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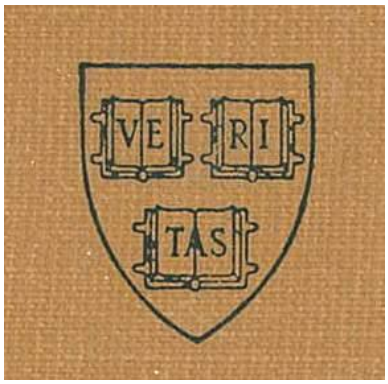
THE ISSMGE FROM 1936 TO 2011 A RETROSPECTIVE ON THE OCCASION OF THE 75TH PLATINUM JUBILEE ANNIVERSARY

Kenji Ishihara
Michele Jamiolkowski

FOREWORD

The members of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) are pleased to remark that the year of 2011 scores an important milestone commemorating the 75th year since the birth of our Society. The International Society had its origins at the First International Conference on Soil Mechanics and Foundation Engineering held in Harvard in 1936. To celebrate this memorial year, the ISSMGE Board, under the guidance of Past President Pedro Sêco e Pinto, put forward a series of commemorative programs of events, taking advantage of the 2011 Regional Conferences held in the six ISSMGE Regions. On the current President's suggestion, the authors initiated studies of the old records on the ISSMGE activities. This article is a result of their studies. Although it is far from being complete the authors it might be a good reminder of the great accomplishments achieved by our predecessors.

FIRST INTERNATIONAL CONFERENCE IN CAMBRIDGE, MASSACHUSETTS, USA IN 1936



A prelude to the founding of the **International Society of Soil Mechanics and Foundation Engineering** (ISSMFE) was provided by the First International Conference on Soil Mechanics and Foundation Engineering (ICSMFE) which was held in Cambridge, Massachusetts, USA, on June 22-26, 1936. By that time, at various venues, a number of activities on soil testing and its application to earthworks had taken place. The time had come to hold a Conference aimed at exchanging and sharing information on Earth and Foundation Engineering.

THE ISSMGE FROM 1936 TO 2011 (continued)

It was Professor Arthur Casagrande (assistant professor of Harvard University) who sensed the timing, conceived the idea and carried out the herculean task of running the conference all the way through, in his role of Secretary General, with K. Terzaghi (Professor of Technical University of Vienna and visiting Professor of Harvard University) as Chairman. Professor Peck once remarked "Our Society owes an enormous debt to Arthur Casagrande for his conviction that the time was right for the International Conference and to his tremendous efforts to organize it".

The 1st ICSMFE came into being thanks to the generosity of Harvard University because it was organized in combination with the commemorative events celebrating the Tercentenary of Harvard University. For this event, a great deal of financial support and administrative assistance were offered by Harvard on top of the many facilities made available to the participants. The Conference was attended by 206 experts from 20 countries mainly from Europe and North America. Photo 1 is truly meaningful as it portraits young professionals who would, before long, take leading roles within their own areas. Looking at the picture in close up we can spot well-known personalities who subsequently shaped the Geotechnical Engineering history, such as G.P. Tschebotarioff, D.M. Burmister, N. Carrillo, D.W. Taylor, C.S. Proctor, L.F. Cooling, H.F. Winterkorn, L.A. Hogentogler, P.C. Rutledge, B.J. Buchanan, G. Rodio and a young J.O. Osterberg who attended almost all the ICSMFE Conferences up to 2001 in Istanbul.

The conference subjects covered a broad range of subjects as they appear nowadays in text books. They included soil properties, stress distribution, settlements, slopes stability, bearing capacity, earth pressures, piles, ground water seepage, soil improvement, and soil problems in highway.

The Opening Session was chaired by the Secretary General, A. Casagrande, while the Opening Address was delivered by Karl von Terzaghi, Chairman. The format of the Conference was plenary and English was the only official language. The Conference was run in a series of main sessions within which some selected experts gave lectures followed by extensive discussions. Looking over the proceedings, we realize that the work content and the discussions were impressive and still of great value for understanding the basic concepts and the framework of soil mechanics. We can go as far as to say that, if the first ICSMFE had not been convened at that time, each subject areas might have remained subordinate separately to other traditional areas, for example, geology or structural engineering, and there might have been no crystallization and further growth of the state of the art in the soil mechanics and geotechnical engineering areas as it prospers today.

Since the first ICMSFE was so successful, it became clear that the Conference should not remain a one-off event but should, instead, be continued within a few years, possibly being held in Holland where earthwork engineering is so crucial to the country.

It was also requested to set up a permanent international organization. Thus it was decided to establish International Committees consisting of National Committees with K. Terzaghi as President and A. Casagrande as Secretary. It was also decided that at the next Conference the International Committees would submit the draft of the Constitution and of the By-laws, which are essential for the Society to become a permanent organization.

There was at that time a widespread awareness that it was the moment to set up a common denominator institution that would group engineers with diverse backgrounds but involved in our discipline.

Editorial 1

It is commonly recognized that K. Terzaghi is the originator of modern soil mechanics and foundation engineering and therefore father of our profession. After tracing the history of development, the writers had a strong belief that this is true. Not only was he always a leading figure in the forefront, but he conveyed strong messages on the role and importance of the soil mechanics and foundation engineering every time he participated in the ICSMFE. We are very much impressed by his enthusiastic and heartfelt message to our community.

THE ISSMGE FROM 1936 TO 2011 (continued)

Photo 1 A lineup of attendees to the 1st ICSMFE (After W. Marcuson)

Photo 1-1 A close-up of the left side of Photo 1 4.S.J.Buchanan 6.P.C.Ruteledge 20.J.P. den Hartog 46. K. von Terzaghi 47. G. Rodio 76. A. Casagrande

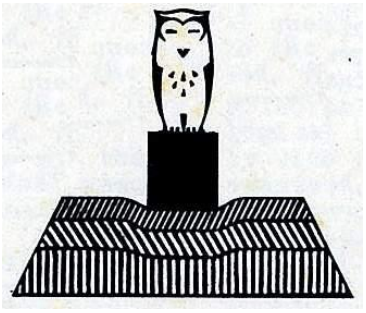
Photo 1-2 A close-up of the up middle of Photo 1 112 D.W. Taylor 129 D.W. Burmister
130 G. Tschebotarioff 131 N. Carrillo
135 J.O. Osterberg 137 C.S. Proctor

No less important was the role played by Arthur Casagrande. He was instrumental in persuading the President of Harvard University to host the conference and carrying out all arrangements for organizing the first International Conference on Soil Mechanics and Foundation Engineering. The great success of this conference contributed greatly for establishing the place of soil mechanics in engineering practice throughout the world. He also dedicated himself to the ISSMFE as the 3rd President between the periods of 1961 in Montreal to 1965 in Paris.

There is a saying that for a great religion to be established, there always are two key-role playing giants. For Christianity Jesus Christ is the originator and his disciple Saint Paul was the great evangelist. For Greek philosophy, Socrates was the great philosopher and it was Plato who was the greatest disciple. Terzaghi and Casagrande are considered as a combination in the same context. Without Terzaghi, Casagrande would not have been so well-known. Had there not been Casagrande, the fame of Terzaghi would have developed in a different format.

THE ISSMGE FROM 1936 TO 2011 (continued)

2ND INTERNATIONAL CONFERENCE IN ROTTERDAM, THE NETHERLANDS, IN 1948



K. Terzaghi

The plans to hold the 2nd Conference within a few years could not be materialized because of the outbreak of the World War II.

It was not until 1948 (June 21–30) that the 2nd ICSMFE could be held in Rotterdam, the Netherlands. President of the Organizing Committee was J.P. van Bruggen, while T.K. Huizinga, and E.C.W. A. Geuze acted as Secretaries. The Organizing Committee was established, under the patronage of Her Majesty the Queen of the Netherlands. Government Dignitaries, the Delft Technical University and the Municipality of Rotterdam formed an Honorary Committee to support the Conference. The International Committee set up in 1936 was consulted to shape up the frameworks of the Conference. Though the conference was organized only three years after the end of the war, a surprisingly large number of papers were submitted with participants rising to 596, the largest part being from European countries.

The organization of the Conference was highlighted by the extraordinary energies and resources employed by a country who had been so severely devastated. The venue was meant as symbolic evidence of how destructive the war had been, of the exceptional restoration works and of the importance of the role played by soils and foundation engineers.

Photo 2 is a group photo taken at the venue. In the front row, the close-up shows K. Terzaghi and A. Skempton.

The Opening Session took place on June 22, 1948 in the City Theater of Rotterdam with the address of the Organizing Committee's chairman, followed by the Presidential address by K. Terzaghi. On the same day a meeting was held with about 20 representatives of national committees to discuss the ISSMFE statutes.

Each Technical session was set up so that distinguished professionals gave introductory lectures followed by open discussions delivered by two to three prominent experts. In addition to traditional subjects such as laboratory and field testing, settlements of structures, stability of earth and foundation works etc., several new subjects and topics specific to low-land countries were selected for the main sessions, including harbour reconstruction, raft and pile foundations and railway embankments.

The epoch-making Rotterdam Conference was the official launch of the International Society of Soil Mechanics and Foundation Engineering (ISSMFE) with Professor Karl Terzaghi elected President and Professor D.W. Taylor designated to serve as Secretary General. The statutes discussed in 1936 were modified and updated into a more complete form. At this stage 18 countries joined the Society and English was the main language to ease the running of the Conference as well as the task of producing the Proceedings.

Editorial 2

The 2nd Conference was an epoch-making event in the sense that it officially announced the establishment of the international body of organization and recommended to each country in the world to join the ISSMFE. This action was huge encouragement for many engineers in war-wrecked countries where soils were only materials to handle for restoration of nations. In Japan, the Committee established in response was indeed the starting point for founding the Japanese Geotechnical Society and for developing further activities.

THE ISSMGE FROM 1936 TO 2011 (continued)

Photo 2 Middle front of the picture showing attendees to the 2nd ICSMFE
(From proceedings of the 2nd Conference)

3RD INTERNATIONAL CONFERENCE IN ZURICH, SWITZERLAND IN 1953

The Opening Session was held on August 17, 1953 in the Kongresshaus in Zurich with the welcome address delivered by E. Meyer-Peter, President of the Organizing Committee. The decision to hold the 3rd ICSMFE in Switzerland was not taken by the Executive Committee in Rotterdam but later in January in 1951 the venue was decided. A total of 154 papers from 28 countries were submitted to the Conference whose format was the same as in Rotterdam with the introductory lectures by selected experts, followed by comprehensive discussions on each subject.

During the official banquet held in the Zurich Kongresshaus, a special event was planned in honor of Professor K. Terzaghi celebrating his 70th birthday to express thankfulness for his enormous contribution to our profession and to our society (Photo 3). Once the Technical Sessions were over, the Conference venue was moved to Lausanne where the closing session and the Banquet were held. In the closing speech, President K. Terzaghi expressed his sincere appreciation and thankfulness to E. Meyer-Peter, von Moos and Haefeli of the Organizing Committee, who made significant efforts for the organization and for the use of two languages.

The Swiss Conference was to a great extent effective in shaping up the framework of the Statues as they are nowadays.

THE ISSMGE FROM 1936 TO 2011 (continued)

The Executive Committee meeting was held twice, first in Zurich and next in Lausanne. For the first time Vice-Presidents were formally appointed, namely A.W. Skempton (Europe), A.E. Cummings (North America), Mr. M. Vargas (South America), Mr. W.S. Hanna (Africa) and K. Hoshino (Asia). At that time there was only the Australian National Society to represent both Australia and New Zealand. In future it would become the 6th ISSMFE Region.

Because of the four-yearly Conferences, being somewhat long recess, Vice-Presidents were encouraged to organize, in between, regional Conferences. The election of the President was taken up during the Executive Committee meeting in Lausanne. The proposal by Mr. Huizinga to re-elect Professor Terzaghi was unanimously approved with acclamation and he agreed to continue working as President for the following four years.

After the Rotterdam Conference in 1948, it was agreed upon that French be officially adopted as the second ISSMFE language. As to the next ICSMFE venue, there were two proposals from Great Britain and Egypt, and after a secret ballot Great Britain was elected as the host country for the 1957 Conference. During the Zurich Conference the assignment of Secretary General was handed over from Professor Casagrande to Dr. D.W. Taylor of U.S.A.

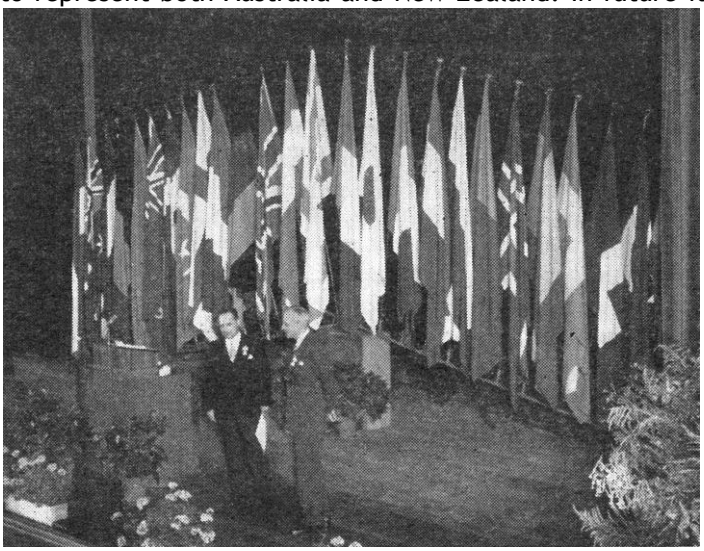


Photo 3 Prof. K. Terzaghi, receiving the Honorary Degree of Doctor of Science of the Swiss Federal Institute of Technology from Prof. H. Favre, Rector of the Swiss Federal institute of Technology.
(From Proceedings of the 3rd ICSMFE)

Editorial 3

The conference in Switzerland appears to provide an opportunity for raising geotechnical challenge particularly associated with mountainous environments such as glacier tills and colluvial deposits. Thus, the landslides and construction of large dams and roads were the subjects on which more emphasis was put. In those days, the Regional Conferences were not yet implemented. Thus, the problems of local or native soils attracted much interest among participants and the technical tours were important attractions.

4TH INTERNATIONAL CONFERENCE IN LONDON, UNITED KINGDOMS IN 1957

The 4th ICSMFE was held at the Institution of Civil Engineers (ICE), in the heart of London, on August 12-24, 1957. The Opening session was launched with A. Whitaker, ICE President's address. It was followed by Professor K. Terzaghi's Presidential address, presenting a detailed history of the development in the earthwork engineering he had been personally engaged since 1900.

In the Technical Sessions, the main subjects were soil properties and their measurements, field measurements and sampling, foundations of structures, roads, runways and rail-tracks, earth pressure on structures and tunnels, earth dams, and slopes and open excavations. The sessions were run by the presentation of general reports and comprehensive discussions followed by well-known specific areas experts. The format of the Conference was the same as in the previous ones.

THE ISSMGE FROM 1936 TO 2011 (continued)

The sessions were operated with simultaneous translation between English and French and this feature became a standard model which was followed by the subsequent conferences.

At the Executive Committee meeting, Professor A.W. Skempton was elected President for the term 1957 to 1961 with Mr. A. Banister to serve as Secretary General. It was decided that Paris, France would host the 1961 Conference.

At the Executive Committee meeting some issues regarded as necessary for the sound growth of the society were suggested, such as:

(1) Notations and Symbols for a conventional use within the soil mechanics community.
(2) Classification of Geotechnical literatures.
(3) The methods of static and dynamic penetration tests.
(4) Undisturbed sampling was the important areas in which survey was deemed necessary to compile data on common basis.

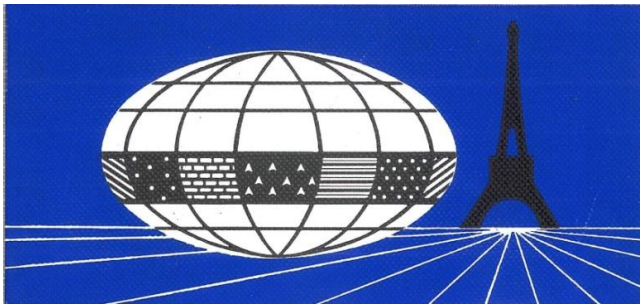
Moreover, it was agreed upon to establish Sub-committees for each of the above items.

Photo 4 President K. Terzaghi making his address at the Opening Session, Standing on the right (From Proceedings of the 4th ICSMFE)

Editorial 4

Reading through the Proceedings, one can realize that the Conference in London was the first occasion in which in-depth discussions were developed regarding the essence of soil mechanics. It may be without saying that this conference set a milestone to further development of soil mechanics. In fact, it is said that the incentive to set up the Rankine Lecture by British Geotechnical Society emerged from the success of the 4th ICSMFE in London.

5TH INTERNATIONAL CONFERENCE IN PARIS, FRANCE IN 1961



France gave birth to many new disciplines of modern science and engineering as exemplified by the works of Coulomb, Alexandre Collin and Boussinesq. In addition, there were many new technologies developed such as pressiometer and heavy tamping method for soil improvement. Thus, it was considered most appropriate and stimulating to hold the 5th ICSMFE in Paris, France and to firm up the basic concepts of soil mechanics and establish the framework of the foundation engineering.

THE ISSMGE FROM 1936 TO 2011 (continued)

A.W. Skempton

The 5th Conference was held at the Assembly Hall of Paris UNESCO place in July 17-21, 1961. The Opening Session was addressed by the preeminent scientist and engineer, Albert Caquot (1881-1976) who acted as President of the French Organizing Committee. In his presidential address, Professor A.W. Skempton traced the last 25 years development of soil mechanics, since 1936, highlighting that significant progresses had been made in understanding the behaviour of clays through case studies on failures of embankment dams and of slopes. He emphasized the great value of field observations for the enhancing the state-of-the-art in soil mechanics and foundation engineering. Conference subjects were soil properties and their measurement techniques both in-situ and in the laboratory, earth pressure on structures and tunnels, shallow foundations, piles foundations, road, runways, and rail-tracks. The Conference outline was arranged as one main working session operated in series with introductory lectures, followed by comprehensive discussions and remarks.

As a result of the increasing number of the papers submitted, to each National Society was allocated a quota of total pages with a limit of 4 pages per article. A total of 269 papers were accepted to be included in the Proceedings Volumes 1 and 2. The Conference was attended by as many as 1025 experts. As for the conference languages, it was decided that the summaries should be written in both in English and in French while one of these two languages was to be selected by the paper's author. Simultaneous translation, however, was to be made into English and French only.

Professor A. Casagrande was elected President for the term 1957-1961, and it was decided that Mr. A. McDonald should act as Secretary General whose role was of the highest importance for managing ISSMFE. At the end of the Conference, the Norwegian Society presented to the ISSMFE a gavel made from a wooden pile excavated from an old church in Norway. Ever since, the gavel has been used since then as a symbol of the Society and transferred from the current to the next president. The gavel and its illustration are shown in the figure below.

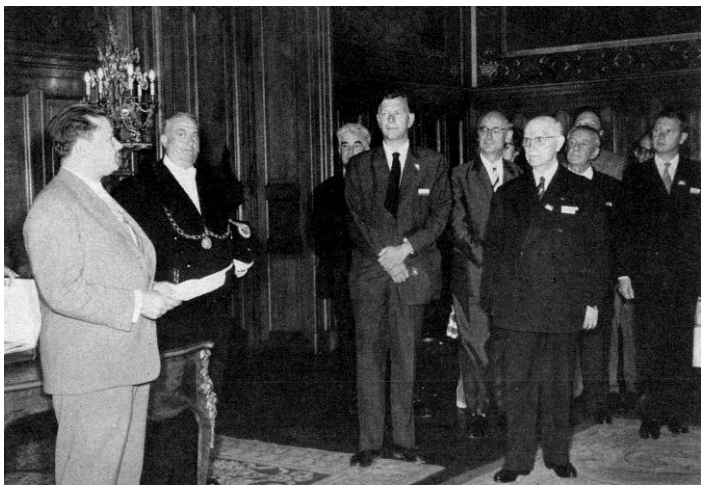


Photo 5. Reception, A. Caquot in the front row on the right and A.W. Skempton in the middle (From Proceedings of the 5th ICSMFE)

Gavel and description on the inner side of the lid

Back side of the box

THE ISSMGE FROM 1936 TO 2011 (continued)

Editorial 5

Professor Albert Caquot is well-known as an outstanding engineer and scientist not only in soil mechanics but more generally in the area of applied mechanics. He was a designer of aircrafts, balloons, cable-stay bridges, caissons, tunnels, etc. The Conference in Paris greatly benefitted from his leading foremost role.

6TH INTERNATIONAL CONFERENCE IN MONTREAL, CANADA IN 1965

The 6th ICSMFE was held in Montreal on September 7-15, 1965 at the Palace des Arts.

At the Opening Session, President A. Casagrande expressed deep sadness for the passing away of K. Terzaghi, the great creator of our profession and highly regarded leader of the ISSMFE.


A. Casagrande

Professor K. Terzaghi had passed away on October 25, 1963 at the age of 80. He had always been most enthusiastic and passionate in guiding the ISSMFE as President between 1936 and 1957. He sent a heartfelt message to the 5th Conference in Paris in 1961 but was not able to attend it. Since he was closely associated as a consultant with many rockfill and earthfill dams in Canada, particularly the Mission Dam in British Columbia, a special memorial ceremony was held to pay him a tribute and to announce that the dam was renamed Terzaghi Dam. The great efforts by Dr. Rovert F. Legget as Chairman of the Conference should be remembered herein. He was the founder of the Canadian Geotechnical Society and also the Canadian Geotechnical Journal.


R. F. Legget

The Technical Sessions were operated in series of plenary sessions with general reports followed by discussions by 5 to 6 panel members. Subjects of the sessions were (1) Soil properties, related mainly on shear strength and consolidation of cohesive soils, (2) Shallow foundations and pavements, (3) Deep foundations, (4) Earth and rock pressures, (5) Earth and Rock Dams,. (6) Slopes, and (7) Open excavations. To facilitate the sessions operation, for the first time Technical Session Secretaries were designated and each session was staffed by six stewards chosen by the Canadian Society members.

During the Conference, the Executive Committee organized many meetings. One of the most important outcomes was a change from “of” to “for” in the name of the Society, which was modified into “International Society for Soil Mechanics and Foundation Engineering”. It was agreed that an Advisory Committee should be established to guide in the future the ICSMFE Organizing Committee. The election of Dr. L. Bjerrum to President in the next term was approved by the Executive Committee. On this occasion, he pinpointed Dr. J.K.T.L. Nash and persuaded him to act as Secretary General. With K. Nash induction, a new era got off to a good start for further advances of ISSMFE.

It was instructive to witness, during the Montreal Conference, the advances of soil mechanics and foundation engineering, (now eventually engaged in a joint effort) in facing the greatness of unexplored nature, with the construction of large dams and highways across a huge area of the North American continent.

THE ISSMGE FROM 1936 TO 2011 (continued)

Editorial 6

Transfer of the venue from Europe back to North American Continent seemed to refresh the atmosphere of the conference. In addition to the traditional subject matters, construction of long-distance highways and rockfill dams were about to start in this period in a large continental scale. The conference in Montreal was of great help for pushing forward the grand design of the infrastructures in the continent.

7TH INTERNATIONAL CONFERENCE IN MEXICO CITY, MEXICO IN 1969

The conference was held at Unidad de Congress, Centro Medico Nacional in Mexico City on August 25 to 29, 1969.

In the Opening Session, Mr. J.H. Teran, Minister of Hydraulic Resources explained that the capital city of Mexico was built on lake fills formed mainly by silts and clays with a high compressibility and the land subsidence due to water pumping had become the most important issue of national concern. The settlement had increased its rate year after year reaching a maximum of 46cm/year in 1951. This caused serious problems for foundations of buildings, infrastructures and settlements due to the consolidation of highly compressible clay deposits. To ease these worsening environments, water supply was attempted from reservoirs outside the capital city by constructing a number of rockfill dams. Thus, the two major issues of national concern, i.e., the ground subsidence due to consolidation and the fill dam construction were the major subjects of the 7th ICSMFE in Mexico City.

N. Carrillo

At the Opening Session, ISSMFE President, Dr. Laurits Bjerrum (1918-1973) called upon Professor A. Casagrande to make a special address in memory of Nabor Carrillo (1911-1967) who was cited as a brilliant scientist, engineer, educator, administrator and humanitarian. Dr. Carrillo was vital for promoting investigations on the unusual subsoil conditions of Mexico City and for initiating the observation of subsidence in the city. He was able to prove that the general subsidence was caused by the extensive extraction of water from underground. He was well-known as an engineering scientist who was able to successfully apply the Terzaghi's consolidation theory to explain the phenomenon of the unusual land subsidence that took place on the large scale over the mega city. During the Carrillo ceremony Professor A. Casagrande handed over to Mrs. Elena Carrillo the book by Nabor Carrillo.

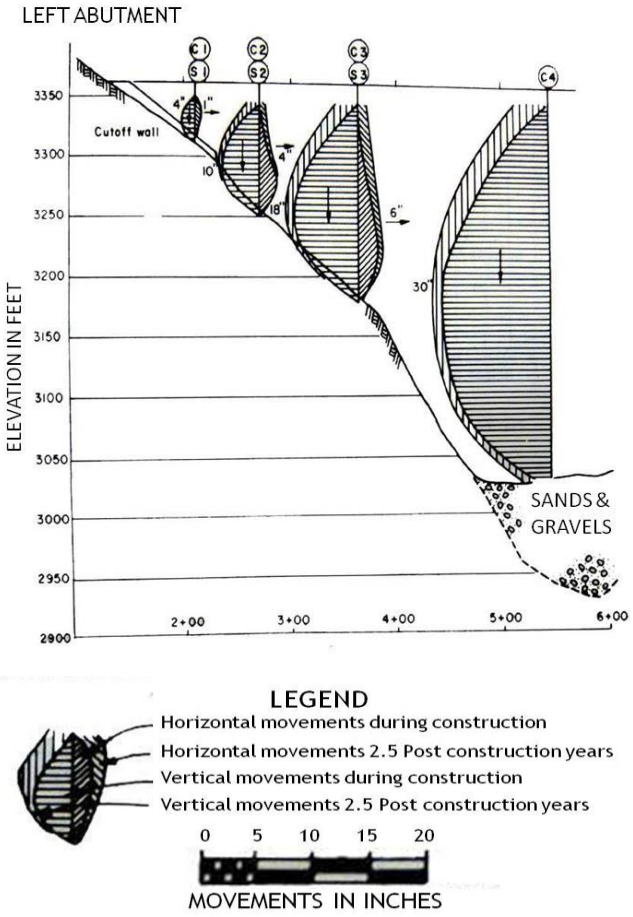
L. Bjerrum

The main subjects of the Plenary Session were (1) Stress-Deformation and Strength, Characteristics of Soils, (2) Foundations of Buildings in Clays, (3) Earth and Rockfill Dams, (4) Deep Excavations and Tunneling in Soft Ground, and (5) Stability of Natural Slopes and Embankment Foundations. The General report was followed by panelists' comprehensive discussions.

THE ISSMGE FROM 1936 TO 2011 (continued)

One of the new features in the Session organization was inclusion of Specialty Sessions which were operated simultaneously in different rooms. The idea was to provide ample opportunities for discussions on various sub-topics which emerged newly in the realm of the general subjects covered by the ICSMFE. Of particular notice were topics of local soils such as expansive soils, collapsible soils and lateritic soils. Soil dynamics associated with earthquake effects was another new topics receiving attention in Mexico which is located in seismically active region.

The other epoch-making event worthy of note was the presentation of the General Reports which were mentioned later as excellent pieces of archives, summarizing the current state-of-the-arts (SOA) in each area. As well-known, the SOA reports by Professor R. B. Peck entitled "Deep Excavations and Tunneling in Soft Ground", and by Dr. S.D. Wilson and R. Squier "Earth and Rockfill Dams" have become classic masterpieces of the work summarizing the current 1969 state-of-the-art. Shown in the right figure are some characteristic patterns of displacements, indicated in their report, which took place in rockfill dams during filling operation and over the periods afterwards. It should be noted that this pattern could be valid in any kind of filling such as seabed reclamation and backfilling behind retaining structures.



Horizontal and Vertical Movements, Mammoth Pool Dam (from the Proc. of the 7th ICSMFE)

It is important to note that the SOA papers play an important role as a means for transmitting traces of efforts of predecessors to next generations to come. With these legacies, ICSMFE has succeeded in establishing the highly reputed status among many other similar societies related to engineering disciplines. As far as the writers know, there is no other engineering society keeping such a well-established tradition of similar nature.

During the 7th Conference in Mexico, the Executive Committee met four times and came up with the renewal of the Statutes and By-Laws which were set in a more up-to-date format. This is to be recognized largely by the inspiration and the leadership of President L. Bjerrum. The new statutes which are virtually as they are today came into effect at Mexico City in 1969. Professor R.B. Peck was elected to the next President and he asked Dr. K. Nash to continue as Secretary General. In view of the fast-growing and widely spreading interests in soil mechanics and foundation engineering, there were too many subjects to be discussed in the Executive Committee meeting. It was thus proposed and agreed upon to hold it every two years. Sydney, Australia was chosen as the next venue to host the Executive Committee Meeting. In all the previous conferences, official languages had always been a matter of debate, but at the Mexico Conference it was eventually agreed upon that English and French would be the ISSMFE official languages.

THE ISSMGE FROM 1936 TO 2011 (continued)

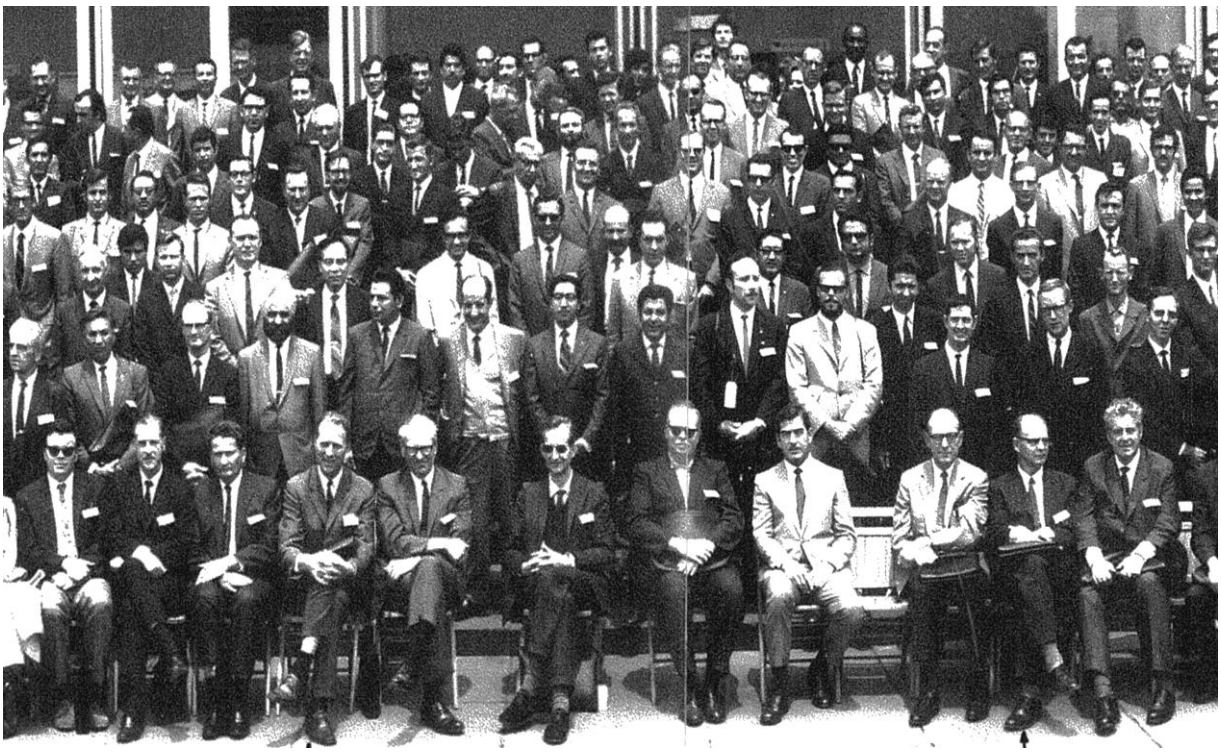


Photo 6 Middle part of the picture showing attendees to the 7th ICSMFE

Editorial 7

Luckily enough, the first writer had a unique opportunity to hear a lecture by Dr. Carrillo. In 1964, there was an International conference of presidents of universities which was held at the University of Tokyo, Japan. As president of Mexico University, Professor N. Carrillo came to Japan. Dr. Takeo Mogami, then Professor of soil mechanics at the University of Tokyo, invited Carrillo to deliver a lecture at the staff room of Civil Engineering Department. The first writer still remembers his excitement inspired by his talk which was lucid, logically well-constituted and of supreme interest in its content, focusing on the ground settlements in Mexico City. At the end he proclaimed that the Mexico City is a paradise of soil mechanics.

THE ISSMGE FROM 1936 TO 2011 (continued)

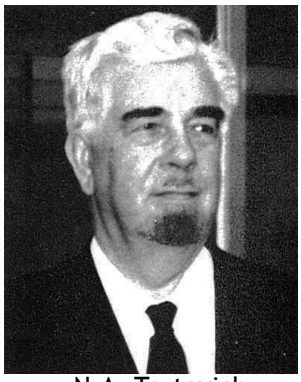
8TH INTERNATIONAL CONFERENCE IN MOSCOW, USSR IN 1973.

The next big event occurred in 1973 when the 8th ICSMFE was held in Moscow on August 6-11. The political climate was still in the midst of the so called "cold war" and there were some restrictions to enter the Soviet Union (USSR). Since the Soviet Union was not a well-known country with most technical and social activities taking place behind what was then called "iron curtain", everything was fresh and impressive for the participants. Over and above the technical interest, there was some eagerness to get to know the social states of affairs behind the iron curtain. The old authentic buildings in the Kremlin palace and Russia hotel gave us a first flair of the atmosphere which was unknown to foreign attendees.

The Opening session was held at the State Concert Hall next to the Russia Hotel, in the premise of the Kremlin. President R.B. Peck stated the death on February 27, 1973, of the most recent ISSMFE President, Laurits Bjerrum. Our Society was truly stunned by his premature death. He was only 54.

R.B. Peck

The presidential address at the opening ceremony was delivered, for the first time at this conference, by President, R.B. Peck who addressed a warning on the increasing reliance on computer works. He placed emphasis on the experience-based design and construction drawing on observations of actual performances of the ground and geotechnical structures. This concept put forth by Professor R. Peck is well-known as the observational method.



N.A. Tsytovich

Professor N.A. Tsytovich, renowned authority in the international arena of our Society acted as ISSMFE President of the USSR National Committee and in his address he mentioned that the "cold war" was about to end. In USSR business, commerce and social structure were experiencing rapid growth and widespread developments, leading to enhanced activities in all branches of industry and speeding up the construction of buildings, electrical power and transportation facilities. As such, the Conference in Moscow may be cited as an event commemorating the faster state of progress taking place in the USSR at the opening of the iron curtain.

In the Main Session 4 on the last day, Professor L. Bjerrum was supposed to give a general report, but because of his sudden death, his role was taken over by Professor G.A. Leonards of Purdue University in U.S.A. The concept of the viscous behavior of soil, also named secondary compression was emphasized for a better awareness and understanding. This topic, as well-known, is central to structure forming processes, triggered by the long-term consolidation such as ageing, bonding and quasi-preconsolidation phenomenon.

In view of the social and industrial circumstances mentioned above, subjects of the Main Sessions were: (1) Soil strength and deformability, (2) Soil-structure interaction, (3) Deep foundation including piles, and (4) Local soils such as soft clays, collapsible and expansive soils. Carrying over what had been set up at the Mexico Conference, eight Specialty Sessions were included in the program focusing mainly on subjects of new emergence or of special importance. These included issues of instrumentation, non-linear behaviour of soils, earth and rockfill dams, methods of soil stabilization and soil dynamics and seismic effects on foundations. It is to be noted that the Special Lecture by Professors M. Fukuoka and A. Nakase

THE ISSMGE FROM 1936 TO 2011 (continued)

on Problems of Soil Mechanics of the Ocean Floor addressed issues of seabed soil deposits related to harbour and airport construction with reference to large-scale land reclamation project in Japan. This was a new initiative to pave a way to what it will be later referred to as Near-shore Geotechnical Engineering.

The post conference tours were special attractions to most participants. Among six programs organized the tour No. 4 traveling through historical old cites over the Central Asia received overwhelming popularity and it was divided into four groups. The first writer participated in one of these traveling through the ancient city Samarkand, a pilgrimage place, and Pendikent to Dushambe now capital city of Tajikistan Republic. Most instructive was the visit to the site of Nurek Dam which was one-third in progress under construction but used already partly for irrigation. This dam still boasts its world record as high as 300m.

In the Executive Committee meeting, Professor J. Kerisel was nominated to the President in the next term and Dr. K. Nash as Secretary General.

Editorial 8

In the Moscow Conference, we underwent several interesting and unexpected experiences which are now recalled as pleasant memories.

One of these was allocation of hotel rooms by the Organizing Committee which seemed to have been made on an at-random basis without paying attention to whether he was VIP, IP or just P. The President R. B. Peck was given a room at Bucharest hotel and the first writer was also put in a room there unsurprisingly which was 3-4 star hotel. He was very fortunate to have an honour of staying in the same hotel as the President and going to the Conference Hall on foot spending about 10 minutes across the Moscow River.

One more anecdote: there were several delegates from Japan sitting in the dining room of Russia Hotel after dinner enjoying drinking and chatting. One of them went to the washroom but did not come back for quite a while. Then, another person went there for search, but nor did he come back. It turned out eventually that they had been taken by the secret police, KGB, to a special room and interrogated. They were kept in a room overnight. The first writer was acting, then, as Secretary of Japanese Geotechnical Society and in its capacity he went to the police and apologized to get them released which ended up with success.

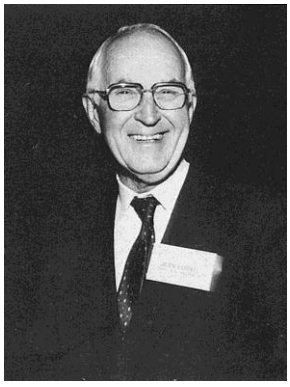
THE ISSMGE FROM 1936 TO 2011 (continued)

9TH INTERNATIONAL CONFERENCE IN TOKYO, JAPAN IN 1977

Cherry hall in the Imperial Hotel, Tokyo city center, was the venue of the 9th ICSMFE which was held on July 11-15 in 1977. President J. Kerisel addressed a message at the Opening Session followed by the four Special Lectures which were enthralling and memorable. Dr. M. Fujii mentioned the enormous efforts in the overall design for construction of the Shinkansen (High-speed railways) between Tokyo and Osaka.

Developments in understanding the behaviour of cohesionless soils were overviewed by Professor T. Mogami mainly focusing on the efforts the Japanese researchers had been making since the 1964 Niigata Earthquake. Of particular interest was the lecture by A.W. Skempton who introduced several examples of delayed failure in cut slopes in London marine clay and attributed it to the time length required to attain equilibrium of pore water pressure along potential slip plane. The endearing lecture by R.B. Peck was entitled "Vignettes of four Past Presidents" in which personal profiles as well as technical achievements of four great predecessors, K. Terzaghi, A. Casagrande, A.W. Skempton and L. Bjerrum, were vividly described. These four lectures will remain in our memory as masterpieces.

In the Council Meeting proceeding the Conference week, the rule for deciding the President was changed from the nomination by incumbent and past presidents to the election by secret voting by the representatives of all national member societies. In the first-time attempt for implementing this new scheme, there were six candidates on the list at the beginning. In each round of balloting, a candidate with the fewest number of ballots was successively deleted until a single majority was obtained. After reading out names loudly by the Secretary, Professor Victor de Mello and Professor Masami Fukuoka had secured the tie ballot 22 to 22 in the last round of counting. It was truly a thrilling moment when the Secretary announced slowly but loudly "Fukuoka" in the last reading. Dr. K. Nash was requested to continue his service as Secretary General.



J. Kerisel

THE ISSMGE FROM 1936 TO 2011 (continued)

There were three burgeoning subject areas newly spotlighted in this conference. One of them was the environmental controls including stability of tailings deposit dams, landfills for wastes and protection of contaminated underground water. The second new subject was the foundation of off-shore platforms associated with their increasing water depth of installation from several meters in 1947 to 300m off Louisiana, U.S.A. in 1977. Dr. McClelland made a presentation on the current state of development on this subject. Still another growing area was the soil dynamics related with machine foundations and earthquakes. There had been an increasing interest particularly for liquefaction after the 1964 Niigata earthquake in Japan. Professors H. Seed and Y. Yoshimi made a great contribution in bringing the Session to fulfillment. It is worthy of notice that these three subject areas have grown up later on to become main streams of the themes in the present day of the ICSMGE.

Photo 7. Opening Session of Tokyo Conference

The year of 1977 corresponds to the time of transition from the slide rule to the use of the electrical computer. There was also a Specialty Session dealing with the computer analysis in the Soil Mechanics: Present and Future.

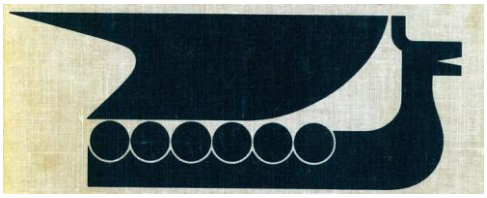
Editorial 9

After Tokyo had been designated to be the venue of the forthcoming 9th ICSMFE, an issue of entry from South America and Rhodesia was raised at the time of the mid-term Executive Committee Meeting (Council Meeting) held in 1975 in Istanbul. After heated debate, it was agreed that Tokyo Conference had to be cancelled. However, President J. Kerisel made a watershed decision afterwards to revive the initial decision. We owe greatly to his leadership in case of such a critical plight.

It was by President J. Kerisel that the rule of page allocation to each member society, for the papers to be included in the Proceedings of the Conference, was defined. This rule, with some minor amendments made in 2009 is still being used to maintain good quality of the papers.

THE ISSMGE FROM 1936 TO 2011 (continued)

10TH INTERNATIONAL CONFERENCE IN STOCKHOLM, SWEDEN IN 1981



Sweden is known as the country where soil engineering had been activated and highly developed in an early stage in 1940's at the Swedish Geotechnical Institute headed by Dr. W. Kjellman. It was thus exciting to have the ICSMFE in Stockholm on 15-19 June. The Conference was held at the Stockholm International Fair Conference Center in combination with GeoEX'81 which was the largest exhibition of geotechnical equipment and technology ever held. The Conference was opened by His Majesty King Carl XVI Gustaf, the first time our International Conference has been addressed by a Royalty. Over 1600 participants and 400 accompanying persons registered for the Conference. Before the Conference, we were all shocked to hear that the Secretary General, Kevin Nash had suddenly died on April 24, 1981. Over the past 16 years, he had strived untiringly and passionately for the interests and advancement of the Society. He was a strong backbone and truly a driving force for innovation of the Society.

M. Fukuoka

Seriously concerned about this, the British Geotechnical Society (BGS) recommended Professor John Burland to act as Secretary General and help President M. Fukuoka to chair the Executive Committee meeting (ECM). In the Opening Session, a memorial tablet and scroll were given to Mrs. Kevin Nash and a short speech as a tribute was made by Professor R.B. Peck. Several new schemes were induced in the organization of the Society. One of them was the establishment of Steering Committee consisting of President, Past President, Secretary General, six Vice-presidents and three members nominated by the President. This committee was renamed as "Board" at the time of the 11th ISSMGE. Professor Victor de Mello (1926~2009) was elected by secret ballot to President for the next term of office. In the ECM, a proposal was made by the U.S. delegate to institute an award lecture to commemorate the contribution by the late Kevin Nash. This was enthusiastically agreed upon and became the start of the Kevin Nash Gold Medal.

Highlights of the Conference were two special lectures. One was delivered by Professor A.W. Bishop (1920-1988) with the title "Thirty-five Years of Soil Testing". It was of great interest to learn how soil testing in laboratory had evolved and how he elaborated conduct of soil testing starting from drafting of equipment design through drainage control with pore water pressure measurements to interpretation of data to determine strength parameters. We felt as if we went through a time capsule of development of soil testing technique. The second lecture entitled "The Teton Dam Failure – A Retrospective Review" co-authored with Professor M. Duncan was delivered by Professor H.B. Seed (1922-1989). It described a sequence of progressive events starting from piping leading to a truly catastrophic complete failure of the rock-fill dam which occurred in the state of Idaho, in the U.S. in 1975. There were 12 Specialty Sessions in all and each of the Main Sessions was followed by three simultaneous Specialty Sessions. After the Conference in Stockholm, President Victor de Mello officially nominated Dr. Dick Parry as the Secretary General of ISSMFE based on the recommendation from the British Geotechnical Society.

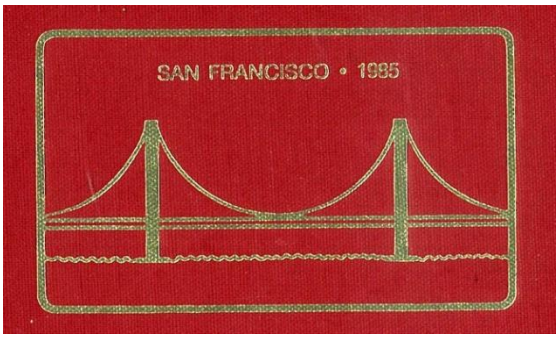
It was at the time of the Stockholm Conference that the formation of the Board was proposed by then President Fukuoka and implemented so as to keep continuity of the business related to the Society. The Executive Committee was also renamed as the Council of ISSMFE.

Editorial 10

One of the attractions was the home hospitality program, first implemented herein Stockholm where many of foreign participants were invited to homes of Swedish colleagues. All the attendees were welcomed and entertained by the courtesy of the hosts in casual Nordic atmosphere.

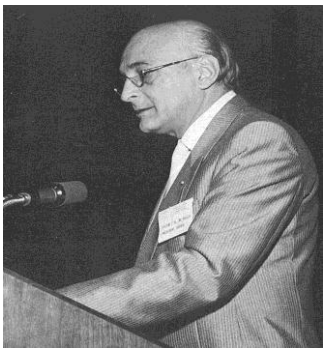
THE ISSMGE FROM 1936 TO 2011 (continued)

THE 11TH INTERNATIONAL CONFERENCE IN SAN FRANCISCO IN 1985



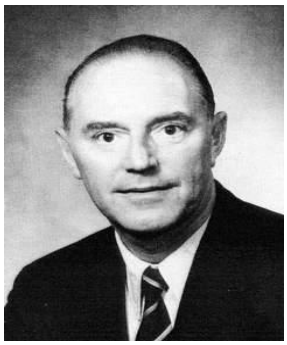
The Fairmont Hotel, Mark Hopkins Hotel and Mesonic Auditorium on top of Nobb Hills overviewing the city of San Francisco were the venues of the 11th Conference which was held on 12-16 August, 1985 in commemoration of the Jubilee year. Several new features were introduced on the occasion of this conference. The logo symbolizing the ISSMFE as it is widely used today was first offically publicized in San Fransico.

In the Opening Session, the newly installed honor award in memory of the late Secretary General, Kevin Nash, was bestowed to Professor H.B. Seed, Chairman of the Organizing Committee. After an introductory speech by President Victor de Mello, the first Terzaghi Oration was delivered by Professor W. Lambe with the title "Amuary Landslides". The framework of the Conference was different from the previous ones.



Victor F.B. De Mello

There were 9 Main sessions each consisting of a theme lecture and 2-4 sub-themes. On the first two days, Monday and Tuesday, the theme lectures were presented continuously in the form of plenary sessions and then the sessions on the sub-divided themes followed on Thursday and Friday simultaneously in pallalel. Each of the theme lecturers presented the outcome of their elaborate works summarizing the current state-of-the-art from their own perspectives. Another new feature was the introduction of the Poster Session in which each participant is allocated a panel board to display their work and to share and discuss problems of mutual interest.



H.B. Seed

It was by the initiative of the President Victor de Mello that the initial framework of Technical Committees (TC) were shaped up in response to the increasing demands to accelerate activities independently on several newly emerging subjects. The TC's initiated in San Francisco have grown into more or less the current format. Several of them have achieved sufficient maturity to organize their own international conferences in their respective areas.

In the Council Meeting, Professor B.B. Broms was elected to President in the next term and Dr. R.H.G. Parry was appointed to serve as Secretary General.

In response to increasing needs for submitting as many papers as possible, what is called "Poster Session" was first introduced in San Francisco Conference. This avenue of presentation has become common in many of subsequent conferences.

Editorial 11

The 11th Conference should be cited as being highly technically enriching thanks to the efforts of the organizing committee as represented by Professor H.B. Seed and J.K. Mitchell. The state of the art reports prepared by nine theme lectures were landmark masterpieces, recording the current achievements in their respective areas.

THE ISSMGE FROM 1936 TO 2011 (continued)

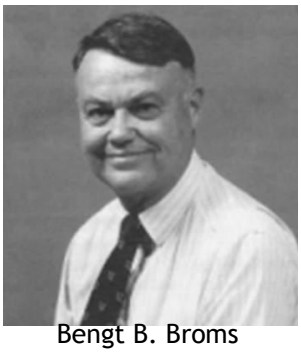
12TH INTERNATIONAL CONFERENCE IN RIO DE JANEIRO, BRAZIL IN 1989

For the first time the International Conference was hosted by a country in the South American Continent. The 12th ICMSFE was held on 13-18 August in 1989 in spectacular Rio de Janeiro, Brazil and the venue was the Convention Center of Hotel National. President B. Broms was the master of ceremony in the Opening Session. In the Presidential address, he summarized various ISSMFE activities underway and stressed on the importance of newly emerging subjects to be incorporated. These included environmental problems, preservation of historical monuments, etc.

Professor K. Hoeg of the Norwegian Geotechnical Institute delivered the Terzaghi Oration with the title "Foundations in Offshore Engineering" which was the new topic attracting much interests of the participants.

The Kevin Nash medal was awarded to Belgian Professor De Beer for his long lasting contribution to the ISSMFE particularly in his role of Chairman of the Committee coordinating several activities amongst Sister Societies, i.e., International Society of Rock mechanics (ISRM) and International Society of Engineering Geology (ISEG).

Out of the 25 Technical Committees launched at the San Francisco 11th Conference, 15 TC's contributed to organize the Discussion Sessions. In addition to traditional subjects, new genuinely technical issues such as Performance Criteria, Professional Practice, and Codes and Standards were also taken up as titles of the Discussion Sessions. The desire to hold the sessions or forming committees devoted to the innovative subjects had increased after the 12th ICSMFE.


Bengt B. Broms


De Beer

In addition, the Technical Committees were arranged more systematically under the leadership of President Broms and 26 TC's were officially launched for the term 1985-1989. Each TC was established based on proposals from member societies which are willing to sponsor and share the burden of all the necessary administrative works.

In the Council Meeting, Professor N. Morgenstern was elected President and he asked Dr. D. Parry to continue his role as Secretary General.

Editorial 12

Brazil is the largest country in South America. Because of the rapid growth in industrial activities from the middle of the 20th century, there was need for geotechnical expertise. The attendees of the 12 ICSMFE learned a lot of lessons from the presentations by Brazilian experts. We were all saddened by the death of Professor Costa Nunes that occurred a few days before the conference. He was a great leader in Geotechnics and the Chairman of the Conference.

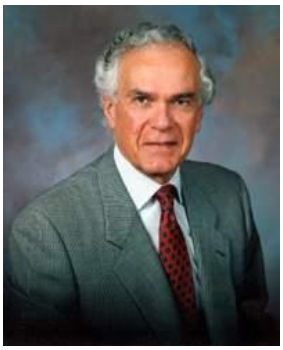
THE ISSMGE FROM 1936 TO 2011 (continued)

THE 13TH INTERNATIONAL CONFERENCE IN NEW DELHI, INDIA IN 1994

India had long been keen about hosting the International Conference. The first invitation was filed as early as in 1954 after the 5th Conference. India's application for the 12th ICSMFE was not successful by a minor margin. Thus, it was truly praised that India would host the 13th Conference.

Because of winter being the best season in India, the Conference was held on January 5-10 in 1994 and held at Ashoka Hotel in New Delhi.

At the Opening Session, the Presidential address was delivered by Professor N.R. Morgenstern followed by a high-note Terzaghi Oration by Professor Victor B. de Mello. The Heritage Lecture was presented by Professor Ramamurthy with Mr. H.C. Verma as Chair. At the Opening Session, the Kevin Nash Gold Medal was awarded to Professor John Burland, U.K. for his great contributions to the ideals and goals of ISSMFE.


N.R. Morgenstern


J. Burland

technical program consisted of five plenary sessions and twelve parallel sessions held in three groups of four concurrent sessions. The traditional subjects, Soil Properties, Foundations, Retaining Structures, Embankment Dams, were the themes of the Main Sessions. A new subject area first addressed in the Main Session was Natural Hazards. The topics of the parallel sessions featured several newly emerging areas for which ISSMFE was expected to take leading roles in the future perspectives. These may be classified as follows. 1) Non-technical subjects: Professional practice, Geotechnical education and Foundations of old monuments and structures, 2) New subject areas: Marine Geotechnology, and Geotextiles and Reinforced earth, and 3) New Technology: Computer Application and Instrumentation and Real-time Management.

The Conference in New Delhi was unique and very instructive. Participants were able to enjoy the deep-rooted historical cultures of India and the geotechnical engineering associated with a strong native flavor. In addition to sophisticated high-tech-based engineering, traditional methodologies were felt substantially in need for developing infrastructure in this part of the world.

Canadian Geotechnical Society had planned to organize an International Congress on Environmental Geotechnics (ICEG) in Edmonton on July 11-15, 1994. On the other hand, there had been activities in ISSMFE which had been underway through TC5 on Environment Control and TC7 on Tailings Dams. President N. Morgenstern emphasized the importance of the subject matter and equal sharing of responsibility by the ISSMFE. Then, the conference in Edmonton was put in the framework of general undertakings of the ISSMFE and became the first of the ICEGs, which was followed by the subsequent conferences as summarized in Table 2 together with the events related with environment in ISSMFE.

In the Council Meeting, Professor M. Jamiolkowski was elected to President and he requested Dr. R. Parry to continue his role as Secretary General.

Editorial 13

India had long been enthusiastic about hosting the ICSMFE. In fact, Professor K.L. Rao was the second Vice-president of Asian Region and it was by his effort that the first Asian Regional Conference of ISSMFE came into existence in New Delhi as early as in 1960. Afterwards the 5th Asian Regional Conference was held in Bangalore (India) in 1975. Professor D. Mohan, whom we pay tribute to for having the 13 ICSMFE held in India, served as Vice-president for the period of 1977-1981.

THE ISSMGE FROM 1936 TO 2011 (continued)

THE 14TH INTERNATIONAL CONFERENCE IN HAMBURG, GERMANY IN 1997

The old Hanseatic city of Hamburg, in the North Germany hosted the 14th ICSMGE on 8-12 September 1997. Recalling the past, West Germany as delegated by Dr. H.W. Koenig, had been many times very keen to host the International Conference. In addition, the 14ICSMFE was an epoch-making event, because the conference was in the midst of extensive construction period for infrastructures after the unification of the East and West Germany in 1990 and there were many colleagues who were able to participate freely both from East Germany and from Central Europe.

M. Jamiolkowski

On September 8, 1997, the Opening Session began with the Chairman of the Organizing Committee address, Professor Wittke whose address was followed by a speech delivered by a representative of the Senate of Hamburg Dr. Leonard Hajen. He mentioned that the city was developing behind dikes and people were concerned about their stability. Thus, it was very appropriate for Hamburg to host the Conference and to have an opportunity to discuss issues of local importance. The Kevin Nash Gold Medal was given by President M. Jamiolkowski to Professor A.S. Balasubramaniam for his enduring contribution to the advancement of geotechnical engineering, and the Terzaghi Oration was delivered by K. Ishihara on the geotechnical aspects of the 1995 earthquake in Japan.

The technical program was composed of six plenary sessions discussing issues of traditional interests, that is, soil testing and ground property characterization, Foundation techniques, Retaining structures and Excavated slopes, Underground works in urban environment, Soil improvement and reinforcing, and Waste disposal and contaminated sites. Each of the six main Sessions was followed by 2 to 3 Discussion Sessions which were conducted in parallel but avoiding overlapping of similar topics as far as feasible.

Reflecting the existing situations in Germany, the subject matters related to urban underground works were one of the focus points including subsidence of the ground performance monitoring, and soil improvements for safer construction. It is also noted that the environment-associated geotechnology had become an issue of prime importance and subjects such as waste disposal and contaminated sites and pollutants containment via passive barriers were taken up in the Parallel Sessions.

High spot of the Conference was the change of name of our Society from "International Society for Soil Mechanics and *Foundation* Engineering (ISSMFE) to "International Society for Soil Mechanics and *Geotechnical* Engineering (ISSMGE); a change that would better reflect the actual situation. A change in the name had long been discussed in past Councils and due to consistent efforts by President Professor Michele Jamiolkowski could be achieved and from the end of the Hamburg Conference, the new name was officially adopted.

Besides more technical problems, subjects such as a professional practice, code and standards and education rose vivid interest. The evolution of these activities is shown in Table 3. Worthy of note is the implementation of the International Conference on Young Geotechnical Engineering Conference (IYGEC). A good number young engineers, graduate students, research assistants, assistant professor, etc. registered at the 14th ISSMFE. They were requested to get together, attend intensive lectures by senior professionals and develop discussions on some related topics. The first of its series was organized at the University of Southampton in U.K. in 2000. IYGEC are considered very meaningful to have young promising engineers familiarize with all the aspects of geotechnical engineering and to help them explore their potential for further advancement.

In the Council Meeting, Professor K. Ishihara was elected to President and he asked Dr. R. Parry to serve as Secretary General until the mid-term Council Meeting in 1999.

THE ISSMGE FROM 1936 TO 2011 (continued)

Editorial 14

Germany for quite a long time had expressed much interest and great desire to host the ICSMFE. When the vote was taken at the time of the mid-term council meeting in Florence, Italy, in 1991, the number of votes for Germany turned out to be tied with another proposal. Considering that the Conference had not been held in Western European Countries since 1961, it was decided to go to Germany which seemed quite satisfactory.

THE 15TH INTERNATIONAL CONFERENCE IN ISTANBUL, TURKEY IN 2001


K. Ishihara


J.K. Mitchell

The 15th ICSMGE was held on August 27th to 31st in the ancient and cosmopolitan city of Istanbul, where three empires, Roman, Byzantine and Ottoman had dominated the world for nearly two thousand years. The venue was the Istanbul Convention and Exhibition Center on top of the hill near the Bosporus. In the Opening Session, the Kevin Nash Gold Medal was awarded to Professor J.K. Mitchell in recognition of his outstanding contribution to the advancement of the geotechnical engineering and to his longstanding service to the ISSMGE. The 5th Terzaghi Oration with the title "The Leaning Tower of Pisa: End of an Odyssey" was delivered by Professor M. Jamiolkowski. In his Heritage lecture, Professor E. Togrol introduced the geotechnical conditions of the natural inlet, Golden Horn, where the ancient and middle-age history of Istanbul developed and also where K. Terzaghi made his very first contribution to the scientific development of earthwork engineering. As reported in Table 1-4, in addition to traditional subjects, special topics, such as off-shore platforms, earthquake geotechnical engineering and scour of foundations were taken up in the Main Session and the Workshop. From early period in his office, President Ishihara communicated with member societies and requested to recommend candidates of new Secretary General. Upon recommendation from British Geotechnical Association, Dr. N. Taylor was selected to the Secretary General, and it was approved at the Council Meeting held in Amsterdam in 1999. A small ceremony was conducted to express deep thanks to Dr. R. Parry for his long-term service. Professor W. Van Impe was elected to President in the next term.

To commemorate the beginning of the third millennium, appealing lectures were delivered on three of the largest projects ever undertaken in the modern mankind history. "Land Reclamation in the Netherlands" delivered by Professor A. Verruijt, Delft Technical University; "Construction of Suez Canal" presented by Dr. M. Hamza, Egypt; and "Construction of Panama Canal" given by Dr. W. Marcuson, U.S.A.

Editorial 15

There was only one person in our discipline who is said to have participated in all the ICSMFE from the first in 1936 up to the 15th in 2001. He was Professor J.O. Osterberg (1915-2008) who is famous for his invention of what is called O-cell test in which a load cell is equipped in the vicinity of the tip of bored piles to monitor end bearing and skin friction. It was surprising to know that not only did he participate in the Conferences, but submitted papers as a co-author. In the Opening Ceremony, he was called upon to come up to the podium and say a few words, which was applauded by the audience.

THE ISSMGE FROM 1936 TO 2011 (continued)

Chairman of the 15th ICSMFE, Professor E. Togrol did attend the 6th Montréal in 1965. Since then, he had been present in all the ICSMFEs, twelve times consecutively. This is an evidence of his self-recognition that Istanbul is the birth place of soil mechanics and he is destined to keep this asset as a guardian.

THE 16TH INTERNATIONAL CONFERENCE IN OSAKA, JAPAN, 2005

The 16th ICSMGE was held on 12 - 16 September 2005, at Rihga Royal Hotel in Osaka, the second largest and old city in Japan.

W.V. Impe

The conference attendees reaching Osaka by plane had the opportunity to become acquainted with the recently completed new Osaka International Airport. This airport that opened in September 1994 is located offshore in Osaka Bay, but because of its unforeseen subsoil conditions, and its large settlement due to consolidation, the man-made island for the airport represents one of the most significant challenges of the geotechnical engineered constructions.

During the Opening Session, after the current President Professor W. Van Impe's address, Professor Harry Poulos was awarded the Kevin Nash Gold Medal in recognition of his outstanding contribution to our discipline particularly with respect to theory and practice in the field of foundation engineering. The Terzaghi Oration whose title was "Associating with Advancing Insight" was presented by Professor F. Barends, from the Netherlands.

H. Poulos

Development of Geotechnical Earthquake Engineering was the title of the Heritage Lecture and covered issues of prominent interests for the host country. It was delivered by Professor I. Towhata.

As always, the technical conference program consisted of five plenary sessions assisted by numerous technical sessions, see Tables 1.3 and 1.4, covering topics such as: properties of natural soils by in situ tests, computational modeling of large deformation, environmental geotechnics, offshore geotechnical engineering and pile foundations.

The appeal of the conference was largely enhanced by the newly introduced major project session, Practitioner-Academic Forum and International Young Geotechnical Engineers Conference. These new format of the Conference was due to the great efforts by the Chairman Professor N. Adachi and Secretary General Professor K. Kamon.

In the Council Meeting, Professor P. Seco e Pinto was elected to the next President and Dr. N. Taylor continued as Secretary General.

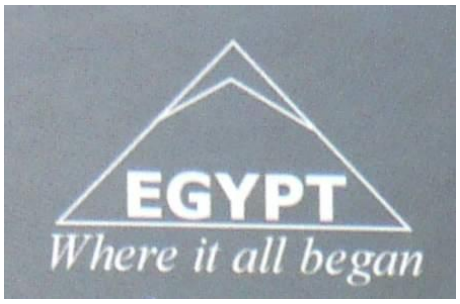
At the closing ceremony Professor Van Impe introduced to the audience the President elect, Professor Pedro Sêco e Pinto, from Portugal and handed over to him the wooden gavel, symbol of ISSMGE.

Editorial 16

It was delightful and heart-warming to be able to welcome to Osaka the esteemed leader of our profession, Professor R. B. Peck who travelled a long distance at an age of 93 and graced the Conference.

THE ISSMGE FROM 1936 TO 2011 (continued)

THE 17TH INTERNATIONAL CONFERENCE IN ALEXANDRIA, EGYPT 2009




P. Sêco e Pinto


S. Hansbo

The 17th ICSMGE was held in the ancient city, Alexandria boasting more than 4000 years history. It is located along the shore of the beautiful bay of Mediterranean Sea and known for its remarkable monuments and archeological remains.

The venue of the Conference is located in the celebrated New Library of Alexandria. Designed by a Norwegian architect, the New Bibliotheca Alexandrina takes the shape of a circular diaphragm wall 160 meters in diameter and 33 meters high - representing the sun. It has been rebuilt on what is believed to be the original site of this great source of knowledge. The Ancient Library of Alexandria was the largest and most significant great library of the ancient world. It flourished under the patronage of the Ptolemaic Dynasty and functioned as a major centre of scholarship from its construction in the 3rd Century BC until the Roman conquest of Egypt in 30 BC. Its destruction by a fire marked the end of Alexandrian school of philosophy.

During the opening session, after the address by the President Professor Pedro Sêco e Pinto, the Kevin Nash Gold Medal was awarded to Professor Sven Hansbo in recognition of his brilliant academic and professional career, for his prominent contribution to the advances of geotechnical engineering and in serving ISSMGE with competence and enthusiasm.

The Terzaghi Oration entitled "Tall Buildings and Deep Foundations", at present of great relevance to our profession, was presented by Professor Harry Poulos. The Heritage Lecture was delivered by an Egyptian archaeologist Dr. Z. Hawass who revealed a series of new discovery from excavation of ancient tombs of King's families.


J.L. Briaud

The added value of the conference was represented by five State-of-the-Art Lectures (SOAL) covering the areas of: Geomaterials Behavior and Testing, Analysis and Design, Prediction, Monitoring, and Performance of Geotechnical Structures, Construction Processes, Training and Education in Geotechnical Engineering.

Each SOAL was linked to one or more technical sessions during which the broad spectrum of pertinent topics were covered by General Reports and extensively discussed.

The conference program was further enhanced by the Great Project Lectures. One of them entitled "Safeguarding Venice from High Tides" delivered by M. Jamiolkowski was one of the highlights of the conference.

At the closing ceremony Professor Pedro Sêco e Pinto introduced to the audience the President elect, Professor Jean-Louis Briaud from the United States. Professor N. Taylor was confirmed Secretary General for the term 2007-2011.

In parallel to the main conference, 4th International Young Geotechnical Engineers Conference (4IYGEC) was held at the El-Mahrousa Hotel during the first two days of the 17th ICSMFE. Professor F. Baligh and Professor M.K. El-Ghamrawy were the key persons who organized the 4IYGEC.

THE ISSMGE FROM 1936 TO 2011 (continued)

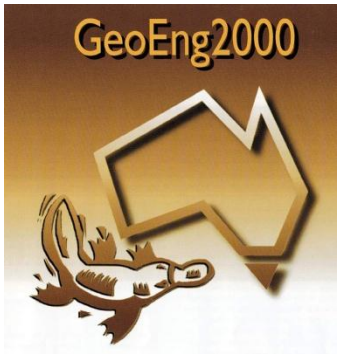
Editorial 17

Alexandria is an old city that is full of cultural heritages. We learned that a lot of monuments and structures involved in earthquake-induced landslides in ancient times still remain in the near shore bottom of the Mediterranean Sea. It appears that delineation of overall features of the damage due to the ancient submarine landslides will be an important task assigned to geotechnical profession.

REGIONAL CONFERENCES AND VICE-PRESIDENTS

The importance for mutual communication and exchange of information has been strongly recognized since the founding of ISSMGE. To fulfill this goal and also considering the four-year gap between conferences, the set up of sub-societies on regional level was encouraged. This motion was put into the Statute at the Executive Committee meeting held in 1953 in Switzerland and Vice-presidents were elected in each of the 5 regions except for the Australian region. A Vice-President for the Australasia Region was established in 1957. Vice presidents were urged to make efforts to organize the regional conference in the mid-year between the four yearly international Conferences. These are listed in Table 4.

INTERNATIONAL CONFERENCE ON GEOTECHNICAL AND GEOLOGICAL ENGINEERING (GEOENG 2000)



There has long been the attitude to enhance synergies among the three Sister Societies, i.e., International Society for Rock Mechanics (ISRM), International Association for Engineering Geology and Environment (IAEG) and ISSMGE. Thus, an idea had been conceived to hold a joint conference at the end of the Second Millennium and reflect upon the advances in the disciplines of geoengineering that have been achieved over the past 70 years. This idea was materialized in the form of GeoEng 2000 which was held in Melbourne on November 19-24, 2000. The great effort by Mr. M. Ervin who acted as Chairman of the Organizing Committee was very much appreciated. In addition to the three Sister Societies, several other societies offered their support to the Conference. There were nine formal invited papers, covering the general overall themes of the Conference and the area of interest and 770 participants from 49 countries. One of the highlights was the special lecture entitled "Terzaghi, Back to the Future", which was delivered by Professor John Burland. The Conference was a landmark event in the sense that members of the three Sister Societies got together and had ample opportunities to exchange views and establish mutual collaboration.

PROFILES OF THE SECRETARIES GENERAL

ISSMGE appreciates the significant roles played by the Secretaries General (SG). Their coherent and tireless efforts have not simply been essential in fulfilling secretarial workload but have also been a guiding power to foster and explore wellbeing and advances of the Society. Thus, it is of particular significance to describe profiles and characters of former Secretaries General and express our deep gratitude for their contribution.

1. A. Casagrande (1936-1953)

Needless to say, the birth of the ISSMFE was brought about by A. Casagrande. It was fortunate for all of us to have his foresight and his mind dedicated to the creation of our society at its embryo stage. It is said

THE ISSMGE FROM 1936 TO 2011 (continued)

that he was enthusiastic about explaining the importance of holding the 1st ICSMFE to Dr. J.B. Conant, then President of Harvard University, as a part of its Tercentenary celebration. He was also eager for persuading K. Terzaghi to accept his proposal and further to act as a leading figure for the organization of the 1st ICSMFE. He worked strenuously over the period from Harvard (1936) to Rotterdam (1948) to maintain close tie and partnership among experts of soil engineers and contributed, in cooperation of Dr. T.K. Huizing, Secretary of the 2nd Conference in 1948 to the restoration of the ICSMFE after the World War II.

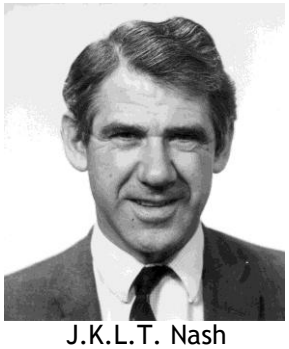

D.W. Taylor

2. D.W. Taylor (1953-1955)
He was actually the first Secretary General after the ISSMFE was officially established in Rotterdam. In the early formative period from 1953 (Zurich) until his death in 1955, Professor Taylor contributed greatly for making up the draft of the Constitution of ISSMFE.


M.A. Banister

3. M.A. Banister (1957-1961)
He contributed as Secretary for the organization of the 4th ICSMFE held in London in 1957 and then became the Secretary General of the International Society. His service continued until 1961 and was greatly appreciated by the President Skempton and Casagrande.

4. A. McDonald (1961-1965)
He served and contributed as a Secretary to President A. Casagrande for the period from Paris to Montreal Conference.

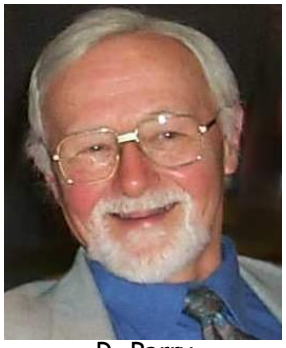

J.K.L.T. Nash

5. J.K.T.L. Nash (1965-1981)
Nominated Secretary General by President L. Bjerrum after the 6th ICSMFE in Montreal, Kevin Nash worked hard carrying heavy responsibility as a core person playing the pivotal role in running the Society. His first task is said to be drafting new statutes. While working as Professor at King's College in London, he was always involved in coordinating opinions, running the Executive Committee Meeting (Council Meeting) and pushing forward a number of undertakings on behalf of the Society. Kevin Nash dedicated the most brilliant period of his life for the interests and evolution of our Society sometimes standing at the forefront of difficult situations and executing important changes in foresight. Kevin Nash served four presidents, viz., L. Bjerrum, P.B. Peck, J. Kerisel and M. Fukuoka for a period of 16 years. He had outstanding talents as a leader and coordinator and had willingness and passion to work for the Society. He was a man of warmhearted friendship. His quality of leadership, strength of purpose and foresight contributed greatly to the advancement of ISSMFE. Our Society was fortunate and profoundly blessed by having such a Secretary General for the formative period in its development.

THE ISSMGE FROM 1936 TO 2011 (continued)

6. R.H.G. Parry (1981-1999)

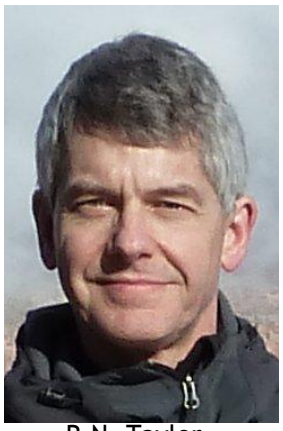
After a half year of intermittent service by J. Burland, Dick Parry was nominated Secretary General by then President, Victor de Mello on recommendation of the British Geotechnical Society. He served five Presidents, i.e., Victor de Mello, B. Broms, N. Morgenstern, M. Jamiolkowski and K. Ishihara. He also dedicated most of the active period of his life time to the interests and advances of the Society. Thanks to his incessant and enduring efforts our Society is acclaimed to widen the range of its activities and founded the basis of the present prosperity. In fact, the majority of the Technical Committees now existing were formed during Dr. Parry's term of office as the Secretary General. It should also be remembered that several new disciplines related to geotechnical engineering came into existence within ISSMFE during his term, such as Environmental Geotechnology, Offshore and Marine Geotechnology, and Soil Reinforcements. At the same time, significant progress had been achieved in experimental soil mechanics and in the rapid development of powerful numerical modeling which, along with the wide application of the observational method, permitted a much deeper insight into the basic features of geomaterial bahaviour. It was thanks to Dr. Parry's consistent and steady efforts that all of these newly emerging areas were put together in the ISSMGE general framework. Dr. Parry's stewardship as Secretary General will be remembered as an outstanding contribution in the most illuminating period during which our Society had grown to maturity and prosperity.



D. Parry

7. R.N. Taylor (1999-)

Based on the recommendation from the British Geotechnical Association, R.N. Taylor was nominated Secretary General at the time of mid-term Council Meeting held in Amsterdam in May 1999. He is presently continuing to contribute greatly to the management of our Society, while working as Professor at City University London. Now that the scale of the geotechnology is very large, its scope is wide and its tradition is deeply rooted, the operation of the Society requires an enormous amount of secretarial workload. Also, the maintenance of the society's wellbeing based on the well-established traditional thread would be a difficult task nobody else can achieve. We are all thankful to Dr. N. Taylor who is now carrying on his shoulders this heavy burden.



R.N. Taylor

EPILOGUE

In the realm of technical disciplines, there are perhaps few societies in the world which have enjoyed continued existence and prosperity over the period as long as 75 years. As the former Secretary General, K. Nash said properly and correctly, the geotechnology will need to exist as long as human being survives on earth. It is hoped that the ISSMGE will also survive as well. The description as above would be a one-sided view over the history of the ISSMGE. It is the authors' earnest wish that someone will also volunteer to look back at the ISSMGE from different points of view.

REFERENCES

J.G. Zeitlen (1987), "History of Asian Regional Conferences 1960-1983," Proc. of the 8th Asian Regional Conferences on Soil Mechanics and Foundation Engineering, Vol. 2, pp. 105-116, Kyoto, Japan.

R.H.G. Parry (1985), "A Brief History of ISSMFE", ISSMFE NEWS, Vol. 12, No. 2, June 1985.

THE ISSMGE FROM 1936 TO 2011 (continued)

Table 1-1. Traditional Subjects of Main and Specialty Sessions (1936-1977)

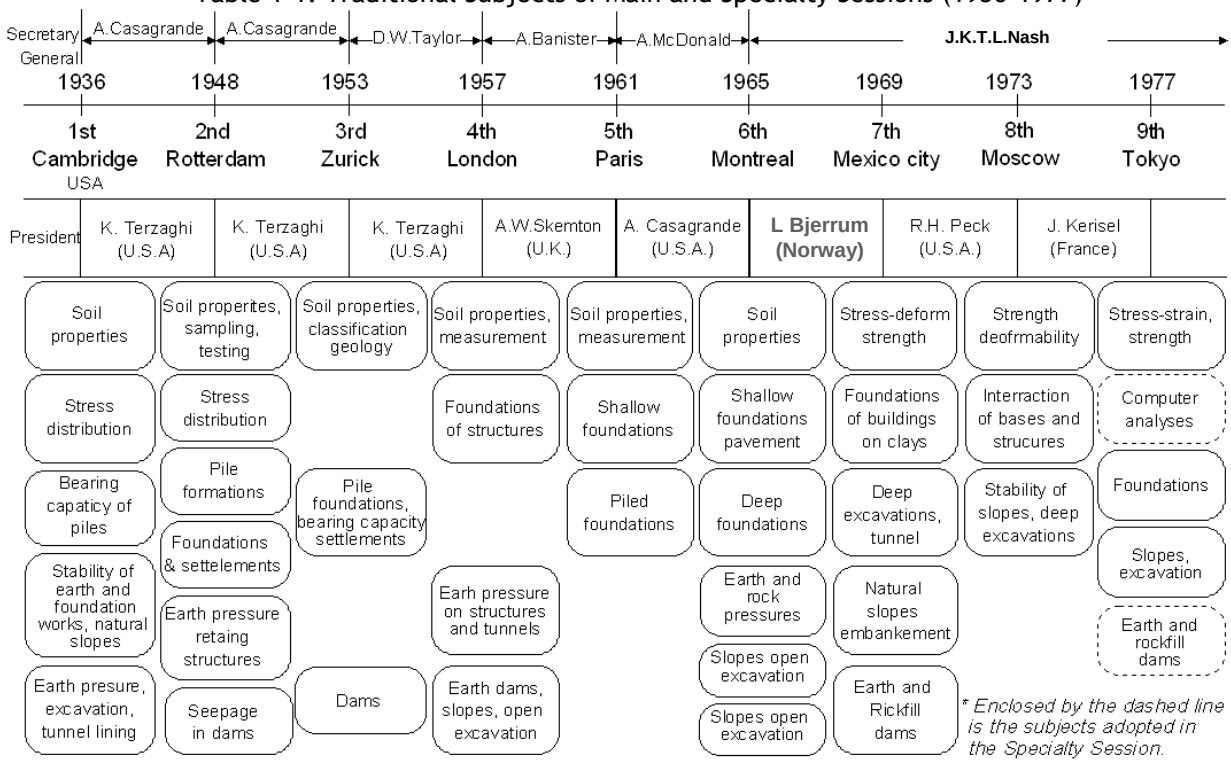
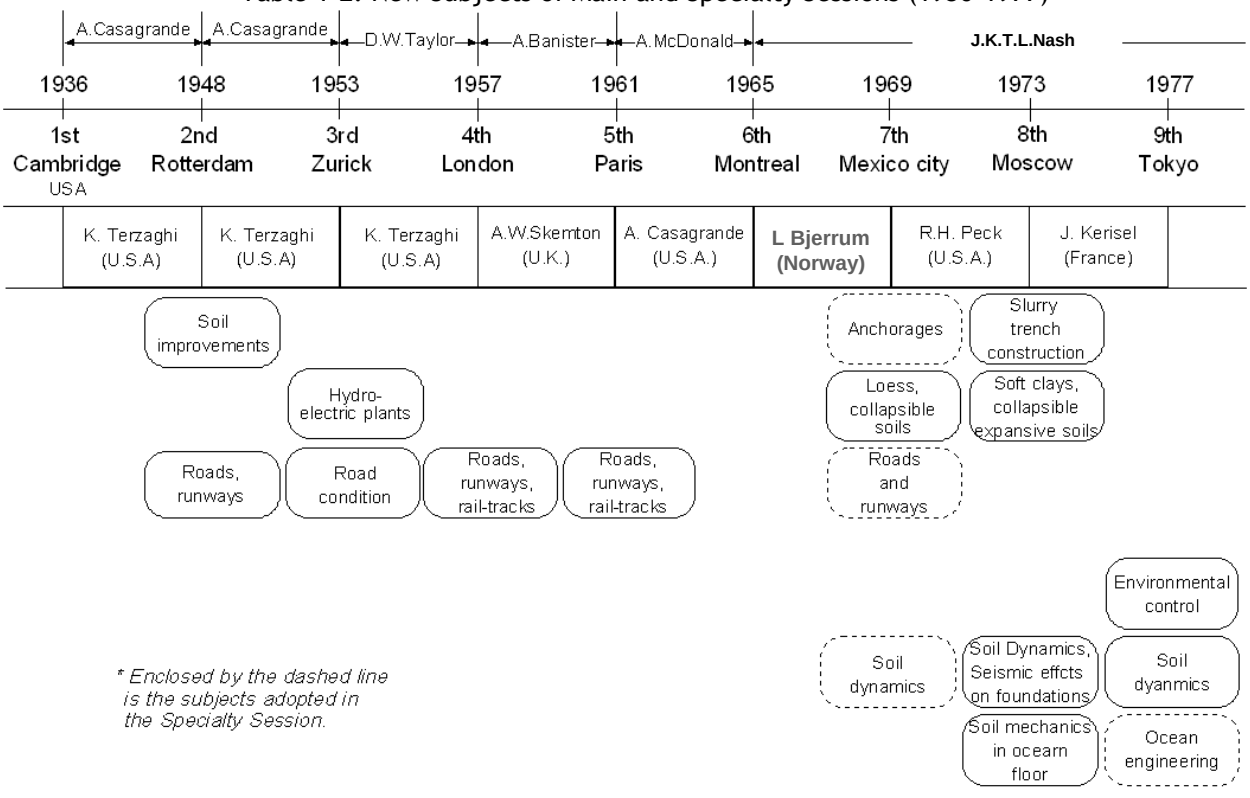


Table 1-2. New Subjects of Main and Specialty Sessions (1936-1977)



THE ISSMGE FROM 1936 TO 2011 (continued)

Table 1-3. Traditional Subjects of Main and Specialty Sessions (1991-2009)

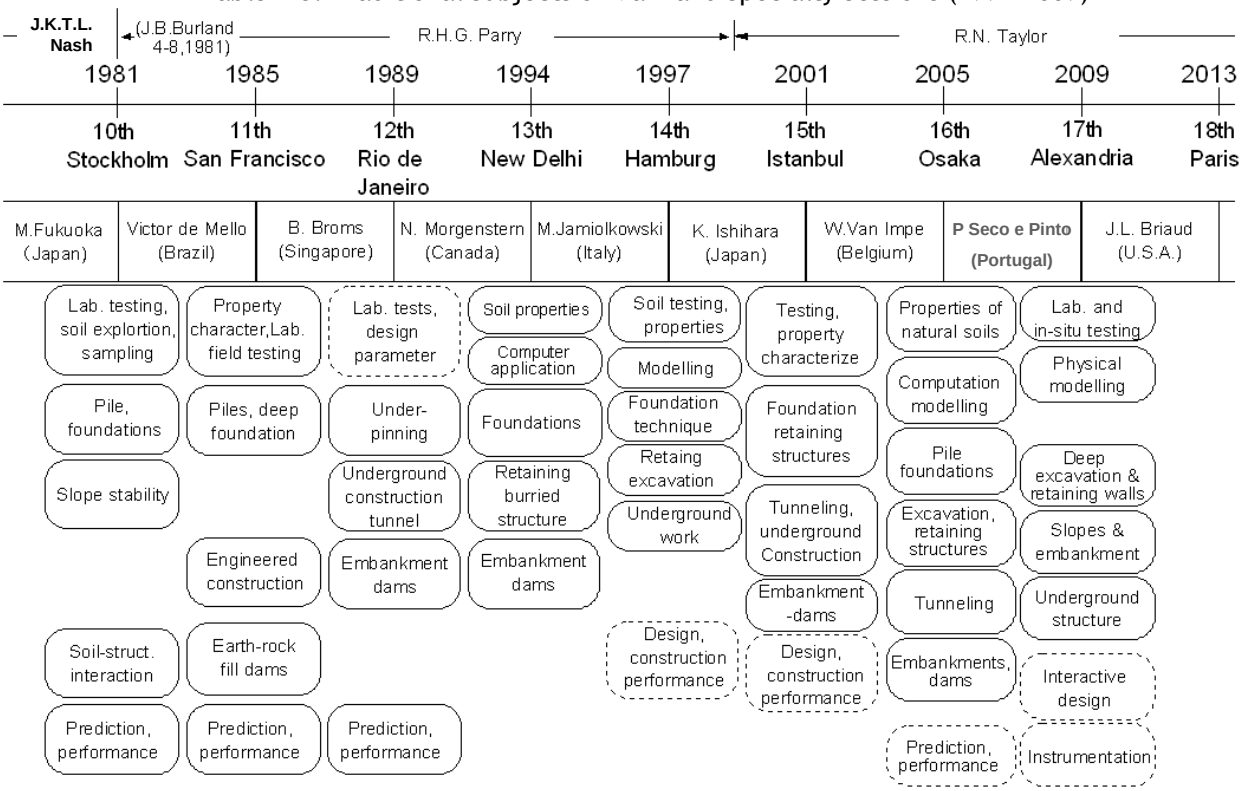
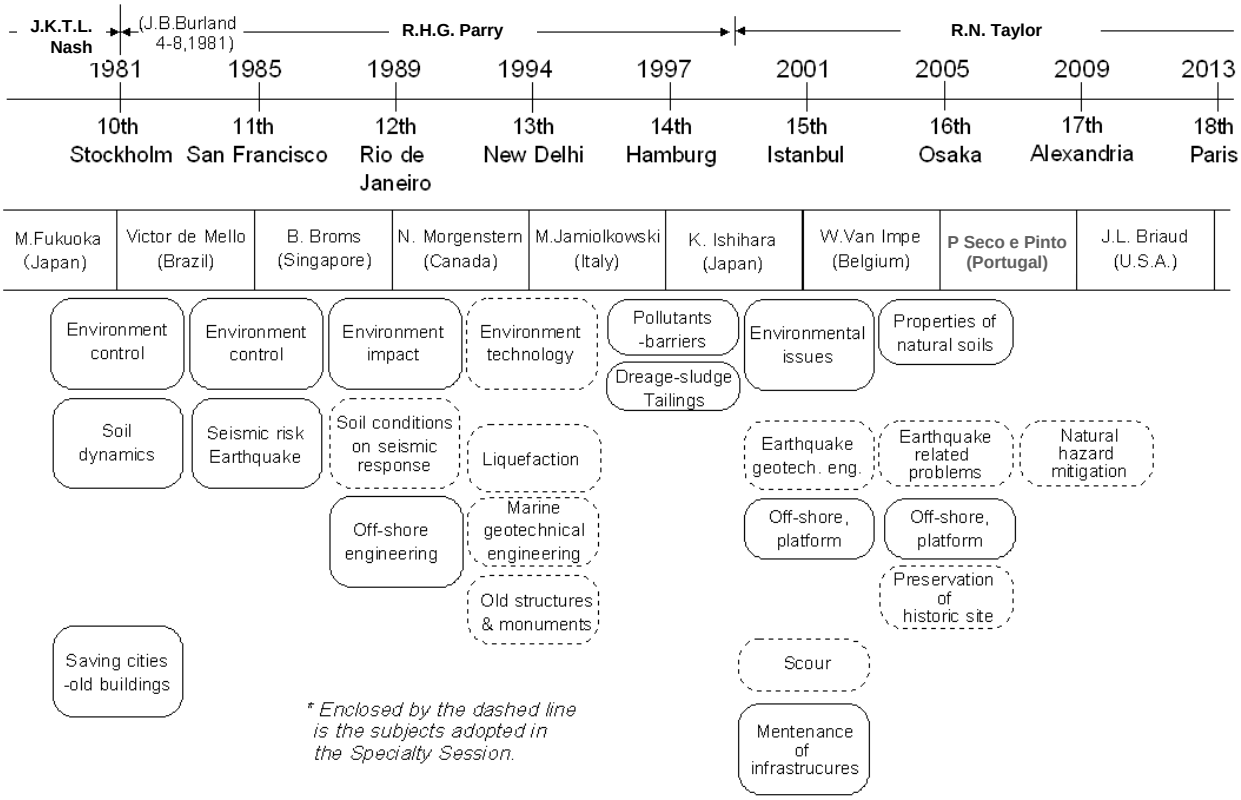


Table 1-4. New Subjects of Main and Specialty Sessions (1981-2009)



THE ISSMGE FROM 1936 TO 2011 (continued)

Table 2. Environment - Related Events in ICSMFE

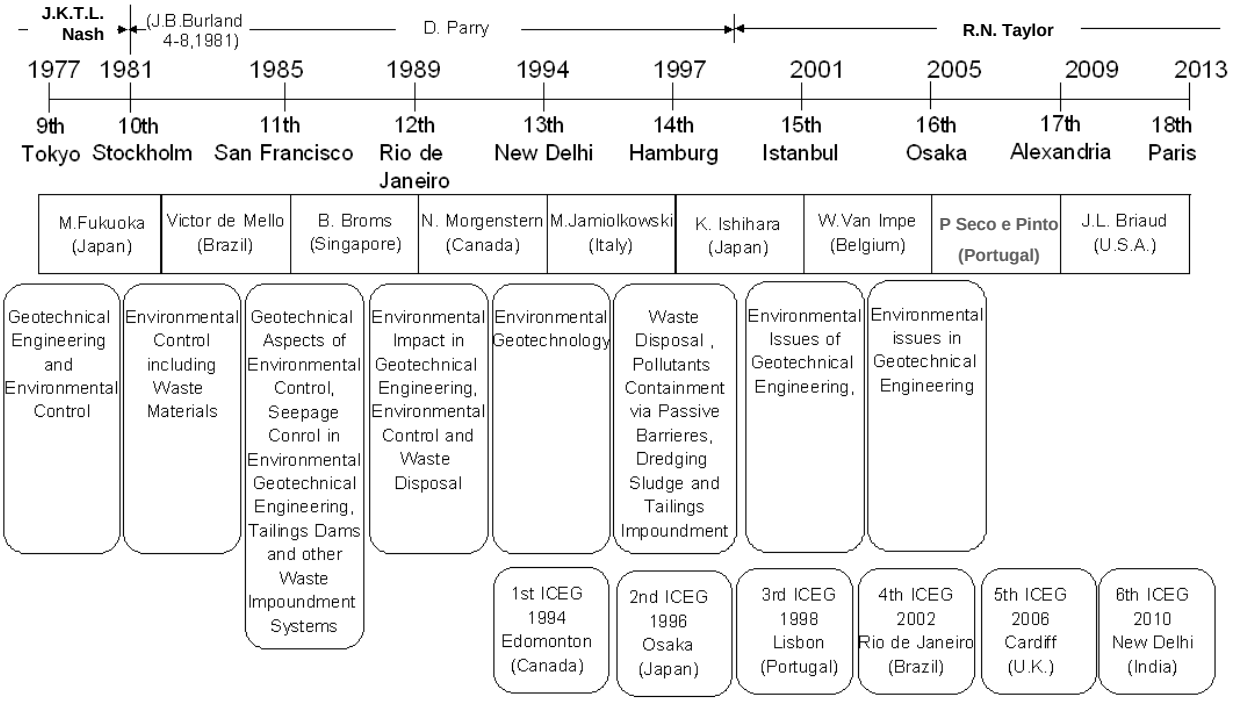
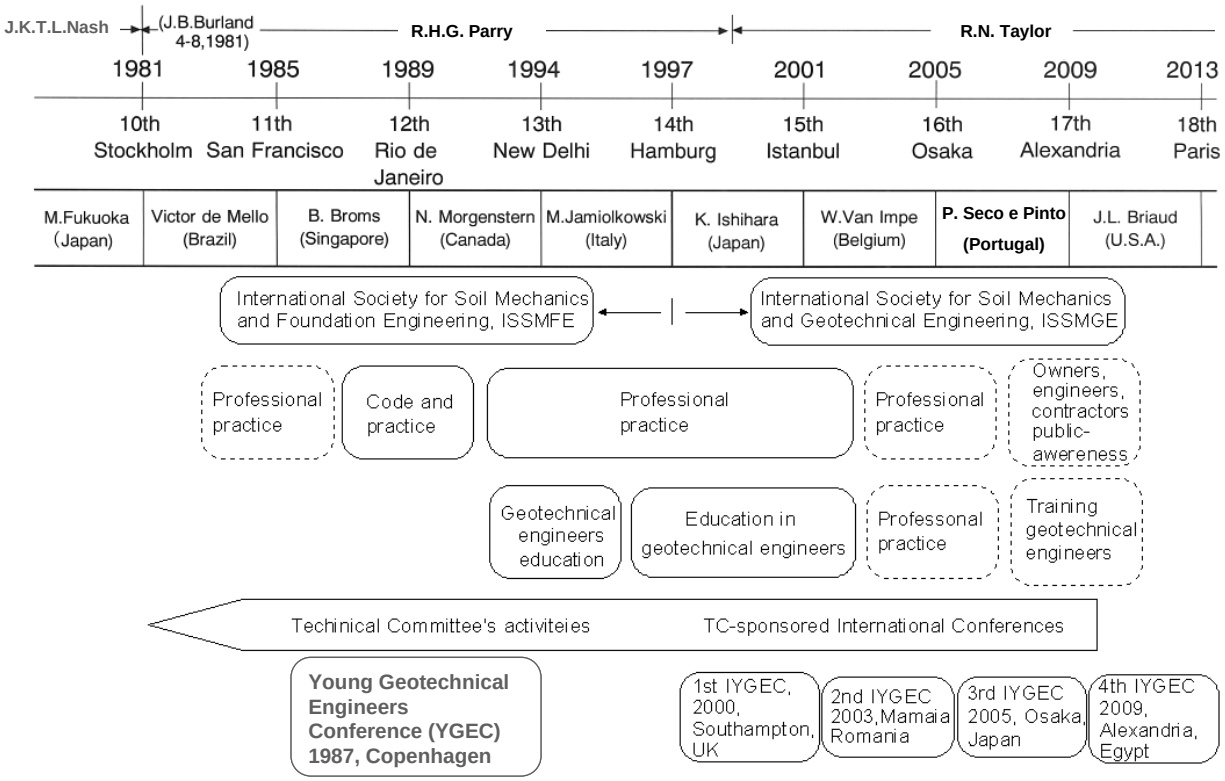
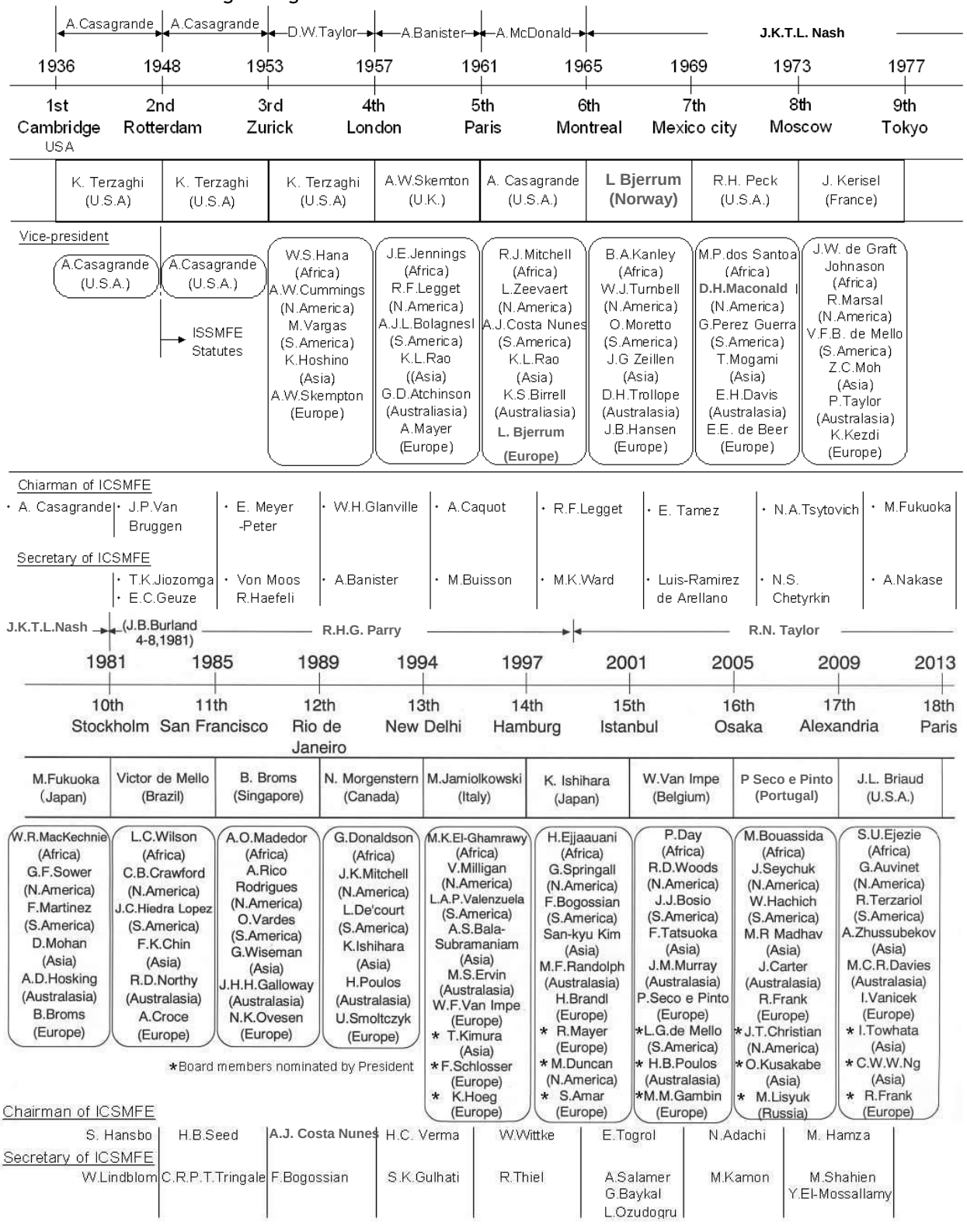


Table 3. Development of non-technical activities



THE ISSMGE FROM 1936 TO 2011 (continued)

Table 4. List of Vice-presidents and Chairman and Secretary of the Organizing Committee in each of the International Conferences



ERRATA

There were mistakes in the Asian V.P. Prof. Askar's message in the June Issue, 2011, of this Bulletin. Please accept the apology from the chief editor of the bulletin. The corrections are shown below. The corrected version of the June Issue has already been uploaded in the ISSMGE website.

Ikuo Towhata

Caption of Photo19:
Prof. Makoto Namba (Moderator of TC 305- Workshop on Recent Projects in Asian Megacities and New Capitals and Chairman of this technical session of TC 305) awarded Dr. Daman Lee (Director of ARUP, Hong Kong) for this excellent invited lecture: Mega City-Hong Kong Underground Space.

Caption of Photo 22:
Amir Hossein Haghi (Geotechnical Consultant Engineer of ZAFA, Iran) - right side, and myself - left side congratulated Prof. Yoshinori Iwasaki (centre) with KGS Award-Medal after the name of Academic Aitaliyev.

ISSMGE President progress Reports
Professor J-L. Briaud

635 Days Progress Report

Distinguished Colleagues, Dear Friends,

This is my twenty first progress report after 635 days as your President. Note that previous reports are on the ISSMGE web site (http://www.issmge.org/) under "From the President" if you need them. In this report, I would like to talk to you about ISSMGE webinars.

Webinars

ISSMGE is launching its webinars series. The first webinar will be on 23 August 2011; it will be 90 minutes long and will be offered 2 times during the day at 9h00, and 16h00 (Texas time). The time in Texas on 23 August 2011 will be UTC/GMT – 5. The topic is "Bridge scour depth prediction and levee overtopping erosion". The speaker is Jean-Louis Briaud, President of ISSMGE and Professor at Texas A&M University. Professor Briaud has worked on scour and erosion for the last twenty years and delivered the ASCE Ralph Peck lecture on this topic in 2007. ISSMGE Webinars will be $200 per computer connected. However, as an introductory offer, the first webinar will be free of charge. If you wish to connect and listen to this first ISSMGE webinar, please let my assistant, Hanna Prichard (hprichard@civil.tamu.edu) know that you wish to join the webinar. She will send you detailed instructions. As background, you will need a computer connected to the internet and equipped with speakers. On the day of the webinar, you will hear my voice on your computer speakers and you will see my slides and movies on your screen. You will also be able to ask questions by typing them in a box on the right side of the screen. I attach a few slides of bridge failures for your information. The content of the webinar will be as follows;

1. Fundamentals of soils erosion
2. Measurement of erodibility
3. The bridge scour problem
4. Prediction of bridge scour depth
5. Woodrow Wilson Bridge case history
6. Levee overtopping
7. Development of design charts
8. New Orleans-2005 Katrina hurricane disaster
9. Mississippi-2008 flood and Midwest levees failures
10. Conclusions

Note that this ISSMGE Webinar will be recorded and that you can listen to the recorded webinar at a date and time of your choice after 23 August 2011 but the $200 payment will apply. The plan is to offer webinars at a frequency of about one per month in the future.

665 Days Progress Report

Distinguished Colleagues, Dear Friends,

This is my twenty second progress report after 665 days as your President. Note that previous reports are on the ISSMGE web site (http://www.issmge.org/) under "From the President" if you need them. In this report, I would like to talk to you about the Council Meeting in Toronto at the upcoming PanAm conference, Webinars, ISSMGE and ISRM, the new ISSMGE Public Relations Committee, the result of the TCs evaluation, and the rules for the ISSMGE Foundation applications.

ISSMGE President progress reports (continued)
Professor J-L. Briaud

Council meeting in Toronto at Pan-Am conference: the ISSMGE Council will meet in Toronto, Canada at the Sheraton Centre Toronto Hotel starting at 8:30 am on Sunday 2 Oct 2011 just before the Pan-Am conference (http://panam-cgc2011.ca/). All 88 National Societies must be represented at this meeting which is very important. Indeed our member societies meet only once every two years so the Council meeting is very important. I hope all of member societies plan to be there. If you cannot be there, make sure to send somebody to represent your Society or give your proxy vote to another National Society.

Webinars: The first ISSMGE webinar was delivered on 23 August 2011. We have about 70 participants so far but there is still room if you wish to join us for this historic event. It will be 90 minutes long and will be offered 2 times during the day at 9h00, and 16h00 (Texas time). The time in Texas on 23 August 2011 will be UTC/GMT - 5. The topic is "Bridge scour depth prediction and levee overtopping erosion". The speaker is Jean-Louis Briaud, President of ISSMGE and Professor at Texas A&M University. This webinar is free but future webinars will be $200 per computer connected; of course several people can watch one computer screen to decrease the cost per person and the ISSMGE Foundation is there for those who may not be able to join without some financial help. The next webinar will be in October 2011 on the topic of Intelligent Compaction by Antonio Correia (Portugal), Chair of the TC on Transportation Geotechnics.

ISSMGE and ISRM: I have received 14 emails from ISSMGE individual members in response to my question asking if it would be a good idea for ISSMGE and ISRM to merge. 10 were strongly in favor and 4 were against the idea. One might read from this that the topic is not a big priority for ISSMGE members (low number of responses) but that the small sample indicate a definite vote in favor of the merger (71% majority).

Public Relations Committee: During its last telephone meeting, the ISSMGE Board voted unanimously to create a new board level committee called the Public Relations Committee (PRC). The idea is that we do very well at talking to each other (conferences, webinars, Technical Committees) but we do very poorly at connecting with the public and the media. The charge of the PRC will be to do just that. Please let me know if you are interested in working on this very important committee.

To the TC Chairs and TC Members: Following the yearly report that you sent to the Technical Oversight Committee (TOC), TOC chaired by Suzanne Lacasse presented its "Evaluation of TCs" annual report to the ISSMGE Board. ISSMGE has 30 technical committees. The work of 25 TCs was found satisfactory, 2 were fairly satisfactory, and 3 were unsatisfactory. Among the 3 that were unsatisfactory, one TC has been terminated, for another one the Chair has changed, and the third one has seen a quick turnaround. Please continue to contribute to the advancement of our profession through the important work done by the ISSMGE TCs. The next TC yearly report will be requested from you in June 2012 with the TOC "Evaluation of TC" annual report coming in July 2012.

Rules for Foundation applications: Just a reminder that to apply for grants from the ISSMGE Foundation, you should go to the ISSMGE web site (http://www.issmge.org/web/page.aspx?refid=563) where you will find the necessary information. Note that the Foundation Committee will make decisions on Feb 1 and Aug 1 of each year and that if you are sponsored by the Foundation you must file a report upon completion of the activity.

ISSMGE President progress reports (continued)
Professor J-L. Briaud

695 Days Progress Report

Distinguished Colleagues, Dear Friends,

This is my twenty third progress report after 695 days as your President. Note that previous reports are on the ISSMGE web site (http://www.issmge.org/) under "From the President" if you need them. In this report, I would like to talk to you about GeoWorld, webinars, and the Council meeting in Toronto.

GeoWorld: I am very pleased to officially announce the grand opening of GeoWorld (http://www.mygeoworld.info). GeoWorld is to geotechnical engineers what Facebook is to social networking. It is a free professional network for interaction between geotechnical engineers worldwide. We owe this brilliant idea to our very own Dimitrios Zekkos who is also the inventor of geoengineer.org, of the International Journal of Geoengineering Case Histories, and the Chair of the Innovation and Development Committee. This idea germinated at the beginning of this year and was endorsed by the Students and Young Members Presidential Group, and by the ISSMGE Board. Please take the time to go and visit the site, create your own GeoWorld profile page, and listen to the introduction movie which will give you much more details. You can also find this movie on YouTube at
http://www.youtube.com/watch?v=MRYA-mMSGCw&feature=player_embedded.

Now geotechnical engineers worldwide have a way to connect through this very simple electronic way. Your comments for future improvements are most welcome. See you on GeoWorld.

Webinar: The first ISSMGE webinar took place on 23rd August 2011. A total of 111 computers worldwide were connected to listen to the webinar (map attached). This is a much larger number than any other webinar I have been associated with or heard of. The webinar went very smoothly thanks to my assistant, Hanna Prichard. I must admit that I was thoroughly exhausted at the end of the day after talking twice to my computer for 90 minutes. The comments were very positive so I am extremely happy with this new development in our International Society. **The second webinar will be on 25th October 2011 on the topic of Intelligent Compaction.** The speaker will be Professor Antonio Correia (Portugal), chair of the ISSMGE Technical Committee on Transportation Geotechnics. Please contact Hanna at hprichard@civil.tamu.edu if you wish to attend this webinar; she will give you all the details. The fee for this webinar will be $200 per computer connected but many people can watch one computer screen to minimize cost per person. Remember that the ISSMGE Foundation can help. Note that the speakers are not getting paid and are doing these webinars as a contribution to the International Society and its members. The expenses arise from the support staff and our contract with WebEx, the company which facilitates the electronic distribution of the webinars.

Council meeting on 2Oct2011 in Toronto, Canada: This is a friendly reminder about our very important Council meeting in Toronto. Make sure that your society will come or are represented. Dimitris Zekkos will demonstrate GeoWorld at the Council meeting.

Please relay this message to all your members. Best wishes.

Jean-Louis BRIAUD
President of ISSMGE

TECHNICAL NEWS
Change Life, Motivate People

An approach for poverty reduction by maintaining rural roads in developing countries

Yoshinori Fukubayashi [i] and Makoto Kimura [ii), iii)]

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ii) Professor, Department of Civil & Earth Resources Engineering, Kyoto University,
Katsura Campus, Kyoto University, Nishikyo-ku, Kyoto 615 8540, JAPAN (kimura.makoto.8r@kyoto-u.ac.jp)
iii) Chairman of Board, Community Road Empowerment (NGO)

WHAT CAN WE DO?

In rural areas of East Africa, because of the characteristics of expansive clay, which is called "Black Cotton Soil" or "Red coffee soil", rural roads often become impassable during the rainy season (Figure 1). The government and international donor agencies have rarely been able to allocate their budget to maintain these roads: this is because the perceived benefits from such projects were limited. The traffic volume passing along rural roads is very small, typically less than 50 vehicles per day. On the other hand, for people living alongside these roads, the roads are fundamental infrastructure for their daily lives. They inevitably sigh looking at their rotten cash crops in their stock that are not transferred to the market due to the impassable road conditions. It takes a whole day to just deliver the daily necessities, such as cooking oil, salt, and sugar, etc., from the nearest town to their village. Consequently, people in the village face considerable inconvenience as they lack basic supplies. The impassability of rural roads also hampers the timely transportation of patients in a village to a hospital (Figure 2). The children sometimes face difficulties getting to school.

Figure 1 A rural road in the rainy season, via which rice is transported (Uganda)

Figure 2 An ambulance stuck on a rural road (Papua New Guinea)

It is said that 75% of individuals globally living in poverty reside in the rural areas. The poor conditions of rural roads in developing countries have been regarded as one of the main constraints to economic development in such countries. In fact, even national and regional roads are not well maintained in those countries. In this situation, do the people in a village have no alternative but to give up on the maintenance of rural roads? Thus far, geotechnical engineering has not been able to develop solutions to this problem regarding rural roads in developing countries.

TECHNICAL NEWS
Change Life, Motivate People (continued)

HOW TO IMPROVE THE TRAFFICABILITY OF RURAL ROADS IN DEVELOPING COUNTRIES

How can the trafficability of rural roads be improved? Our approach is “To enable African people to solve their problems by themselves”. As the first step of this specific strategy, the authors developed a maintenance method for unpaved roads using “Do-nou”, a Japanese term for a soil bag. The bearing capacity of “Do-nou” was specified by Prof. Hajime Matsuoka in the Nagoya Institute of Technology. The authors have started a study to apply the theory of “Do-nou” to rural road maintenance in Africa with the understanding of Prof. Matsuoka.

Even in rural areas of developing countries, woven bags using string made from polypropylene are commonly found. These bags are used for packing fertilizer, feed, seeds, and crops for sale. The empty used bags are utilized for packing and transporting other goods. Sometimes, the bags can be seen filled with soil and used for reinforcing a flat space raised above ground level for selling in markets along main roads. These second hand bags are sold in street stalls at a price ranging from 0.1 to 0.3 US$.

The sizes of the bags vary from 10 to 90 kg. A 20kg bags are the most convenient to maintain roads, because they are easy to transport and lie properly in terms of the weight and size after the bags are filled with soil. Moreover, they exhibit sufficient tensile strength to bear the tension generated during the loading of traffic and compaction.

COMPACTION USING EQUIPMENT VERSUS WRAPPING SOIL WITH BAGS

Without any equipment for compaction, is it possible to build a base course to bear the traffic load simply using the in situ soil reinforced by being placed in “Do-nou” bags? The effect of such reinforcement has been confirmed through full-size driving tests (Figure 3 and 4). When a vehicle drove on the base course without “Do-nou”, consisting only of gravel compacted by tamper, the depth of the rut ultimately formed by the vehicle passing 10 times exceeded 15 cm; at that point, the vehicle could not drive along it anymore because the bottom of the car collided with the road. However, on the base course reinforced with “Do-nou” manually compacted, the depth of the rut formed by the vehicle passing 10 times was reduced to 33% of that without “Do-nou”; the settlement showed convergent behavior. Even after 200 passes at the end of the test, the road still maintained trafficability.

The effect of “Do-nou” as a reinforcement mechanism is easily understood by people engaged in the work during the demonstration (Figures 5 and 6). Therefore, the participants could understand the reason why soil is put in “Do-nou” bags and the concomitant importance of manual compaction on “Do-nou”.

TECHNICAL NEWS
Change Life, Motivate People (continued)

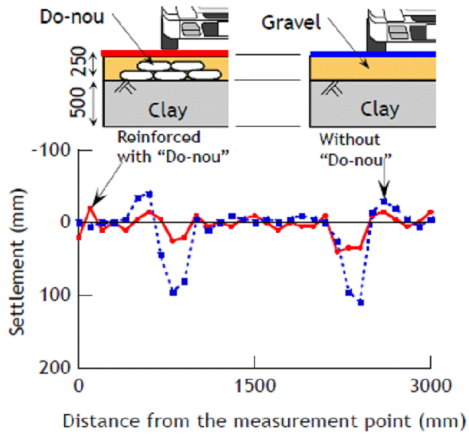

Figure 3 The settling of the road surface after a vehicle passes 10 times

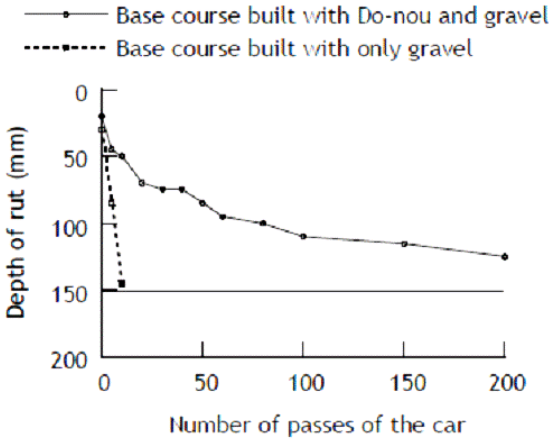

Figure 4 Relationship between the rut depth and number of car passes

Figure 5 Kenyan farmers assessing the hardness of "Do-nou" after compaction

Figure 6 "Do-nou" bears the load of a heavy tractor during construction (Kenya)

PRACTICAL ROAD MAINTENANCE IN RURAL AREAS OF DEVELOPING COUNTRIES

Through using only locally available material and manual labor, rural roads can be maintained by villagers who use the roads daily. This is one of the important factors to solve the problem of rural roads in Africa, or developing countries. This can be viewed as a giant step to reduce poverty in the world.

On rural roads, sometimes you do not see cars passing for half a day; or you might see trucks of buyers collecting crops passing in a row. The first thing to do for the maintenance of such roads is to improve the trafficability at spots which become impassable whenever it rains. Due to poor drainage, run-off water is stagnant on the carriageway of rural roads and so road surfaces become muddy. Soil with high water content is easily disturbed by traffic, leading to the formation of deep ruts. Generally, the length of sections that becomes impassable ranges from 20 to 200 m.

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First of all, the drainage system is improved, and then the muddy part is replaced with “Do-nou”. Figure 7 shows a standard cross-section of a maintained road with two-layer “Do-nou”. Where a rural road has a deeper rut or overly soft ground, the required number of “Do-nou” layers is varied accordingly, sometimes exceeding two layers.

One of the main challenges is to train farmers who usually dig up the ground to implement road maintenance by themselves properly to realize the full potential of “Do-nou”.

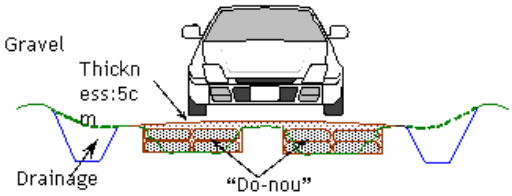

Figure 7 The standard cross-section of a road maintained using “Do-nou”

A 20-liter container of cooking oil is utilized to measure the proper volume of soil put into bags (Figure 8). After putting the soil in the bags, the open end is tied with a string at a position just over the fist to be leaving a certain space inside the bags (Figure 9). These standardized procedures enable the size of “Do-nou” to be uniform. As a result, it becomes possible to place “Do-nou” evenly and minimize the space between them (Figure 10).

For compaction, a wooden mallet, which weighs about 10 kg, is utilized. The compactor is hand-made by villagers and requires only locally available materials such as wood and nails. At least ten strokes per “Do-nou” are required for compaction (Figure 11). The space still remaining after the compaction is filled with stones and soil; the next layer of “Do-nou” is then applied. In order to avoid the bags being torn due to exposure to sunlight and friction from the car tires passing, the top layer of “Do-nou” is covered with gravel to a thickness of 5 cm after compaction (Figure 12).

Figure 8 Soil measured with a container is being put inside a bag (Kenya)

Figure 9 Open end of a bag is being tied using string over a fist; the child being curious about his mother’s work (Kenya)

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Figure 10 "Do-nou" are positioned at a site where the mud has been removed. The space between "Do-nou" is necessary to allow them to expand due to compaction (Kenya)

Figure 11 A villager is compacting "Do-nou" using a wooden mallet (Kenya)

REACTIONS TO OUR APPROACH

It is not cement but "Do-nou" bags to facilitate the building of a base course that can efficiently bear traffic load without any equipment for compaction in rural areas in developing countries. At first, the villagers could not believe that the road was maintained using "Do-nou" bags: they were able to maintain the road with their own labor. They were surprised to see the conditions of the improved road. In Kenya, not only villagers but also a colonial immigrant from Europe who owned a large area of land could not believe the effect of "Do-nou". He passed by the construction site where the villagers were working on the road using "Do-nou", and simply said, "Such "Do-nou" bags cannot improve the road!" After a couple of days, he came to our office to apologize for his rash comment. The section of road had vastly improved and is now passable even during the rainy season.

Figure 12 Gravel is distributed over the final layer of "Do-nou" to build the layer of the road surface (Kenya)

"The maintained road soon becomes impassable again, doesn't it?" We heard this comment numerous times. The road is not sealed by asphalt or concrete. This is a simple spot improvement of an earth road through building a base course utilizing locally available "Do-nou" bags. This maintenance method will be implemented continuously in the future by villagers who acquire technology with a willingness to solve their problems by themselves. The technology leads to sustained trafficability of rural roads.

The villagers received powerful reminder that they themselves could improve their own lives (Figure 13). The application of this technology motivates and empowers farmers to initiate their own development schemes. Geotechnical engineering methods are delivered to the villagers in rural areas of developing countries; this helps encourage local villagers to maintain their own roads. After problematic portions are improved using "Do-nou" technology (Figures 14 and 15), the villagers' life has changed. This is because the volume of crops transported to markets has increased as the number of buyers' cars passing has

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increased as well. The transportation fee for goods is reduced; public transportation options from the villages to towns are increased. This enables the villagers to commute to towns daily.

Figure 13 Villagers who participated in the demonstration of road maintenance using "Do-nou" technology (Kenya)

Figure 14 The road situation before the maintenance, in September 2008 (Kenya)

Figure 15 The road situation after two years of maintenance at the same place as in Figure 14 (Kenya)

Figure 16 The dam's embankment built with "Do-nou" covered with the branches of *Acacia*

APPLICATIONS OF "DO-NOU" TECHNOLOGY

The "Do-nou" technology, which can be said to be one of the most convenient geotextiles in rural areas of developing countries, is adopted by the *Masai* – a tribe that lives with its livestock at the bottom of the Great Rift Valley. The seasonal river sometimes floods their living area during the rainy season. They reinforced the flooded part of the embankment using "Do-nou" technology. To protect the maintained dam from being trampled down by their cattle, the dam is covered with branches of *Acacia* growing near the area (Figure 16). Because of the thorns of *Acacia*, the cattle do not approach the dam. This represents the integration of traditional technology of the *Masai* and geotechnical engineering. In Kenya, it is estimated that forests currently compose only 2% of the total land, a substantial decline from the previous estimate of nearly 30%. The government of Kenya obliges farmers to keep at least 10% area of their farms

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for planting trees for forest revival. A farmers' group used water, stored in a dam built using "Do-nou" technology (Figure 17), to grow a tree nursery reinforced by "Do-nou" (Figure 18). The nursery of trees was purchased by local authorities and other farmers' groups in compliance with the government regulations. The maintenance of the rural infrastructure generates new sources of income for farmers.

Figure 17 The dam to store water built with "Do-nou" (Kenya)

Figure 18 A terrace reinforced with "Do-nou" for the tree nursery

BUILDING NON-PROFIT ORGANIZATION

In order to expand the approach for poverty reduction based on geotechnical engineering, a non-profit organization (NPO), whose mission is to maintain the rural infrastructure in developing countries, was established in 2007. Mr. Fukubayashi, who is the first author of this article, received negative feedback on his plan to develop an NPO and work as a board member since graduation on account of the uncertain future. However, only a simple thank from the villagers, "Thank you for providing us with the technology!" encouraged us to start the NPO without any guarantee concerning the future of the organization.

Up to now, our activities have benefitted 11 countries in Asia, Oceania, and Africa, and 13 km of rural roads have been maintained under the NPO's direct supervision (Figures 19 and 20).

Figure 19 Prof. Kimura is supervising construction in Ghana

Figure 20 Fukubayashi is explaining the procedures to villagers in Papua New Guinea

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It was in 2005 that road maintenance involving farmers using “Do-nou” was implemented for the first time in Papua New Guinea, which is often referred to as the last paradise on earth. The Secretary of Papua New Guinea’s Department of Works has now recognized our organization. We are also providing management services for a project funded by the Asian Development Bank (ADB), in which 80 km of rural roads are being maintained using “Do-nou” technology. We plan to extend the socioeconomic benefits to the roadside communities. ADB is also expecting to maintain the community infrastructure using “Do-nou” technology in another project in East Timor; therefore, we are being asked to join the project to transfer this “Do-nou” technology.

A “Do-nou” team was established in a local university in the Philippines. The team consists of an associate professor of international affairs as a coordinator, and engineers of the technical faculty. They adopted “Do-nou” technology, and have been applying it to the maintenance of small infrastructures on the campus; they also transferred the technology to neighboring communities and local NGOs as means to contribute to society under the university initiative.

Our NPO was asked to collaborate in the study to promote a Base of Economic Pyramid (BOP) Business through road maintenance using “Do-nou” technology by an international consultant company. Beginning in 2011, the study started in Ghana with funding assistance from the Japan International Cooperation Agency (JICA).

In the middle of Africa, there are native people whose height is only 150 cm or less. We are also members of a study team attempting to develop sustainable agriculture in their living area. Our contribution is to develop and suggest methods of rural infrastructure maintenance utilizing locally available material.

There are many Japanese volunteers who are working in a number of developing countries with passion to help develop the area. Even though they are not engineers, requests from them such as “Please teach me road maintenance using “Do-nou” technology” have been e-mailed to us. To respond to such requests, in Uganda and Tanzania, training and demonstrations have been conducted with them. Afterwards, the volunteers have maintained roads in their assigned areas with villagers. They have been able to receive recognition and be accepted as members of their community.

THE IMPACT FROM RURAL ROAD MAINTENANCE USING “DO-NOU” TECHNOLOGY

At the end of this article, let us introduce the voices from the villagers along the rural road which is maintained by using “Do-nou” technology as shown below.

The farmers groups have come together and established an association to apply “Do-nou” technology to the maintenance of rural infrastructures. It is likely that road maintenance using “Do-nou” technology may become the emerging business in rural area in developing countries for promoting the improvement of the infrastructures.

Geotechnical engineering techniques can be a key tool that can enhance the general welfare and happiness of individuals all over the world.

We would like to contribute to the happiness of more communities. Your attention to our activities is greatly appreciated.

See Table 1 for more voices.

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Table 1 Result of the interview to the villagers who participated in the work

Category	Voices (Comments)
Traffic	1. Number of the bike taxi on the road has increased. 2. Time taken to reach the town has become shorter. 3. The improved road enabled the motorcyclists increase the fuel mileage. 4. The fee of the bike taxi has become cheap.
Agribuisness	1. The frequency of the visits of the buyers has increased. 2. The farmers become able to arrive at the market earlier in the morning, and then their products command good prices. 3. The planting area of the farmers has increased, since the most of the products can be transported and sold. 4. The extension officers have visited the village more frequently because of the improved road conditions.
Group activities	1. The number of the member of the group has increased. 2. The group became more cohesive and started the new self-development project, such as the new crops, fish pond and nursery. 3. The group started to transfer the Do-nou technology to the neighbors who got interested in the road maintenance.
Life	1. The patient could be transferred to the hospital in time. 2. A new kindergarten has built. 3. Some people started to commute to the town near the village, since the commute time has reduced.