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.

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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.

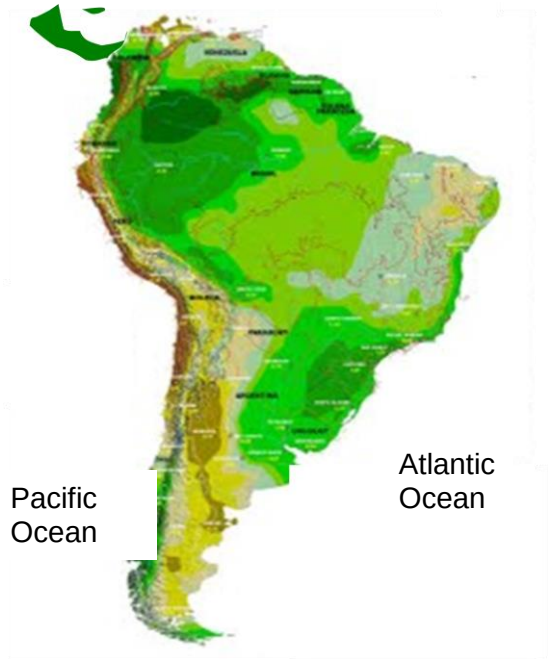

Figure 1. Geographical zones in South America

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.

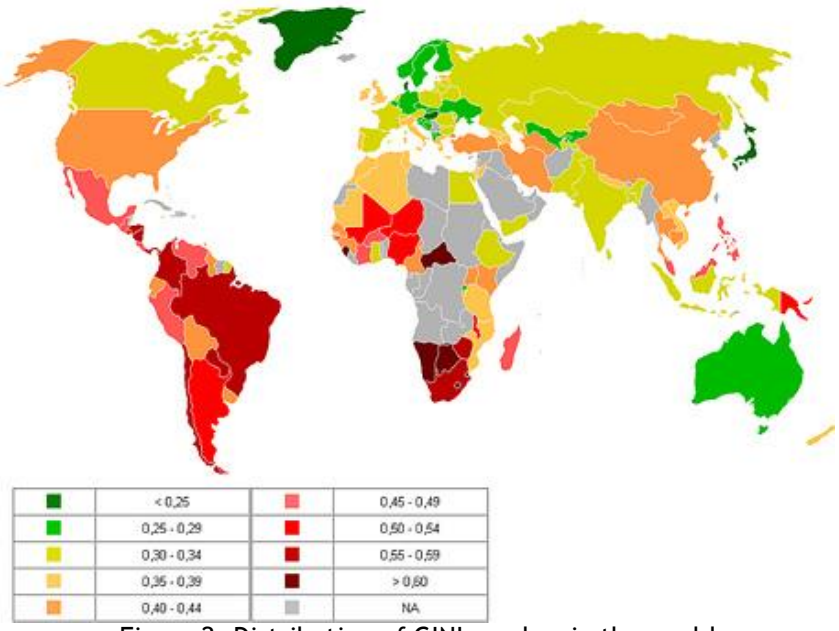

Figure 2. Distribution of GINI number in the world

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

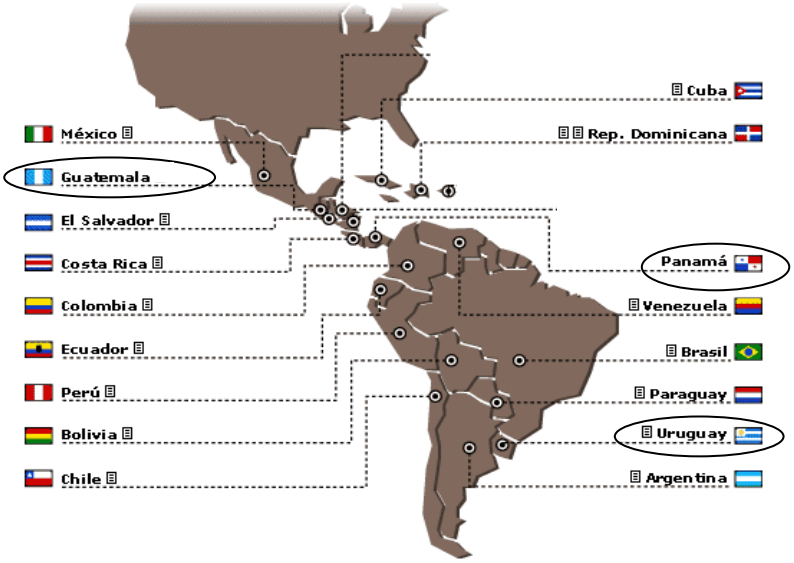

Figure 4. Geographical distribution of Member Societies

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.

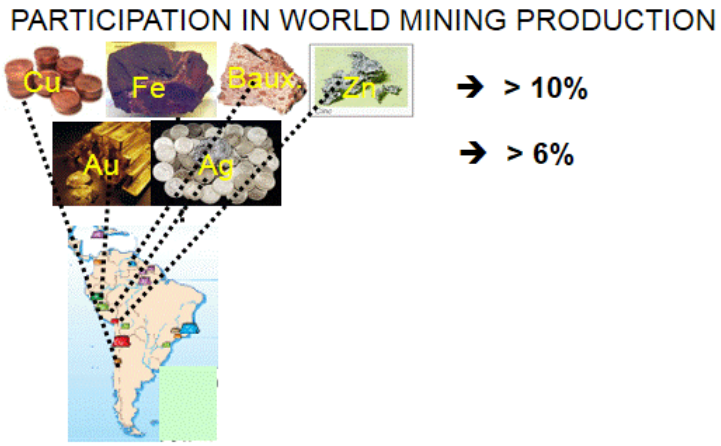

Figure 5. World distribution of mining production

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)

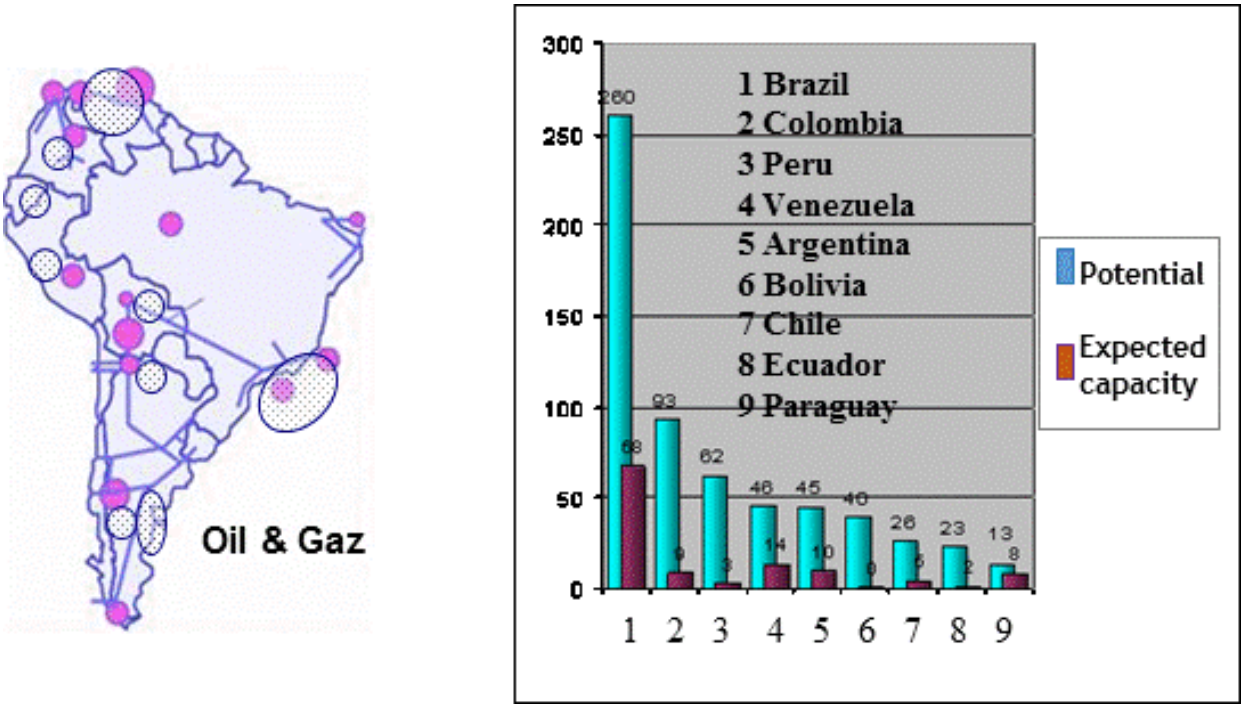

Figure 6. Oil and Gas deposits & use of hydroenergy

Figure 7. Enlargement of Panama Canal.

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

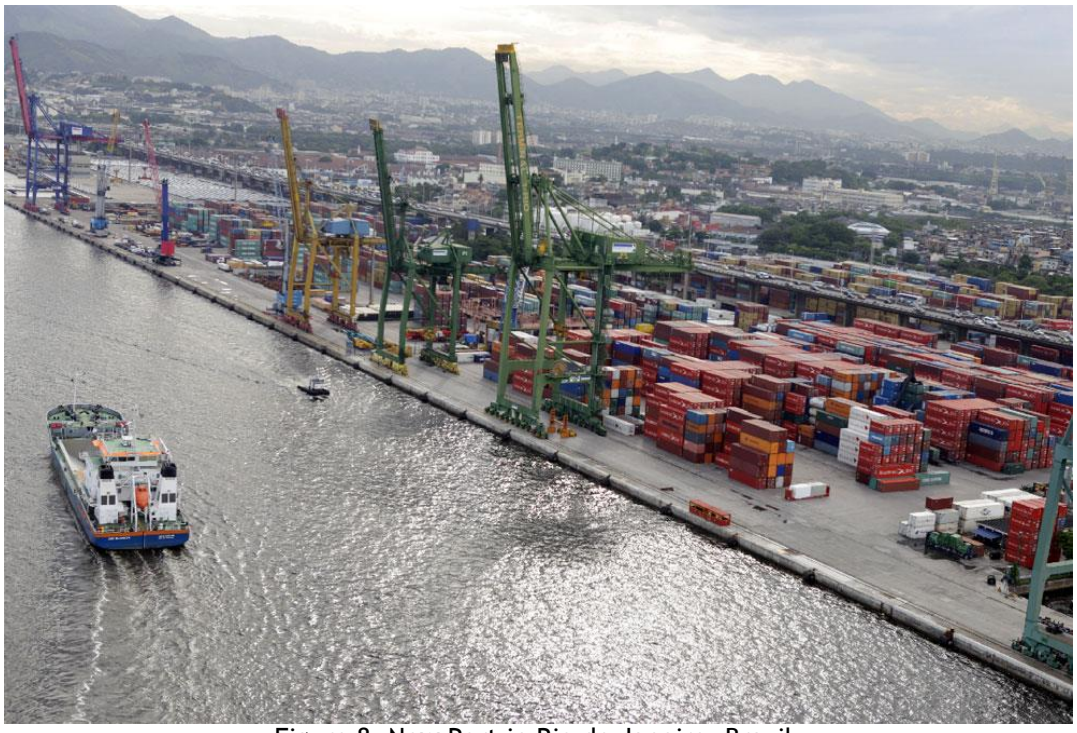

Figure 8. New Port in Rio de Janeiro, Brazil.

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)

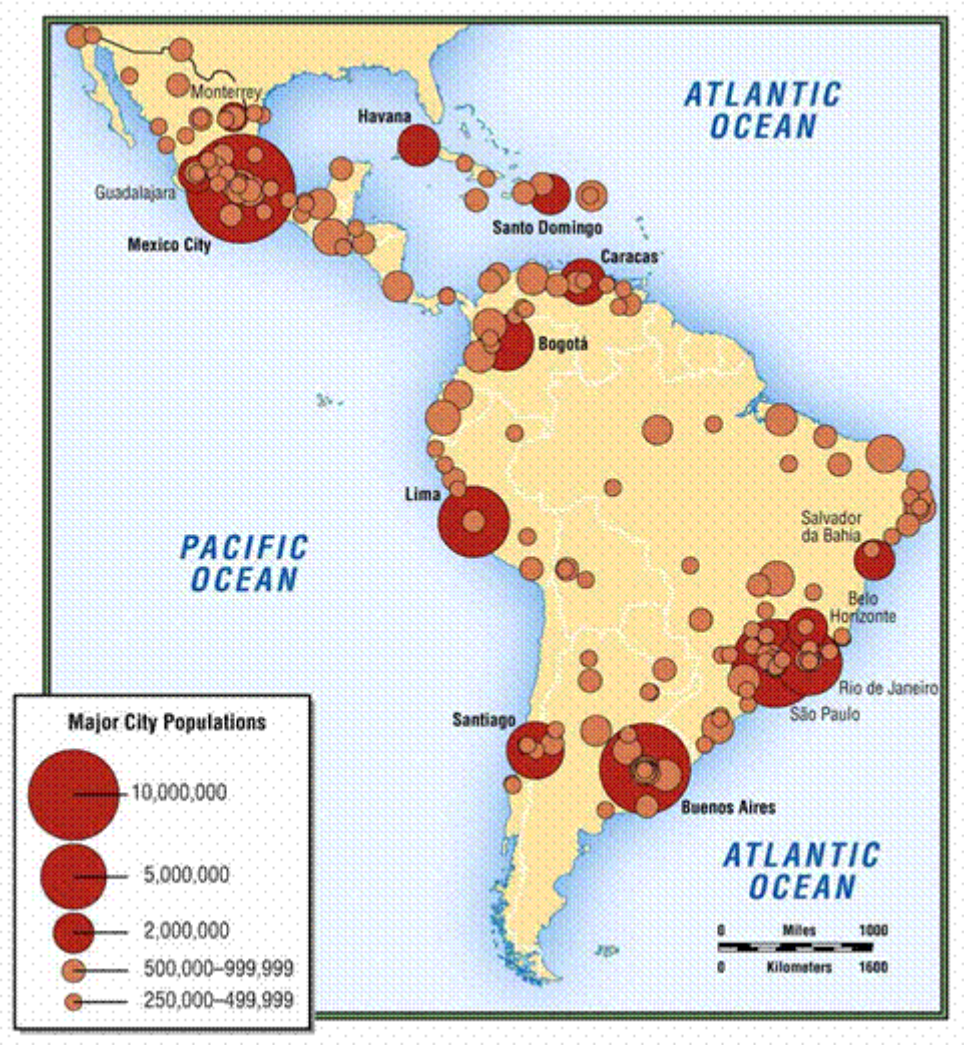

Figure 9. Distribution of main urban areas

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

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

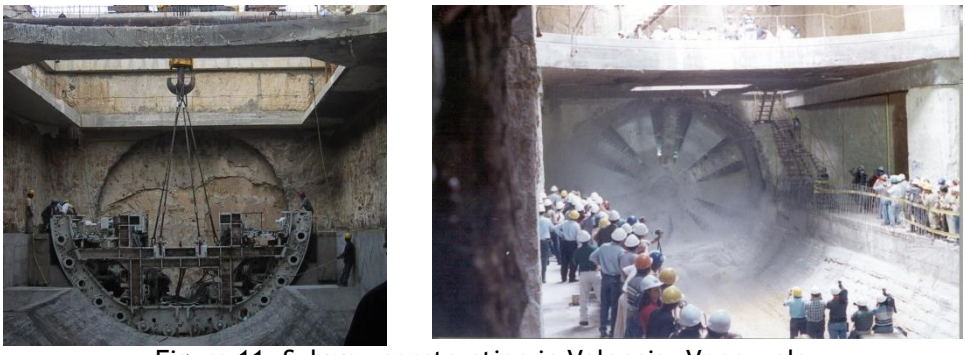

Figure 11. Subway construction in Valencia, Venezuela

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.

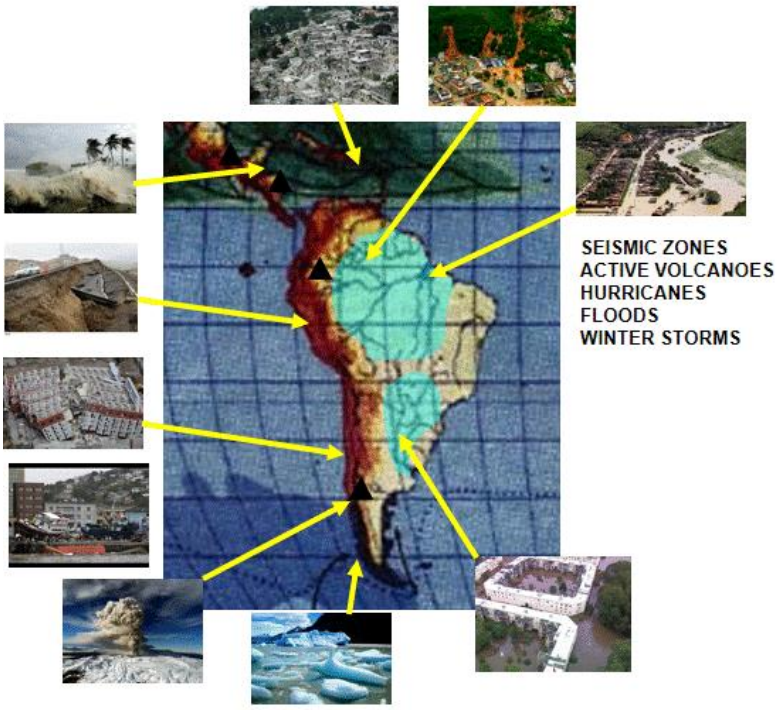

Figure 14. Volcanic, Seismic and Hurricane Zones

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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The future of ISSMGE in North America

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Federal Highway Administration, McLean, VA, USA

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.

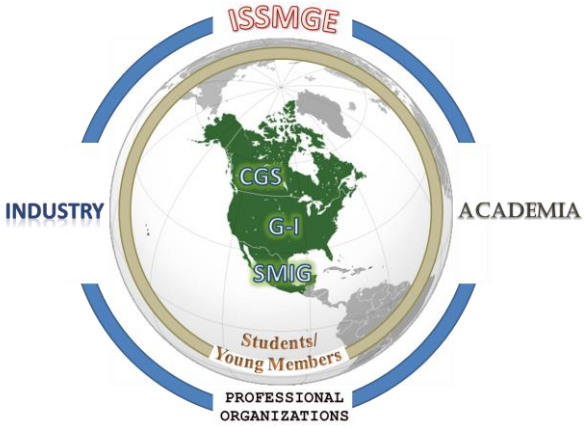

Figure 1. Relationship between ISSMGE and its partners

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.

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