A. Woodward	2006-07
N.D. Benson	2008-09
G. K. Scholey	2010-11
S. Mackenzie	2012-13

4. THE NEW ZEALAND GEOTECHNICAL SOCIETY

The New Zealand Geotechnical Society (NZGS) has followed a path similar to that of the AGS. The first meeting of the New Zealand National Committee was held on 17th July 1958, with J.W. Ridley being elected Chairman and R.D. Northey being elected Secretary. Statutes for the "New Zealand National Society for Soil Mechanics and Foundation Engineering" were drawn up and the subscription was set at 10 shillings (1 NZ dollar) per annum. Both the International Society and the Australian National committee were informed of this development.

In 1972, the Society changed its name to the New Zealand Geomechanics Society, and then in 1996, the name was changed to the present New Zealand Geotechnical Society.

5. AUSTRALASIAN REGIONAL VICE-PRESIDENTS

The Australasian Region of ISSMGE comprises only two member societies, the AGS and the NZGS. There is close cooperation between the two societies and also an agreement in relation to the election of regional Vice-Presidents, in that the Australian Society will make a nomination for two successive terms and then the New Zealand Society will make the nomination for the next term. While it has been customary for each Society to nominate from its own members, this has not always been the case, and there are at least two cases in which a nomination of a member of the other Society has been made.

Table 2 lists the official Australasian Regional Vice –Presidents. There is an indication that, during the period 1953-57, J.M. Lee was the Vice-President, but it is understood that this was not an official nomination.

THE AUSTRALASIAN REGION – THE PAST (Continued)

Table 2 Australasian Vice-Presidents of ISSMFE/ISSMGE

Name	*Country*	*Period of Office*
G.D. Aitchison	Australia	1957-61
J. Birrell	New Zealand	1961-65
D.H. Trollope	Australia	1965-69
E.H. Davis	Australia	1969-73
P.W. Taylor	New Zealand	1973-77
A.D. Hosking	Australia	1977-81
R.D. Northey	New Zealand	1981-85
J.H.H. Galloway	New Zealand	1985-89
H.G. Poulos	Australia	1989-94
M.C. Ervin	Australia	1994-97
M.F. Randolph	Australia	1997-2001
J.G. Murray	New Zealand	2001-05
J.P. Carter	Australia	2005-09
M.C.R. Davies	New Zealand	2009-13

6. SOME PERSONALITIES

This section provides some very brief details of five persons who were very influential within the Australasian Region and who pioneered the geotechnics in the region.

Dr. G. D. Aitchison

Dr. Gordon Aitchison (Figure 4) was born in Adelaide South Australia on 6th March 1918, and died in Mornington Victoria in June 2003. He made major contributions to the mechanics of unsaturated soils and developed a very strong research group within the then CSIRO Division of Geomechanics in the 1960's and 1970's. Among his protégés were Ian Donald and Brian Richards.

Figure 4 Dr. Gordon Aitchison (1918-2003)

Prof. E.H. Davis

Edward Hughesden Davis (Figure 5) was born in Hendon England on 16th December 1920, and died in Sydney Australia on 27th February 1981. Davis joined the University of Sydney in 1952 and started the systematic teaching of soil mechanics. He made major contributions to soil mechanics, the theory of plasticity, the theory of elasticity as applied to soils, and the theory of consolidation. His contributions were recognised by his election to the Australian Academy of Science. He also acted as a consultant on several important projects and was a specialist consultant for the firm of Coffey and Hollingsworth in the 1970's and 1980's. Among his protégés were the late Don Douglas, Harry Poulos, the late John Booker, John Carter and Kerry Rowe. Roderick (1982) provides a more complete biography of Davis.

THE AUSTRALASIAN REGION – THE PAST (Continued)

Figure 5 Professor Ted Davis FAA (1920-1981)

Prof. D.H. Trollope

David Hugh Trollope (Figure 6) was born in Swansea Wales on 9th March 1925 and died on 8th March 2011 in Bendigo Victoria. He migrated to Australia and joined the University of Melbourne in 1950. He started the teaching of soil mechanics at that University and developed a strong research group. In the 1960's, he moved to James Cook University in Queensland to take the position of Foundation Professor of Civil Engineering, and later became Deputy Vice-Chancellor, while still maintaining his technical interests in soil and rock mechanics. He was the third and youngest of the triumvirate of Aitchison, Davis and Trollope, that was so influential in developing soil mechanics and geotechnical engineering in Australia.

Trollope made major contributions to arching in soils, and pioneered the area of "clastic mechanics", which found application in the emerging field of rock mechanics as well as in traditional soil mechanics. His contributions to the university and to his profession were recognised by his appointment as an Officer of the Order of Australia (AO). Among his protégés were Ted Brown, Jack Morgan, Ian Lee, Dick Parry, Alan Parkin, Robin Friday and Kevin Rosengren.

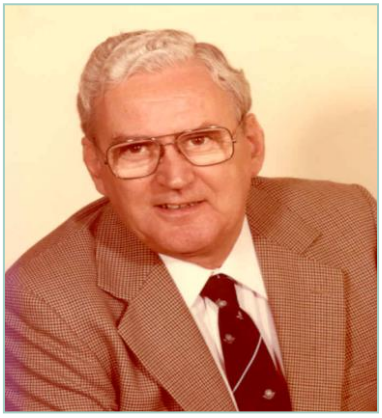


Figure 6 Professor Hugh Trollope AO (1925-2011)

Prof. P.W. Taylor

Peter Taylor (Figure 7) was born in New Zealand in 1925 and died there in 2011. He developed the soil mechanics group at the University of Auckland in the 1960's and made major contributions to geotechnical earthquake engineering and the behaviour of soils under cyclic and dynamic loading. Among his protégés are Michael Pender, Geoff Martin, Bruce Menzies and Terry Kayes.

THE AUSTRALASIAN REGION – THE PAST (Continued)

Figure 7 Professor Peter Taylor (1925-2011)

Dr. R.D. Northey

Dr. Roy Northey (Figure 8) was born in New Zealand on 5th April 1924 and died in New Zealand on 16th November 2011. He studied at Imperial College London under the guidance of Professor A.W. Skempton and then returned to New Zealand to join the DSIR. He was with that organization from 1950 to 1981, and made major contributions to soil mechanics, foundation design and the assessment of geotechnical risk. He was the 3rd New Zealand Lecturer (1979) and was Australasian Vice-President of ISSMGE during the period 1973-1977. One of his key disciples was John Hawley.

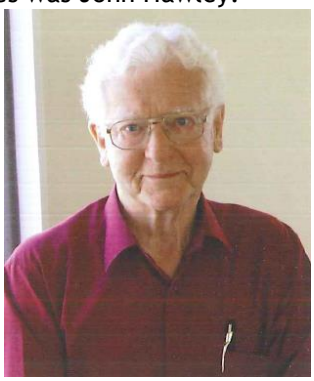


Figure 8 Dr. Roy Northey (1924-2011)

6. AUSTRALASIAN CONFERENCES

Australasia can proudly claim to have organized the first regional conference of ISSMFE in 1952. Dr. Hugh Trollope was the key figure in organising this conference, which focussed on the shear strength of soils and which was held in Melbourne. This conference was reviewed in Geotechnique in March 1953, and parts of this review are reproduced in Figure 9. It highlighted the issue of unsaturated soils which became a major topic of research in Australia over the next two decades.

Subsequent Australia New Zealand Conferences were held in Australia and New Zealand, with a pattern of two conferences in Australia and one in New Zealand. Table 3 lists these conferences, and it can be noted that the name of the conference changed in 1971, following the formation of the Australian and New Zealand Geomechanics Societies.

THE AUSTRALASIAN REGION – THE PAST (Continued)

In the international arena, in the year 2000, Australia hosted a very successful conference, GeoEng 2000, which was sponsored jointly by ISSMGE, ISRM, IAEG, but also with the support of three other international societies, ITA, IGS and IAH.

Australia has also made a number of bids to host the quadrennial conference of ISSMFE/ISSMGE, namely in 1965, 1977, 1991 and 1995. Unfortunately, all bids were unsuccessful. Undaunted, Australia is making yet another attempt, by bidding for the next ISSMGE conference in 2017, with Sydney as the host city.

A REVIEW OF THE FIRST AUSTRALIA – NEW ZEALAND CONFERENCE ON SOIL MECHANICS AND FOUNDATION ENGINEERING

by

D. H. TROLLOPE, M.Sc.

The Conference was held at the University of Melbourne, during the week commencing June 2nd, 1952, under the auspices of the Faculty of Engineering of the University, and the Institution of Engineers (Australia). The subject of the Conference was " The Shear Characteristics of Soils " on which the following Papers were presented :—

(1) " The Chemistry of Soils "	Assoc. Prof. G. W. Leeper
(2) " The Movement of Water in Unsaturated Soils "	J. W. Holmes
(3) " A Note on the Physical Aspect of Cohesion "	D. H. Trollope
(4) " The Physical Condition of the Soil as a Modifying Factor in the Measurement and Interpretation of Shear Strength "	G. D. Aitchison
(5) " Physical Properties of Volcanic-Ash Soils and their Shear Characteristics "	K. S. Birrell
(6) " The Basic Law of Shear Strength "	D. H. Trollope
(7) " Shear Resistance of Soils "	J. McN. Turnbull

CONCLUSIONS

In the Writer's opinion, the conclusions to be drawn from the Conference are twofold. First, particularly in Australia, the influence of environment on soil behaviour is of vital importance. Considerable attention needs to be paid to the shear characteristics of soils in the unsaturated state, both remoulded and undisturbed. Secondly, the definition of cohesion as a fundamental soil property is one about which, at present, there is much conflicting opinion ; engineers are dependant to a large extent upon progress in the science of colloid chemistry for resolution of this problem. Close collaboration between the two branches is essential, however, to bring about the attainment of this end.

The Proceedings of the Conference will be published, early in 1953.

Figure 9 Review of 1st ANZ Conference, in Geotechnique, March 1953.

THE AUSTRALASIAN REGION – THE PAST (Continued)

Table 3 Australia New Zealand Regional Conferences (1952-2012)

Conference	*Location*	*Year*
1st ANZ Conference SM&FE	Melbourne	1952
2nd ANZ Conference SM&FE	Christchurch	1956
3rd ANZ Conference SM&FE	Sydney	1960
4th ANZ Conference SM&FE	Adelaide	1963
5th ANZ Conference SM&FE	Auckland	1967
1st ANZ Conference on Geomechanics	Melbourne	1971
2nd ANZ Conference on Geomechanics	Brisbane	1975
3rd ANZ Conference on Geomechanics	Wellington	1980
4th ANZ Conference on Geomechanics	Perth	1984
5th ANZ Conference on Geomechanics	Sydney	1988
6th ANZ Conference on Geomechanics	Christchurch	1992
7th ANZ Conference on Geomechanics	Adelaide	1996
8th ANZ Conference on Geomechanics	Hobart	1999
9th ANZ Conference on Geomechanics	Auckland	2004
10th ANZ Conference on Geomechanics	Brisbane	2007
11th ANZ Conference on Geomechanics	Melbourne	2012

7. AUSTRALIAN SOCIETY AWARDS AND PUBLICATIONS

7.1 Awards

Since the late 1970's, AGS has instituted a series of awards and prizes to recognise achievement in the field of Geomechanics. Some of these awards carry the name of distinguished contributors to the geotechnical profession in Australia.

The main awards are as follows:

- The John Jaeger Memorial Award, given every 4 years, recognizing contributions of the highest order over a lifetime commitment to the geotechnical profession in Australia; commenced 1980.
- The E.H. Davis Lecture, awarded every 2 years for distinguished recent contributions to the theory and practice of geomechanics in Australia; commenced 1985.
- D.H. Trollope Medal, awarded every 2 years to the author of an outstanding paper on either theoretical or applied geomechanics. The work reported in the paper must have been undertaken in Australia by an author under 35 years of age; commenced 1988.
- Geotechnical Practitioner of the Year, awarded every 2 years. The award recognizes contributions of the highest order over an extended period, with a commitment to the geotechnical profession in Australia and the Australian Geomechanics Society; commenced 2004.
- Don Douglas Fellowship award of AGS, awarded every 2 years to the author of the most outstanding paper at an ANZ Young Geotechnical Professional Conference. The recipient must be a member of the AGS and be below the age of 35 at the time of receiving the award; commenced 2000.
- Australian Geomechanics Award, given annually for the best paper published in "Australian Geomechanics"; commenced 2003.

Table 4 lists the recipients of the John Jaeger Memorial Award.

THE AUSTRALASIAN REGION – THE PAST (Continued)

Table 4. Recipients of the John Jaeger Memorial Award

Recipient	*Year*
E.H. Davis	1980
G.D. Aitchison	1984
H.G. Poulos	1988
B.G. Richards	1992
D.H. Stapledon	1996
D. Coffey	1999
E.T. Brown	2004
R. Fell	2007
I.W. Johnston	2012

7.2 Publications

Regular publications of the AGS commenced in 1971 with the appearance of the first issue of the Australian Geomechanics Journal. This journal published peer-reviewed technical papers and appeared annually, with the last issue being published in 1979.

Because of procedural difficulties, the Australian Geomechanics Journal was replaced in 1980 by "Australian Geomechanics". This publication was less formal than its predecessor, and while still containing high-level technical papers, also included news items and subsequently, advertising. It has become a very popular and well-supported publication, and now appears quarterly. A number of the issues have become highly influential, including issues related to the engineering geology of the main cities in Australia, and an issue related to a framework for landslide risk management in Australia.

8. NEW ZEALAND SOCIETY AWARDS AND PUBLICATIONS

8.1 Awards

The main awards of the NZGS are as follows:

- The NZ Geomechanics Lecture is the premier award of the New Zealand Geomechanics Society. It is presented by a person prominent in Geomechanics who can, in the presentation, contribute a statement of significance and value relevant to New Zealand. The lecture is to be presented at intervals of up to four years at a minimum of three venues in New Zealand and is promoted to attract as wide an audience as possible. Following its presentation, the lecture is to be published.
- The New Zealand Geotechnical Society Geomechanics Award is awarded every three years and shall be presented at the Society's Annual General Meeting. The award shall be made to the Society member or members producing the adjudged "best" published paper during the previous three years.
- New Zealand Geotechnical Society Young Professionals fellowship - awarded to the author of the best paper by a New Zealand representative at each Australia-New Zealand Young Geotechnical Professionals conference. The recipient must be a member of the New Zealand Geotechnical Society and be below the age of 35 at the time of presenting the paper at the conference.
- New Zealand Geotechnical Society Student Awards: The New Zealand Geotechnical Society Student Awards are presented to recognise and encourage student participation in the fields of geotechnical engineering and engineering geology. In 2012 the awards were altered to a poster competition.
- Young Geotechnical Professionals Conference Awards: The Earthquake Commission Research Foundation and the NZ Geotechnical Society have awards available for New Zealanders attending the Young Geotechnical Professionals Conference.

8.2 Publications

The New Zealand Geotechnical Society produces two bulletins each year which are distributed to all members as part of their annual subscriptions. Back issues are available for purchase where available, and electronic copies of content's pages are available to scan for articles if necessary. The Society also holds

copies of many past conference and symposia proceedings which are available for purchase by both members and non-members.

The Society has published a number of guidelines, some of which can be downloaded for free, while others carry a small cost.

9. CONCLUDING REMARKS

The Australasian region has participated vigorously in the activities of ISSMGE and its predecessor, ISSMFE, for over 60 years, and the per capita membership of this region is the highest of the 6 regions within the Society.

The Australasian region has been a leader in certain activities, having organised the first regional conference on Soil Mechanics and Foundation Engineering, and having an integrated Society which embraces not only soil mechanics, foundation engineering and geotechnical engineering, but also the sister disciplines of rock mechanics and engineering geology.

The strong foundation developed by the pioneers of the discipline in each country has created a platform for the growth and advancement of Geotechnics, not only in Australasia, but globally.

ACKNOWLEDGEMENTS

The author is grateful to Professors E.T. Brown and M.J. Pender for their assistance in providing background information on some of the past eminent figures in Australasian geomechanics, and to Max Ervin for his helpful comments.

REFERENCES

Brown, E.T. (1991). Australian Advances in Geomechanics. *Proc. 7th Int. Conf. on Computer Methods & Advances in Geomechanics, Cairns, Ed. G. Beer, J.R. Booker & J.P. Carter, 1: 15-29.*

Roderick, J.W. (1982). Edward Hughesdon Davis 1920-1981. *Records of Australian Science, Vol. 5, No. 3.*

ISSMGE in the Australasia Region : The present

Michael C R Davies
Vice President for Australasia and First Vice President of the ISSMGE

The Australasia Region

In terms of the number of Member Societies Australasia is the smallest of the six ISSMGE regions. The Australasian Region of the ISSMGE comprises of only two Member Societies, Australia and New Zealand, but also represents activities of the Society in the South Pacific. Although there is extensive geotechnical engineering activity in Papua New Guinea and the South Pacific islands of Fiji and New Caledonia, they currently do not have member societies or other coordinated associations. Nevertheless, if the numbers of individual members in the two Member Societies that constitute the region are considered, the region is the fourth largest; with Australia and New Zealand having the fourth and eleventh largest number, respectively, of ISSMGE members of the 87 member societies. In 2011 Professor Roberto Terzariol, Vice President for South America, presented an analysis of the ratio of the number of ISSMGE members in each society to the number of millions of inhabitants of each country (ISSMGE Bulletin, Volume 5, Issue 2, April 2011). Updating this analysis for 2013, the median value of this ratio for the Australasia region - at 89 ISSMGE members per million inhabitants - is some four times greater than that of the region with the next highest ratio, i.e. Europe which has a median value of 20, Fig. 1. This analysis indicates that, relative to the other ISSMGE regions, in terms of attracting members to the ISSMGE the two societies in the Australasia region are currently highly successful. This relative strength of the Australian Geomechanics Society (AGS) and the New Zealand Geotechnical Society (NZGS) has been the result of the hard work and enthusiasm of the officers and members of the two societies over many years, it is also a reflection of the importance for society in Australia and New Zealand of there being good practice in geotechnical engineering.

Figure 1. ISSMGE Members per 10^6 of the population
(Based on data presented by Professor Roberto Terzariol, Vice President for South America; ISSMGE Bulletin, Volume 5, Issue 2, April 2011)

The AGS is the largest Technical Society within Engineers Australia and its membership in 2013 stands at 1,743 (1,276 in 2009); of these members 1,033 (800 in 2009) are affiliated to ISSMGE. This represents a growth of 29% in ISSMGE membership since 2009. In addition, the society currently has 44 corporate members that represent a wide range of consulting and contracting organisations. The society is managed by a National Committee and is represented in the States and Territories of the Commonwealth of

ISSMGE in the Australasia Region : The present (Continued)

Australia by eight Chapters, Fig. 2. Each of these Chapters has its own regional committee and organises a vibrant technical programme. The mission of the AGS is to encourage advancement and excellence in the theory and practice of geomechanics and to promote these both in Australia and overseas.

Founded in 1958, the NZGS became the first technical group of the Institution of Professional Engineers New Zealand (IPENZ) in 1965. In recent years the NZGS has also seen a steady rise in membership. In 2013 the NZGS has a membership of 982 (731 in 2009) of whom 575 (421 in 2009) are ISSMGE members. The increase in ISSMGE membership over the period since 2009 has been 37%. As Fig. 1 shows, this is a very high number relative to the population of New Zealand (4.4 million) – the highest for any of the 87 ISSMGE Member Societies - and possibly reflects the increased requirement for geotechnical engineers in a geologically active developed region of the world. The NZGS is overseen by a Management Committee and has seven branches located throughout the country, Fig. 3; each of which has its own programme of technical events. The aims of the Society are to: (i) advance the education and application of soil mechanics, rock mechanics and engineering geology among engineers; (ii) advance practice and application of these disciplines in engineering; (iii) implement the statutes of the respective International Societies; (iv) ensure that the learning achieved through the above objectives is passed on to the public as is appropriate.

Australian Geomechanics Society

Australian Geomechanics Society

Chapters

- Queensland
- NSW – Sydney
- NSW – Newcastle
- Victoria
- Tasmania
- South Australia & NT
- Western Australia
- WA - Kalgoorlie

Figure 2. Australian Geomechanics Society

New Zealand Geotechnical Society

NZ Geotechnical Society

Branches:

- Auckland
- Bay of Plenty
- Christchurch
- Nelson
- Otago
- Waikato
- Wellington

Figure 3. New Zealand Geotechnical Society

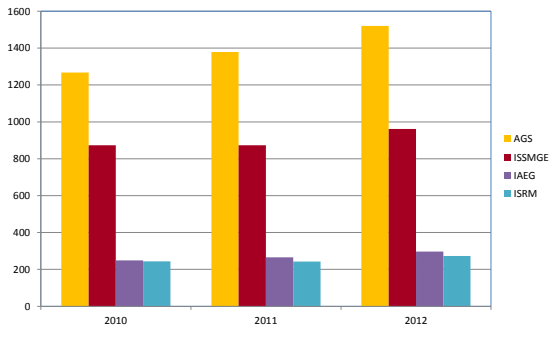


Figure 4. Membership of the Australian Geomechanics Society

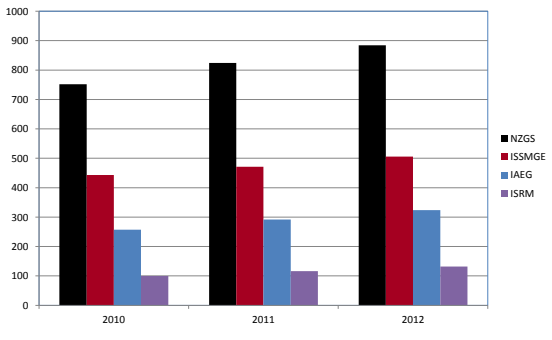


Figure 5. Membership of New Zealand Geotechnical Society

To some extent the importance of geotechnical engineering in both Australia and New Zealand is for similar reasons but there are specific national conditions that prevail. For example, in both countries there is a requirement to deal with natural hazards that have large scale detrimental effects on society.

ISSMGE in the Australasia Region : The present (Continued)

However, whilst slope stability presents geotechnical challenges to engineers on both sides of the Tasman Sea – which separates the two countries – New Zealand is located at the boundary of the Australian and Pacific tectonic plates and has, therefore, a much higher risk of major earthquake hazards than Australia, which is not located on any major tectonic plate boundaries. Australia has an extensive mining industry that requires the expertise of geotechnical engineers. This industry is contributing to a relatively strong economy in Australia and the growth in its population. This, in turn, has resulted in major opportunities for infrastructure development. There is a demand in both countries, therefore, for practitioners with a wide range of expertise across the range of geotechnical engineering; including engineering geology, rock mechanics and soil mechanics. It is not surprising, therefore, that both the AGS and the NZGS are the national societies for the IAEG and the ISRM as well as the ISSMGE. Although in both cases ISSMGE members represent the largest group, Figs. 4 and 5.

Activities of the Member Societies

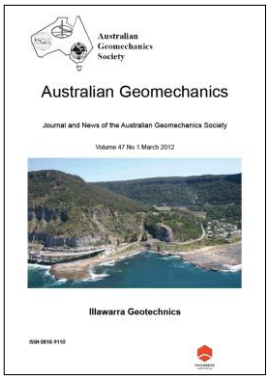
The Australian Geomechanics Society and the New Zealand Geotechnical Society are both highly vibrant member societies of the ISSMGE. Because of the geographical spread of their membership both societies organise their activities through their Chapters (AGS) or Branches (NZGS). In addition to regular technical meetings both societies have very active programmes of special events. These include Young Geotechnical Professional activities, specialist seminars and professional development courses together with lectures from distinguished international speakers. Both societies have their own journal and publish technical guides they also provide a range of technical information of interest and use to their members on their websites (http://australiangeomechanics.org/ and http://www.nzgs.org/). In addition, the societies engage with other learned societies, technical organisations and professional bodies together with national standards organisations, and both national and regional government, to provide technical advice and represent the profession. Both societies also recognise the achievements of their members through a variety of prizes and awards.

Publications and Technical Advice

Australian Geomechanics is the "official" journal of the AGS, which is published quarterly, in March, June, September and December, by the Institution of Engineers Australia, Fig. 6. It is edited and produced by the Australian Geomechanics Society and is distributed to all members of the AGS. At the end of 2009 the AGS published a DVD which contains copies of all papers published in *Australian Geomechanics* from 1971 to end of 2009. Over the last few years *Australian Geomechanics* has published special issues concentrating on the geotechnics in regions of the country together with a special issue (in June 2011) on landslide risk management.

The Australian Geomechanics Society has also developed and published a series of benchmark guidelines on landslide risk management and slope management and maintenance, Fig. 7. These were published in the *Australian Geomechanics* Journal in March 2007 and build on previous guidelines published in 2000. In the first half of 2011, through its network of local Chapters, the AGS supported a "National Landslide Risk Management Roadshow" to disseminate the new "Geoguides" to relevant end users. The roadshow (which became known as the "Risky Roadshow") provided information to a large number of local government officers and practitioners about the Landslide Risk Management guidelines and geoguides, Fig. 8.

ISSMGE in the Australasia Region : The present (Continued)



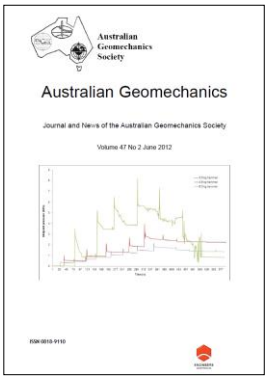


Figure 6. Publications - Australian Geomechanics Society

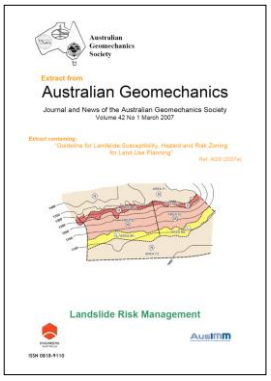


Figure 7. Guidelines - Australian Geomechanics Society

Landslide Risk Management – Education Empowerment Website

Australian GeoGuides:

- GeoGuide LR1 - Introduction
- GeoGuide LR2 - Landslides
- GeoGuide LR3 - Landslides in Soil
- GeoGuide LR4 - Landslides in Rock
- GeoGuide LR5 - Water & Drainage
- GeoGuide LR6 – Retaining Walls
- GeoGuide LR7 - Landslide Risk
- GeoGuide LR8 - Hillside Construction
- GeoGuide LR9 - Effluent & Surface Water Disposal
- GeoGuide LR10 - Coastal Landslides
- GeoGuide LR11 - Record Keeping

Figure 8. Advice - Australian Geomechanics Society

The New Zealand Geotechnical Society publishes a biannual bulletin, *Geomechanics News*, for its members in June and December of each year, Fig. 9. The bulletin, which contains papers reporting geotechnical research and practice in or directly relevant to New Zealand as well as news about the society and its members, has grown significantly of late and now averages just over 100 pages per issue. Each issue of the bulletin publishes special features. Most notable of these in recent years is the June 2011 issue, which contained a series of articles about the February 2011 Christchurch earthquake sequence.

As with the AGS, the NZGS also develops and publishes guidelines for its members, Fig. 10. The most recent of these is *Guidelines for the Electronic Transfer of Geotechnical and Geoenvironmental Data*, published in 2012. In 2010 the NZGS published the first module of its earthquake engineering guidelines, *Geotechnical Engineering Practice - Module 1 - Guideline for the identification, assessment and mitigation of liquefaction hazards*. The purpose of the series of guidelines is to provide authoritative material to help engineers address geotechnical issues related to the design of buildings and structures in conjunction with national building codes. Whilst the NZGS has been involved in developing geotechnical earthquake engineering advice for many years, the commencement of the Canterbury earthquake sequence in 2010 has increased the requirement for this and the NZGS has responded by accelerating the process of preparing the second and third modules in its Seismic Design Guidelines series. These modules address the seismic design of foundations and retaining walls, respectively.

In the immediate aftermath of the initial major shocks of the Canterbury earthquake sequence the NZGS worked with the Institution of Professional Engineers New Zealand (IPENZ) to produce a series of fact sheets for the public to explain the effects of earthquakes on buildings and infrastructure, Fig. 11. The

ISSMGE in the Australasia Region : The present (Continued)

NZGS has also provided formal submissions on geotechnical matters to the official investigation (The Canterbury Earthquakes Royal Commission) into causes of building failure as a result of the earthquakes and the legal and best-practice requirements for buildings in New Zealand Central Business Districts. It is also contributing to revised Building Assessment Guidelines.

Figure 9. Publications - New Zealand Geotechnical Society

Figure 10. Guidelines - New Zealand Geotechnical Society

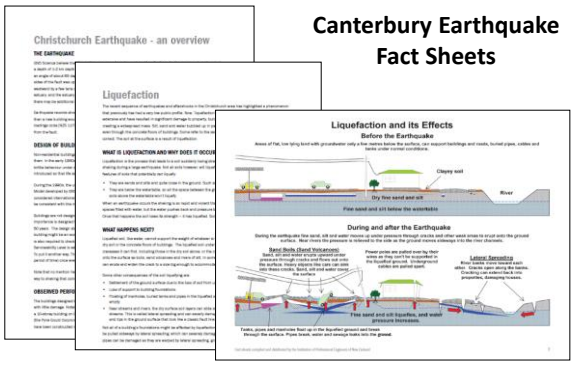


Figure 11. Advice - New Zealand Geotechnical Society

Prizes and Awards

Both the AGS and NZGS have a number of prizes and awards to recognise the achievements of their members. To encourage members who are in the early stages of their careers both societies have special awards for both students and young geotechnical professionals. A brief description of the prizes and awards is presented in Table 1.

ISSMGE in the Australasia Region : The present (Continued)

Table 1 – ANZ, NZGS and Joint Societies Prizes and Awards

Australian Geomechanics Society	New Zealand Geotechnical Society
John Jaeger Memorial Award Recognises contributions of the highest order over a lifetime of commitment to the geotechnical profession in Australia. **E.H. Davis Memorial Lecture** The lecturer is awarded to a member who has made a distinguished recent contribution to the theory and practice of geomechanics in Australia. **Practitioner of the Year** Recognises contributions of the highest order over an extended period with a commitment to the geotechnical profession in Australia and the Australian Geomechanics Society **D.H. Trollope Medal** The Trollope Medal is awarded to the author of an outstanding paper on either theoretical or applied geomechanics. **The Australian Geomechanics Award** Recognises the authors of the best paper published in Australian Geomechanics in each calendar year. **AGS – Don Douglas Youth Fellowship** Awarded to the author of the most outstanding paper at an ANZ Young Geotechnical Professional Conference, or the most recently held ANZ Geomechanics Conference. The recipient must be below the age of 35 at the time of receiving the award.	**New Zealand Geotechnical Society Geomechanics Lecture** The premier award of the New Zealand Geomechanics Society awarded for prominence in Geomechanics. **New Zealand Geotechnical Society Geomechanics Award** Awarded for the best paper published during the three years preceding the date of the Award that is distinguished in its contribution to the development of geotechnics in New Zealand. **New Zealand Geotechnical Society Scholarship** Award to provide funding for a scholarship that would enable a member of the Society to undertake postgraduate study in New Zealand that would advance the objectives of the Society **New Zealand Geotechnical Society Young Geotechnical Professionals Fellowship** Awarded to the author of the best paper by a member at the ANZ Young Geotechnical Professionals conference. **Young Geotechnical Professionals Conference Awards** Awards to attend the Young Geotechnical Professionals Conference. **New Zealand Geotechnical Society Student Awards** Recognises and encourage student participation in the fields of geotechnical engineering and engineering geology.
Joint Societies Award This award is presented at the ANZ Geomechanics Conference for the most valuable conference paper. The winner may be a member of either the AGS or NZGS	

Contributions to the wider ISSMGE

Both societies in the Australasia region, regularly host or sponsor well supported specialty conferences, seminars and symposia which are organised under the auspices of the ISSMMGE. Most notable of these is the four yearly ISSMGE Australasia regional conference. The most recent of these, the 11th Australia New Zealand Conference on Geomechanics - “Ground Engineering in a Changing World” (ANZ 2012), was held in Melbourne during July 2012. This conference, which attracted 558 delegates from around the world, was universally acclaimed as a great success both from its technical content and the high standard of its

ISSMGE in the Australasia Region : The present (Continued)

organisation. This demonstrated that the AGS was not only capable of organising a world class conference but it could also attract delegates to it from around the globe. The 12th ISSMGE Australasia regional conference - The Changing Face of the Earth: Geo-Processes and Human Accelerations (ANZ 2015) will be held in Wellington, New Zealand in February 2015.

The region also organises a conference for young geotechnical professionals to coincide with its quadrennial ISSMGE regional conference. The latest in this series of conferences was the 9th ANZ Young Geotechnical Professionals Geotechnical Conference which took place in Melbourne immediately prior to ANZ 2012.

There are a number of major ISSMGE conferences being planned to be held in the region in the next few years. The 5th International Conference on Earthquake Geotechnical Engineering (TC203) to be held, most appropriately, in Christchurch, New Zealand in 2015. Four ISSMGE conferences will be taking place in Australia: 8th International Conference on Physical Modelling in Geotechnics (TC104), Perth in 2014; 7th International Congress on Environmental Geotechnics (TC215), Melbourne 2014; 6th International Conference on Unsaturated Soils (TC106), Brisbane in 2014; 5th International Conference on In-situ Testing and Geophysical Characterisation (TC102), Brisbane in 2016.

In 2000 the Australian Geomechanics Society hosted the highly successful international conference GeoEng 2000. This was organised by the AGS on behalf of the ISSMGE together with the International Society for Rock Mechanics (ISRM) and the International Association of Engineering Geology and the Environment (IAEG). However, whilst both the ISRM and the IAEG have held their major quadrennial international conference in the Australasia region, despite the strong support for the ISSMGE in Australia and New Zealand, neither the AGS nor the NZGS has had the privilege to host the International Conference on Soil Mechanics and Geotechnical Engineering (ICSMGE) on behalf of the ISSMGE. As a successful and vibrant ISSMGE region, members are eager to be awarded this distinction. Therefore, having demonstrated in GeoEng 2000 and ANZ 2012 its ability to host major international conferences, the AGS has prepared a very strong bid to host the 19th International Conference of the Society for Soil Mechanics and Geotechnical Engineering (ICSMGE) in Sydney during September 2017, Fig. 12. In the hope of redressing the anomaly of the Australasia region not having hosted the ICSMGE, the AGS bid for the 19th ICSMGE is supported strongly by the NZGS. This bid will be considered by the ISSMGE Council at its meeting in Paris in September 2013.

Figure 12. Logo for ICSMGE 2017 bid by the Australian Geomechanics Society

ISSMGE members of the AGS and NZGS are active in the Society's Technical Committees and the ANZ hosts two TCs, viz. Physical Modelling (TC104) and Geo-Engineering Education (TC306). These two TCs are chaired by Professor Christophe Gaudin and Professor Mark Jaksa, respectively. Members of the AGS also serve as officers of TCs; Professor David White is the Secretary of TC104 and Professor Mark Randolph the Vice-Chair of TC209 (Offshore Geotechnics). Dr Elisabeth Bowman of the NZGS is the Secretary of TC208 (Slope Stability).

During his term of office the President of the ISSMGE, Professor Jean-Louis Briaud has introduced a number of Board Level Committees to assist the ISSMGE Board in managing the business of the Society. The Australasia region is represented amongst the officers of the inaugural Board Level Committees by

ISSMGE in the Australasia Region : The present (Continued)

Professor Harry Poulos, who is Chair of the Membership, Practitioners and Academicians Committee, and Sukumar Pathmanadavel, who is Vice-Chair of the Corporate Associates Presidential Group. In addition the region has representatives on all the other Board Level Committees. These members are Professor Mark Cassidy (Technical Oversight Committee), Professor Mark Jaksa (Public Relations Committee), Lucy Coe, Brendan Scott and Colin Dickson (Student and Young Member Presidential Group), and Professor Indraratna Buddhima (Awards Committee).

Conclusion

Although the ISSMGE Australasia region has only two Member Societies, the high quality of the advancement of theory and practice in geotechnical engineering in the region together with the energy of the membership and management committees of the Australian Geomechanics Society and the New Zealand Geotechnical Society result in the region being highly active. The AGS and NZGS are both vibrant societies that:

- Represent the breadth of specialisms in the geoengineering profession (i.e. they are Member Societies of ISSMGE, ISRM and IAEG);
- As learned societies facilitate lectures, symposia, conferences and educational programmes for their members;
- Provide technical advice to the profession and related professions and interpret technical issues to the general public;
- Advocate on behalf of the profession to government;
- Participate actively in international activities as part of the ISSMGE (including hosting conferences and taking leading roles in Technical Committees and Board Level Committees).

In the present both the AGS and the NZGS continue to build on their heritage as two very active Member Societies of the ISSMGE. It is, therefore, exceptionally pleasing that one of the two societies, the NZGS, has been recognised by the ISSMGE for its vitality by being selected for the inaugural Award for the Outstanding Member Society, which will be presented at the 18th International Conference of the Society for Soil Mechanics and Geotechnical Engineering in Paris during September 2013. This augurs very well for the continued significant contribution of the AGS and the NZGS to the activities of the geotechnical engineering profession, both within and outwith the Australasia region, into the future.

SOUTHESAST ASIAN GEOTECHNICAL SOCIETY, THE PAST, SEAGS – AIT Partnership

A.S. Balasubramaniam
Griffith University, Gold Coast, Australia
Formerly at Asian Institute of Technology, Thailand

The partnership between the Southeast Asian Geotechnical Society (SEAGS) and the Asian Institute of Technology dates back to 1967. Both SEAGS and the Geotechnical Program at AIT was the brain child of Dr. Za Chieh Moh with the help of a large number of individuals and organizations contributing in the developments. As we are coming to the end of 2012, it is good to look back on the positive side of this partnership. I was fortunate to have worked with a large number of Distinguished Presidents of SEAGS.

The General Committee of SEAGS in 1987 and those played a key role in the development of SEAGS are presented below.









Southeast Asian Geotechnical Society

It is a most rewarding experience to have associated with SEAGS since 1973. The Presidents I worked with as Secretary General are the late Tan Sri Prof Chin from Malaysia, the late Prof. Peter Lumb from Hong Kong, the late Dr. Tan Swan Beng from Singapore, Dr. Ted Brand from UK, DR. Ting Wen Hui from Malaysia, Prof. Seng Lip Lee from Singapore, Dr Ou Chin Der from Taiwan, Dr. Ooi Tiek Aun from Malaysia, Dr. Surachat Sambandaraksa from Thailand, Dr.John Li from Taiwan. I have also worked with Prof. K. Y. Yong from Singapore and Dr. Chung Tien Chin from Taiwan, as a G.C. Member. I am greatly indebted to all of them.

SOUTHESAST ASIAN GEOTECHNICAL SOCIETY, THE PAST, SEAGS – AIT Partnership (Continued)

SEAGS has always seeked international co-operation and is also a strong arm of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE). Our Society conferences always had very distinguished Geotechnical Experts and Professors giving Guest Lectures and also participating. The First Conference had Prof. Lambe from MIT as the Guest lecturer. The second conference in Singapore had Prof Ralph Peck as the Guest lecturer.








ISSMGE & ARC

In the third conference in HK, the late Prof. Victor de Mello was the Guest lecturer. Prof. Lambe was named as the Hero in Geotechnical Engineering by the Geo-Institute of ASCE. My fist attendance in a Geotechnical Conference was the 4th SEAGC in the Equatorial Hotel in KL. We all went from AIT to participate in this event and that team included Drs. Moh, Brand, Peter Brenner and myself. There, I met Prof. Harry Poulos who was described to me as the mast famous Geotechnical Personality. The 9th International Conference in Tokyo organised by Prof. Masami Fukuoka was truly an exceptional Event. He lined up all the Geotechnical Personalities from Prof. Peck, Prof. Meyerhof, Prof. Skempton, and so many others. Just before that Conference we had the 5th SEAGC in Bangkok. We had Prof. Morgenstern as the Guest Lecturer; also the late Prof. Chin, the late Dr. Arthur Penman, and Dr. Ian Donald from Australia. The most memorable event associated with that was the Soft Clay Symposium organised by Drs Brand and Peter Brenner. We had personalities from Nils Flodin, Ove Eide, Elmo Dibiagio, Bengt Broms, Sven Hansbo, and Harry Poulos. Dick Parry, the late Peter Wroth. George Pilot, Mike Duncan, Wayne Clough and many others. Prof. Jamiolkowsky also attended in the event. In the above picture you can see them revisiting us in Bangkok and in KL, Taipei, Singapore as well. Prof. Fukuoka became the ISSMGE President in 1977 after Prof Kerisel. Prof de Mello in 1981, Prof. Bengt Broms in 1985, Prof. Morgenstern in 1989, Prof. Jamiolkowsky in 1994, Prof. Ishihara in 1997 . The subsequent Presidents were William Van Impe, Prof. Pedro Pinto and now Prof. Jean Louis Briaud. Dick Parry who was a teacher of mine at Cambridge was the Secretary General of ISSMGE succeeding the late Prof. Kevin Nash and for a brief time Prof. John Burland.

Prof. John Burland was a Guest Lecturer in the 12th SEAGC in KL. Over a thousand geotechnical experts visited AIT and attended the conferences in Bangkok. The late Prof. Harry Seed, the late Pierre Londe,

SOUTHESAST ASIAN GEOTECHNICAL SOCIETY, THE PAST, SEAGS – AIT Partnership (Continued)

Prof. Walter Wittke, Prof. Jim Mitchell are just a few names. The Kevin Nash Award was given to the late Prof. de Beer, the late Prof. Harry Seed, Prof. John Burland, Prof. Jim Mitchell, Prof. Harry Poulos and Prof. Sven Hansbo.

Asian Institute of Technology

On the AIT side there were many memorable activities. The gold medal Award to HM the King on the occasion of the sixth cycle celebrations as arranged by Prof. Prinya our Colleague was a remarkable event. Also, the 9th Southeast Asian Regional Conference chaired by HR Princess Sirindhon was also a grand success. During the 40th Year Anniversary we had a grant event at AIT. Most of the former AIT Faculty attended this event from the Civil & Environmental Engineering side. The Milton Bender Lecture Series was also a great success. The First Lecture in the series was given in March 1993 by Professor Andrew Schofield, a Fellow of the Royal Society of London on the most admired fields of Centrifuged Model Tests and Critical State Soil Mechanics. The 1994 Lecture was given by Prof. Ray W. Clough, a pioneer in the Development of Finite Element Analysis. Prof. Clough has also been outstanding in the fields of dynamic analysis of structures, experimental research in structural behavior during earthquakes, and the development of the Earthquake Research Center at Berkeley with its shake table and other related facilities. The 1995 lecture, third in the series, was given by Prof. Kiyoshi Horikawa, President of Saitama University and Professor Emeritus at the University of Tokyo. Prof. Horikawa, again a pioneer researcher in Coastal Engineering, brought to AIT his contributions and experiences in expanding the knowledge on the Coastal Engineering discipline, particularly the near shore dynamics and coastal transport mechanism.

Prof. Jorg Imberger from the University of Perth, Australia and an eminent environmentalist who has participated and directed high-level projects on Water Quality and Environmental Management throughout the world from the Bay of Venice to the lakes of Chile and Japan, gave the Fourth Lecture in 1996. In 1996, Prof. Jorg Imberger was awarded the Stockholm Water Foundation Prize for his outstanding contributions to the Water Industry. Professor Douglas Wright, a distinguished Structural Engineer and a University Professor and Administrator at the University of Waterloo in Canada, gave the Fifth Lecture in 1997 on "Engineering the New Economy".

SOUTHESAST ASIAN GEOTECHNICAL SOCIETY, THE PAST, SEAGS – AIT Partnership (Continued)

Asian Institute of Technology

Professor Amir Pnueli, a Science Mathematician cum Computer Scientist at the Weizmann Institute of Science, Israel, gave the 1998 Lecture. Professor Amir Pnueli recently received the world's most prestigious Turing Award in Computer Science dubbed as the "Nobel Prize in Computer Science". Prof. Pnueli developed sophisticated methods for verifying the correctness and the reliability of computer systems, including software and hardware. These innovative systems control crucial aspects of contemporary life, such as the operation of nuclear power stations, missile launching, aircraft navigation, functioning of medical equipment and communications.

Professor Cham Tao Soon, a past-President of the Institution of Engineers, Singapore (IES) and the President of the Nanyang Technological University (NTU) will be the Year 2000 Bender Lecturers at AIT on the occasion of the Information Technology Conference August 1-4, 2000. The title of Prof. Cham's Lecture is "The Impact of Information Technology on University Education". The Asian Institute of Technology introduced the prestigious Milton Bender Lecture Series in Engineering, Science, Technology and Management to honor the first AIT President, Dr. Milton E. Bender. The lecture is given at the Institute once a year by distinguished University Professors selected on a global basis. Educated at Raffles Institution and a Singapore State scholar at the University of Malaysia, Prof. Cham was also a commonwealth Scholar at the Cambridge University, where he received his Ph.D. Prof. Cham, a former Dean of the Faculty of Engineering at the National University of Singapore was the founder-President of NTU in 1981. Under his able leadership, NTU has become one of the finest universities offering higher education. Prof. Cham, a foreign member of the Royal Academies of Sweden and UK is an Honorary Fellow of St. Catherine's College in Cambridge. He has also received honorary Doctorate Degrees from many Universities in UK and Japan.

SOUTHESAST ASIAN GEOTECHNICAL SOCIETY, THE PAST, SEAGS – AIT Partnership (Continued)

Asian Institute of Technology

The last Milton Bender lecture was given by Dr. Za Chieh Moh; concurrently he was also given an Honorary Doctorate Degree by AIT.

Dr. Za-Chieh Moh had his undergraduate education at National Taiwan University in 1953, graduated with the Sc.D. degree from MIT in 1961, and since has maintained a continuing relationship with Prof. Lambe and other eminent geotechnical engineers in all parts of the world.

Dr. Za-Chieh Moh joined the Asian Institute of Technology (AIT) in 1965 and was given the special task of establishing a field of study in Soil Mechanics .This he was able to accomplish within a year. The period that followed constituted the formative years for geotechnical engineering in Asia Over the years, several leading geotechnical engineering professors have joined the Institute, and the Institute is now well known in geotechnical engineering circles all over the world. Nearly 1000 graduates of AIT with post-graduate education in geotechnical engineering are working in many parts of Asia and elsewhere; many of these graduates hold key positions in universities, government, and the private sectors.

In early 1976, Dr. Za-Chieh Moh moved to consulting practice, and soon established himself as a leading geotechnical consultant in Southeast Asia, including Singapore, Malaysia, Indonesia, Philippines, Thailand, Hong Kong, China and Taiwan. Some of the important projects carried out by him include: geotechnical and seismic study of the Kaohsiung Cross Harbour Tunnel; geotechnical study for the reclamation of an abandoned river channel for development in Taipei; design and instrumentation of a 30-m retaining structure; and instrumentation for deep excavations and geotechnical studies for mass rapid transit systems. **There are a large number of other projects as well.** In the international field, Dr. Moh made notable contributions when he served as the Vice-President for Asia of the International Society for Soil Mechanics and Foundation Engineering (ISSMFE) in 1973 to 1977. Additionally, he has served as a panelist, a general reporter and session chairman in many international and regional conferences. To be able to contribute significantly in geotechnics demands the virtues of good sense and sound judgement, both possessed abundantly by Dr.

SOUTHESAST ASIAN GEOTECHNICAL SOCIETY, THE PAST, SEAGS – AIT Partnership (Continued)

Moh. In consequence, he has been called upon to serve on a very large number of technical committees of ISSMFE and its national societies.

The late Dr. Chai Mukthabant was also awarded an Honorary Doctorate Degree and so was Khun Kasame Chatikavanich the former Governor of EGAT. Prof. Worsak Kanokkulchai organised the AIT Hall of Fame during the 50th Anniversary of AIT.

The AIT Hall of Fame really brought great prestige to AIT. It would be nice if this event can be continued in the future as well. Unfortunately, AIT was badly affected by the floods. This was a tremendous set back to AIT. However, AIT was able to recover back and have a grand graduation ceremony in December this year.

The astonishing recovery of AIT and the 118th Graduation Ceremony. Thanks to Prof. Irandoust the President of AIT and the most valued contribution by the Faculty, Staff and most importantly the alumni.

SOUTHESAST ASIAN GEOTECHNICAL SOCIETY, THE PAST, SEAGS – AIT Partnership (Continued)

The success of SEAGS-AIT and the new AGSSEA is mostly due to the international co-operation and goodwill. This trend must continue. Both SEAGS and AIT enjoyed

Very strong support, while we cannot single out any one of them, the contributions from Japan, Thailand, Taiwan and indeed a very large number of countries within and without Asia and the international and national organizations are worthy of mentioning. The current picture of AIT before graduation is remarkable indeed.

ICE BOOKS

EVENT DIARY

ISSMGE EVENTS

Please refer to the specific conference website for full details and latest information.

2013

Fifth International Young Geotechnical Engineers' Conference (5iYGEC'13)
Date: Saturday 31 August 2013 - Sunday 01 September 2013
Location: École des Ponts Paris Tech, Paris. France
Language: English/French
Contact person: Prof. Yu-Jun Cui
Address: Paris, France
E-mail: yujun.cui@enpc.fr
Website:
http://www.lepublicsystemepco.com/EN/events.php?IDManif=696&IDModule=21&PPAGE=&PAGE=&TEMPLATE=&CSS=&IDRub=

18th International Conference on Soil Mechanics and Geotechnical Engineering, Paris,
Date: Monday 02 September 2013 - Friday 06 September 2013
Location: Palais des congrès de Paris, Porte Maillot, Paris, France
Language: English, French
Organizer: Le Public Système, 38, rue Anatole France-Levallois-Perret Cedex, 92594 France
Contact person: Violaine Gauthier, Clémentine Nicollet
Address: 38 rue Anatole France, 92594 Levallois-Perret Cedex, France
Phone: +33 1 70 94 65 04
Fax: +33 1 70 94 65 01
E-mail: vgauthier@le-public-systeme.fr, vmetral@le-public-systeme.fr,
Website: http://www.issmge2013.org/EN/events.php?IDManif=561&IDModule=71&IDRub=79
More info: Organizer Phone: 33 1 70 94 65 04 Contact persons: Violaine Gauthier: vgauthier@le-public-systeme.fr Clémentine Nicollet: cnicollet@le-public-systeme.fr

Geotechnical Seminar: 14th Šuklje´s Day Unsaturated Soil Mechanics: Theoretical Background and Case Histories
Date: Friday 11 October 2013 - Friday 11 October 2013
Location: Plaza Hotel Ljubljana, Bratislavska cesta 8, BTC, 1000 Ljubljana, Ljubljana, Slovenia
Language: English / Slovenian
Organizer: Slovenian Geotechnical Society - SLOGeD
Contact person: Mojca Ravnikar Turk
Address: SLOGED Jamova 2, 1000, Ljubljana, Slovenia
Phone: +386 41 770 542
Fax: +386 1 2804 264
E-mail: mojca.turk@zag.si
Website: http://www.sloged.si

International Symposium on Design and Practice of Geosynthetic-Reinforced Soil Structures
Date: Sunday 13 October 2013 - Wednesday 16 October 2013
Location: Faculty of Engineering, Bologna, Italy
Language: English
Organizer: Tatsuoka, Gottardi, Ling, Han
Contact person: Hoe I. Ling
Address: 500 West 120th Street, Columbia University, 10027, New York, NY,USA
Phone: 12128541203
Fax: 12128546267

EVENT DIARY

E-mail: ling@civil.columbia.edu
Website: http://www.civil.columbia.edu/bologna2013/

The third Italian Workshop on Landslides (The 3rd IWL) - "Hydrological response of slopes through physical experiments, numerical investigations and field monitoring"
Date: Wednesday 23 October 2013 - Thursday 24 October 2013
Location: Partenope Conference Centre, Naples, Italy
Language: English
Organizer: Seconda Università di Napoli, Università di Napoli Federico II, Universitat Politechnica de Catalunya
Contact person: Emilia Damiano
Address: Dipartimento di Ingegneria Civile, Design, Edilizia e Ambiente - Via Roma 29, 81031, Aversa (CE), Italy
Phone: +39 081 5010207
Fax: +39 081 5037370
E-mail: info@iwl.unina2.it
Website: http://www.iwl.unina2.it/

International Conference Geotechnics in Belarus: Science and Practice
Date: Wednesday 23 October 2013 - Friday 25 October 2013
Location: Belarussian National Technical University, Minsk, Belarus
Language: Russian and English
Organizer: Belorussian Geotechnical Society
Contact person: Ulasik T., Sernov V., Ignatov S.
Address: Republic of Belarus, prospectus Nezavicimocti, building 65, 220013 Minsk, Belarus
Phone: +37517 2659769
E-mail: geotechnika2013@gmail.com belgeotech@tut.by

8th Ukrainian Conference "Geotechnics and foundations"
Date: Tuesday 12 November 2013 - Thursday 14 November 2013
Location: Yuri Kondratyuk Poltava National Technical University, Poltava, Ukraine
Language: Ukrainian, Russia, English
Contact person: Vynnykov Yurii
Address: PoltNTU, Pershotravneva Ave., 24, 36011, Poltava, Ukraine
Phone: +38-067-7029331
Fax: +38 (053)-222-98-75
E-mail: vynnykov@yandex.ru

The 19th NZGS Symposium "Hanging by a Thread – Lifelines, Infrastructure and Natural Disasters
Date: Wednesday 20 November 2013 - Saturday 23 November 2013
Location: Millennium Hotel, Queenstown, New Zealand
Language: English
Organizer: New Zealand Geotechnical Society
Contact person: Amanda Blakey
Address: Auckland, New Zealand
Phone: +64 9 575 2744 or +64 21 025 11 628
E-mail: secretary@nzgs.org
Website: http://www.nzgs13.co.nz/

10th International Symposium of Structures, Geotechnics and Construction Materials
Date: Tuesday 26 November 2013 - Friday 29 November 2013
Location: International Convention Center, Santa Clara, Villa Clara, Cuba
Language: English, Spanish
Organizer: Facultad de Construcciones, Universidad Central de Las Villas

EVENT DIARY

Contact person: Dra. Ana Virginia González - Cueto Vila
Address: Facultad Construcciones, UCLV, Carretera a Camajuani, km 5.5, 54830, Santa Clara, Villa Clara, Cuba
Phone: (53) 42 281655, 42 281065, 42 28 1561
Fax: (53) 42 281655
E-mail: ana@uclv.edu.cu , quevedo@uclv.edu.cu
Website: www.uclv.edu.cu

GEOTEC HANOI 2013 "Geotechnics for Sustainable Development"
Date: Thursday 28 November 2013 - Friday 29 November 2013
Location: Melia Hotel, 44B Ly Thuong Kiet Street, Hoan Kiem District, Hanoi, Vietnam
Language: English
Organizer: FECON (Vietnam), VSSMGE (Vietnam) and AIT (Thailand)
Contact person: Dr. Le Quang Hanh, Ms Vu Thuy Dung
Address: FECON Foundation Engineering & Underground Construction JSC.15F, CEO Building, HH2-1 Plot, Pham Hung Road, Tu Liem District, Hanoi, Vietnam
Phone (+ 84) 46.269.0481 or 46.269.0482, Ext: 335
Fax: (+ 84) 46.269.0484
E-mail: secretariat@geotechn2013.vn
Website: http://www.geotechn2013.vn

2014

8th International Conference on Physical Modelling in Geotechnics 2014 (ICPMG)
Date: Tuesday 14 January 2014 - Friday 17 January 2014
Location: University Club, The University of Western Australia, Perth, Western Australia, Australia
Language: English
Organizer: Centre for Offshore Foundation Systems, The University of Western Australia
Contact person: arinex pty limited

Address: GPO Box 316, Belmont WA 6984 Australia,
Phone: +61 2 9265 0890
Fax: + 61 2 9265 0880
E-mail: icpmg2014@arinex.com.au
Website: http://icpmg2014.com.au/

GeoShanghai 2014
Date: Monday 26 May 2014 - Wednesday 28 May 2014
Location: Shanghai , China
Language: English
Organizer: Tongji University
Contact person: Xiong Zhang
Address: Department of Civil & Environmental Engineering, University of Alaska Fairbanks, 99775, Fairbanks, AK, United States
Phone: +1(907)474-6172
Fax: +1(907)474-6030
E-mail: xzhang11@alaska.edu
Website: www.geoshanghai2014.org

Geohubei International Conference 2014
Date: Sunday 20 July 2014 - Tuesday 22 July 2014

EVENT DIARY

Location: Three Georges Dam, Hubei, China
Language: English
Organizer: Geohubei International Conference 2014
Contact person: Dr. Guodong Zhang
Address: Three Gorges University,
E-mail: geohubei.adm@gmail.com
Website: http://geohubei2014.geoconf.org

2nd International Conference on Information Technology in Geo-Engineering
Date: Monday 21 July 2014 - Tuesday 22 July 2014
Location: Durham University, Durham, United Kingdom
Language: English
Organizer: Professor David Toll
Contact person: Dr Ashraf Osman
Address: School of Engineering and Computing Sciences, Durham University, DH1 3LE, Durham, United Kingdom
Phone: +44 191 334 2425
Fax: +44 191 334 2408
E-mail: icitg@duram.ac.uk
Website: www.icitg.dur.ac.uk

TC204 ISSMGE International Symposium on "Geotechnical Aspects of Underground Construction in Soft Ground" - IS-Seoul 2014
Date: Monday 25 August 2014 - Wednesday 27 August 2014
Location: Sheraton Grande Walkerhill, Seoul, Korea
Language: English
Organizer: TC204 of ISSMGE and Korean Geotechnical Society
Contact person: Prof. Chungsik Yoo
Address: 300 Chun-Chun Dong, Jang-An Gu,440-746,Suwon,Kyoung-Gi Do, Korea
Phone: +82-32-290-7518
Fax: +82-32-290-7549
E-mail: csyoo@skku.edu

International Symposium on Geomechanics from Micro to Macro (TC105)
Date: Monday 01 September 2014 - Wednesday 03 September 2014
Location: Cambridge University, Cambridge ,United Kingdom
Language: English
Organizer: TC105
Contact person: Professor Kenichi Soga
Address: University of Cambridge, Department of Engineering, Trumpington Street, CB2 1PZ, Cambridge, U K
Phone: +44-1223-332713
Fax: +44-1223-339713
E-mail: ks207@cam.ac.uk

XV Danube-European Conference on Geotechnical Engineering
Date: Tuesday 09 September 2014 - Thursday 11 September 2014
Location: Vienna University of Technology, Vienna, Austria
Language: English and German
Organizer: ISSMGE/Austria (ASSMGE) & Vienna University of Technology, Institute of Geotechnics
Contact persons: Prof.H.Brandl, Armin Steurer, Gerda Pfleger

EVENT DIARY

Address: Vienna University of Technology, Institute of Geotechnics, Karlsplatz 13/220-2, A-1040, Vienna, Austria
Phone: +43 1 58801 22101
Fax: +43 1 58801 22199
E-mail: igb@tuwien.ac.at
Website: http://www.decge2014.at

10th International Conference on Geosynthetics (10ICG)
Date :Sunday 21 September 2014 - Thursday 25 September 2014
Location: Estrel Convention Center, Berlin, Germany
Language: English
Organizer: DGGT / German IGS Chapter
Contact person: Gerhard Braeu
Address: Baumbachstrasse 7, 81245, Muenchen, Germany
Phone: +49 89 289 27139
Fax: +49 89 289 27189
E-mail: g.braeu@bv.tum.de

7th International Congress on Environmental Geotechnics
Date: Monday 10 November 2014 - Friday 14 November 2014
Location: Melbourne Convention and Exhibition Centre, Melbourne, Victoria, Australia
Language: English

Organizer: Engineers Australia
Contact person: Hayley Le Gros
Address: WSM, 119 Buckhurst Street, Vic 3205,Melbourne,Victoria,Australia
Phone: 61 3 9645 6322
E-mail: 7iceg2014@wsm.com.au
Website: www.7iceg2014.com

2015

12th Australia and New Zealand Conference on Geomechanics - The Changing Face of the Earth: Geo-Processes & Human Accelerations
Date: Sunday 22 February 2015 – Wednesday 25 February 2015:
Location: Wellington, New Zealand
Contact person: Amanda Blakey
E-mail: secretary@nzgs.org

XVI African Regional Conference on Soil Mechanics and Geotechnical Engineering - Innovative Geotechnics for Africa
Date: Monday 27 April 2015 - Thursday 30 April 2015
Location: Hammamet, Tunisia
Language: English and French
Organizer: ATMS
Contact person: Mehrez Khemakhem
Phone: +216 25 956 012
E-mail: mehrez.khemakhem@gmail.com
Website: www.16cramsg.org

EVENT DIARY

ISFOG 2015
Date: Wednesday 10 June 2015 - Friday 12 June 2015
Location: Holmenkollen Park Hotel Rica, Oslo, Norway
Language: English
Organizer: NGI
Contact person: Vaughan Meyer - NGI
Address: PO Box 3930 Ullevaal Stadion,N-0806,Oslo, Norway
Phone: +47 22 02 30 00
Fax: +47 22 23 04 48
E-mail: isfog2015@ngi.no
Website: www.isfog2015.no

XVI European Conference on Soil Mechanics and Geotechnical Engineering
Date: Sunday 13 September 2015 - Thursday 17 September 2015
Location: Edinburgh International Conference Centre, Edinburgh, Scotland, United Kingdom
Language: English
Organizer: British Geotechnical Association
Contact person: Derek Smith
Address: Coffey Geotechnics Limited, The Malthouse, 1 Northfield Road, Reading, Berkshire, RG1 8AH, Reading, UK
Phone: +44 1189566066
Fax: +44 1189576066
E-mail: derek_smith@coffey.com
Website: http://www.xvi-ecsmge-2015.org.uk/

Workshop on Volcanic Rocks & Soils
Date: Thursday 24 September 2015 - Friday 25 September 2015
Location: Isle of Ischia, Italy
Language: English
Organizer: Associazione Geotecnica Italiana (AGI)
Contact person: Ms. Susanna Antonielli
Address: Viale dell'Università 11, 00185, Roma, Italy
Phone: +39 06 4465569 - +39 06 44704349
Fax: +39 06 44361035
E-mail: agi@associazionegeotecnica.it
Website: www.associazionegeotecnica.it

15th Pan-American Conference on Soil Mechanics and Geotechnical Engineering
Date: Sunday 4 October 2015 - Thursday 8 October 2015
Location: Buenos Aires, Argentina
Email: panamericano2015@saig.org.ar

The 15th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering -New Innovations and Sustainability-
Date: Monday 09 November 2015 - Friday 13 November 2015
Location: Fukuoka International Congress Center, Fukuoka, Kyushu, Japan
Language: English
Organizer: The Japanese Geotechnical Society
Contact person: Toshifumi Mukunoki
Address: 2-39-1 Kurokami, Chuou-ku, Kumamoto, JAPAN, 860-8555,Kumamoto, Japan
Phone: +81-96-342-3535

EVENT DIARY

Fax: +81-96-342-3535
E-mail: 15tharc@kumamoto-u.ac.jp
Website: http://www.jgskyushu.net/uploads/15ARC/

2016

NGM 2016, The Nordic Geotechnical Meeting
Date: Wednesday 25 May 2016 - Saturday 28 May 2016
Location: Harpan Conference Centre, Reykjavik, Iceland
Language: English
Organizer: The Icelandic Geotechnical Society
Contact person: Haraldur Sigursteinsson
Address: Vegagerdin, Borgartún 7, IS-109, Reykjavik, Iceland
Phone: +354 522 1236
Fax: +354 522 1259
E-mail: has@vegagerdin.is
Website: http://www.ngm2016.com

NON-ISSMGE SPONSORED EVENTS

2013

The 1st International Symposium on Transportation Soil Engineering in Cold Regions
Date: Thursday 10 October 2013 - Saturday 12 October 2013
Location: Qinghai Hotel, Xining, Qinghai Province, China
Language: English
Organizer: Beijing Jiaotong University, Qinghai Research Institute of Transportation
Contact person: Prof. Jiankun LIU
Address: School of Civil Engineering, Beijing Jiaotong University, 100044, Beijing, China
Phone: 86-13581986007
Fax: 86-10-51684096
E-mail: jkliu@bjtu.edu.cn
Website: http://subgrade.sinaapp.com/

The Mediterranean Workshop on Landslides (MWL) - "Landslides in hard soils and weak rocks - an open problem for Mediterranean countries"
Date: Monday 21 October 2013 - Tuesday 22 October 2013
Location: Partenope Conference Centre, Naples, Italy
Language: English
Organizer: Seconda Università di Napoli, Università di Napoli Federico II, Universitat Politechnica de Catalunya
Contact person: Emilia Damiano
Address: Dipartimento di Ingegneria Civile, Design, Edilizia e Ambiente - Via Roma 29 ,81031, Aversa (CE), Italy
Phone: +39 081 5010207
Fax: +39 081 5037370
E-mail: info@iwl.unina2.it
Website: http://www.mwl.unina2.it

EVENT DIARY

International Symposium on Advances in Foundation Engineering
Date: Thursday 05 December 2013 - Friday 06 December 2013
Location: Furama Riverfront Hotel, Singapore
Language: English
Organizer: Geotechnical Society of Singapore
Contact person: Phoon Kok Kwang (Chair)
Address: Block E1A, #07-03, 1 Engineering Drive 2,Singapore 117576, Singapore
Phone: 65-65166783
Fax: 65-67791635
E-mail: kkphoon@nus.edu.sg
Website: http://rpsonline.com.sg/isafe2013/

2014

DFI-EFFC International Conference on Piling and Deep Foundations
Date: Wednesday 21 May 2014 - Friday 23 May 2014
Location: Stockholmsmässan, Stockholm, Sweden
Language: English
Organizer: DFI & EFFC
Contact person: Deep Foundations Institute
Address: 326 Lafayette Ave,07506,Hawthorne,New Jersey, United States
Phone: 9734234030
Fax: 9734234031
E-mail: staff@dfi.org
Website: http://www.regonline.com/builder/site/Default.aspx?EventID=1221506

8th European Conference on Numerical Methods in Geotechnical Engineering (NUMGE14)
Date: Tuesday 17 June 2014 - Friday 20 June 2014
Location: Delft University of Technology, Delft, Netherlands, The
Language: English
Organizer: Prof. Michael Hicks
Contact person: Mrs. Hannie Zwiers
Address: Delft University of Technology, Faculty of Civil Engineering & Geosciences. Stevinweg 1, 2628, CN Delft, The Netherlands
Phone: +31 15 2788100
E-mail: info@numge2014.org
Website: http://www.numge2014.org

FOR FURTHER DETAILS, PLEASE REFER TO THE WEBSITE OF THE SPECIFIC CONFERENCE

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The International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) is pleased to announce the publication of another new issue of the International Journal of Geoengineering Case Histories (http://casehistories.geoengineer.org).

The papers included in Issue #3, Volume #2 are the following:

Paper Title: **Flat Jack Method for Measuring Design Parameters for Hydraulic Structures of the Koyna Hydro Electric Project in India,** pp. 182-195

Authors: Keshav Ral Dhawan

Abstract: The paper presents two different projects: The first involves a case with limited rock cover on a side of an excavated surge shaft located near a steep slope. The second involves the assessment of design parameters of an existing masonry dam for use as input in dynamic analysis. The induced stresses in the surge shaft of Koyna Hydro Electric Project (K.H.E.P.) stage-IV were measured with flat jack. These tests were first performed in a 4 m diameter pilot shaft and after the shaft was excavated to its full diameter of 22.70 m. The stresses increased from 3.96 MPa to 5.09 MPa, when the 4m-diameter surge shaft was expanded to its full diameter of 22.70 m, in the case where significant rock mass cover existed at EL 651.00 m. However stress reduction or no variation in the induced stress was measured in the portion of insufficient rock cover. In the second case, to determine the design parameters of Kolkewadi masonry dam of K.H.E.P stage-III, flat jack tests were conducted at the upstream side of Kolkewadi masonry dam in masonry of 1:4 and 1:3 and at downstream sloping side in masonry of 1:5. It is impractical and difficult to obtain mechanical properties of masonry in laboratory from the extracted core samples, due to intrinsic nonhomogeneity of the material. The brick/stone and mortar layers caused anisotropic behavior of masonry. Average deformation modulus for 1:3 masonry was 32.8 GPa. Similarly, the average deformation modulus for the 1:4 and 1:5 masonry was 19.0 and 13.7 GPa respectively and were adopted for the dynamic analysis. Induced stresses in the masonry dam were found to be nearly equal to the overburden.

Download here: http://casehistories.geoengineer.org/volume/volume2/Issue 4/IJGCH_2_3_1.html

Paper Title: **Large Diameter Long Bored Piles in the Mekong Delta,** pp. 196-207

Authors: Bengt H. Fellenius, Nguyen Minh Hai

Abstract: Static loading tests, O-cell tests, were performed on two long, strain-gage instrumented, bored piles in HoChiMinh City, Vietnam, where a series of twelve apartment towers were to be constructed. The test piles were constructed to 76 and 91 m depth and tested to maximum O-cell loads of 10 and 18 MN, respectively. For both piles, the O-cell level was placed at a depth of about 20 % of the pile length above the pile toe. The soil profile consisted of very soft organic clay to about 10 to 15 m depth underlain by firm to stiff clayey soil to about 25 to 45 m depth. Hereunder, the soil consisted of a compact to dense sandy silt. Neither of the tests was able to fully engage the shaft resistance of the piles above the O-cell level, but did so below the O-cell level. Back-calculation of the load distributions determined from the strain-gage measurements showed the shaft resistance, even where fully mobilized, to be very small: the beta-coefficient applied in an effective stress analysis was only about 0.13 to 0.14. The evaluations of shaft resistance development showed a maximum shear resistance to occur after a movement of only 3 to 4 mm, after which the response became plastic and strain-softening. The toe resistance was very low because the construction had left soil debris at the bottom of the drilled hole. Ongoing regional settlement leads to concerns about the possibility for the production piles to have a similarly low toe resistance. This would locate the neutral plane of the shorter piles in settling soil and create a downdrag situation for the piled foundation.

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ISSMGE's International Journal of Geoengineering Case Histories(Continued)

Paper Title: **The July 10 2000 Payatas Landfill Slope Failure**, pp. 208-228
Authors: Navid H. Jafari, Timothy D. Stark, Scott Merry

Abstract: This paper presents an investigation of the slope failure in the Payatas landfill in Quezon City, Philippines. This failure, which killed at least 330 persons, occurred July 10th 2000 after two weeks of heavy rain from two typhoons. Slope stability analyses indicate that the raised leachate level, existence of landfill gas created by natural aerobic and anaerobic degradation, and a significantly over - steepened slope contributed to the slope failure. The Hydrologic Evaluation of Landfill Performance (HELP) model was used to predict the location of the leachate level in the waste at the time of the slope failure for analysis purposes. This paper presents a description of the geological and environmental conditions, identification of the critical failure surface, and slope stability analyses to better understand the failure and present recommendations for other landfills in tropical areas. In addition, this case history is used to evaluate uncertainty in parameters used in back-analysis of a landfill slope failure.
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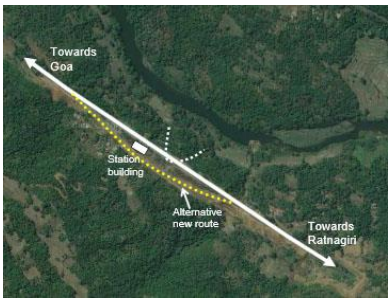
Paper Title: **Embankment Failure in Residual Soils at Nivsar, Ratnagiri**, pp. 229-251
Authors: Ashish Juneja, Deblina Chatterjee, Rajendra Kumar



Abstract: The Nivsar Yard embankment was constructed by the Konkan Railways in 1994. Near to the station building, the 22m high embankment runs parallel to the Kajali River for a stretch of about 100m. This stretch has experienced failure and settlement related problems since the record-breaking July 2005 rainfall. Corrective ground improvement measures were implemented immediately after the monsoon. However, these measures were inadequate because the failure-surface reappeared during the following monsoon. The failure-surface mirrored the shape and size of the failure observed in 2005. Since then after nearly every monsoon, the embankment has moved despite precautionary measures taken by the railway to arrest the movement. The hydrogeological and geotechnical properties which affect slope stability are first discussed. The stability of the embankment is then evaluated at 5-sections drawn along the slope. Two cases are considered. In the first case, the stability of the unreinforced slope is calculated. In the second case, calculations are done using the slope reinforced with soil nails and micropiles installed in 2005 and 2007. The design railway loading and the water level position during the dry and wet season were also taken into account in the stability analysis. The safety factor during the wet season was observed to be less than unity in 4 out of 5 sections for both cases. In each case, the critical circle passed through the toe of the embankment and mirrored the field observations. In 2010-11, the rail tracks were realigned to bypass the failure surface. The stability of the slope was reinvestigated and considered to be safe under the new loads. Irrespective of the above change in the rail alignment, the cumulative settlement of the embankment has also reduced since the 2009 monsoon.
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From the editor of ISSMGE Bulletin

There is some confusion about case-history articles in this fantastic journal and those in Bulletin. As the editor of Bulletin, I would clarify the differences between them. Bulletin is something like a magazine that emphasizes simplicity, clarity, and speed. Hence, there is no peer review and I do my best to improve the submitted draft quickly so that the readers may get the latest information from the article. The articles are usually short and nice photographs are considered important. In contrast, the International Journal of Geoengineering Case Histories seeks for high quality as an academic journal with good peer reviews. Thus, the two publications of ISSMGE are different but work together as evidenced by many Bulletin articles that are invited to be re-submitted to the journal after their quality is improved and more information is added.