Reminiscences (continued)

BBB: Indeed – and I was entrusted to build up a new department, covering soil and rock mechanics, and later soil dynamics. The number of researchers and doctoral students increased and we were able to maintain close contacts with the international geotechnical community, in spite of the move of SGI from Stockholm. I am also very proud of the work done by many doctoral students at KTH.

***KRM**: During this period you were also very active in ISSMFE.*

BBB: From 1977 until 1981, I served as Vice President of ISSMFE for Europe, with the 10th International Conference being held in Stockholm at the end of my term. One of the persons most strongly working for bringing the conference to Sweden was Prof. Hansbo, then president of the Swedish Geotechnical Society. The Swedish King opened the conference. Also, this was the first conference to introduce the idea of "home hospitality", inviting conference participants as guests to members of the host country. This concept, which has now become a tradition, and many other aspects of the conference were quite successful.

***KRM**: And in 1985 you became president of ISSMFE.*

BBB: I was elected in 1985 at the San Francisco conference, and this was quite an honor for a small country. At that time, I had already moved from Stockholm to Singapore, where I was given the task of starting up a geotechnical department at the newly founded Nanyang Technological Institute, NTI, which later became Nanyang Technological University, NTU. This was a remarkable period not only in Singapore but in the entire regions, with many interesting construction projects just starting up.

***KRM**: Also there you continued arranging geotechnical seminars and conferences, which attracted many participants from the region and abroad. During your career you consulted on many major construction projects.*

BBB: I was fortunate to become involved in several very interesting projects. In Singapore, work on the MRT subway had just started, so I had the opportunity to get involved in some aspects of this complex project. One of my more spectacular project involvements was serving as consultant on the foundation of the Kuwait towers.

Conference in Singapore in honor of Prof. Bengt Broms, 1995

***KRM**: Your lectures about the collapse of the New World Hotel are quite well-known!*

BBB: I was member of the panel that was charged with the investigation of the failure of this hotel in Singapore, which collapsed on March 15, 1986. The story about the design and construction of the hotel sounds like a saga. Only one of three owners could write and read. The piles were driven without knowing the shape of the building. The original structural engineer had also made a serious error in calculating the weight of the building. At the time of the collapse, the six-storey hotel was quite busy, so nobody paid attention when they heard cracking in walls and columns. During a seven-day rescue operation after the collapse, 17 people were found alive, but 33 people lost their lives. As a consequence of the failure, the government of Singapore introduced tighter regulations on building construction.

***KRM**: Returning to your presidency of ISSMFE, I understand that you had several concerns about the future of the society?*

BBB: Yes, at that time, the question of the name of the society was discussed and disputed. It was suggested by some to include the term "geotechnical engineering" – which since has been implemented. Another of my concerns was the low number of young

Reminiscences (continued)

participants at international conferences. With the support of several others, such as the late Prof. Niels Krebs Ovesen of Denmark, the first Young Geotechnical Engineers Conference was organized.
Prof. Robert Holtz, guest researcher at the SGI 1971-1973, assisted in the idea of creating "geotechnical model libraries" for newly established universities, especially in developing countries, to be donated by the society and sponsors. Also individual members were encouraged to contribute. With the evolution of information technology, this idea can now probably be implemented more easily.

***KRM**: You are the author of several books and many publications. The reader easily recognizes your papers by your hand-drawn figures. You are famous for your personal style!*

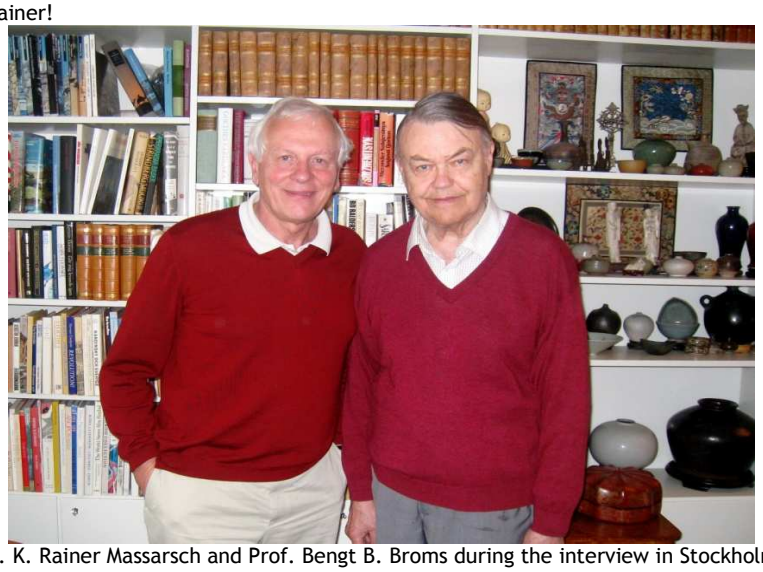
BBB: I always enjoyed drawing figures by hand. Unfortunately, now I cannot draw any more, my right hand is too shaky.

***KRM**: Time is passing quickly, so I would like to ask you a final question - which are the most important challenges for the engineering profession and our society in particular?*

BBB: Well, no doubt, environmental problems are highest on the list. We need to take care of all waste and – if possible – make use of it. Geotechnical and environmental engineering must be going hand in hand and can offer many effective solutions. Another important question is storage of nuclear waste, also here geotechnical engineering plays an important role.

***KRM**: Bengt, I do not want to keep you any longer from going to your summer house. Thank you very much for your time!*

BBB: It was my pleasure, Rainer!



Dr. K. Rainer Massarsch and Prof. Bengt B. Broms during the interview in Stockholm.

Prof. Bengt Broms and wife Carina during the interview.

Case History

Some aspects of the M6.3 April 6 2009, L'Aquila, Italy, earthquake

By Armando L. Simonelli (Università del Sannio, Email: alsimone@unisannio.it)

On April 6th 2009, 03:32 local time, a strong earthquake hit the town of L'Aquila on the Appenninic chain in central Italy (Fig. 1). The sequence started in December 2008 as a series of small earthquakes and reached its climax in April 2009. Three events above M5 took place on April 6, 7 and 9 which devastated the town and its vicinity. An international team sponsored by GEER project and several Italian-only teams sponsored by AGI and ReLUIS project performed reconnaissance of the event. Most of this note is extracted from their reports ([1] and [2]).

Figure 1. Geodynamic model for the central Mediterrannean (Devoti et al., 2008) and location of L'Aquila earthquake (adapted from [1])

The city of L'Aquila and several small towns along the Aterno river valley suffered severe damage. About 300 people died as a result of the earthquake and several tens of thousands were left homeless. Most of the deaths took place in vulnerable masonry houses which were subjected to unusually strong motions – mainly due to proximity to the fault. In the days following the earthquake, a large number of researchers visited the area. A preliminary report on the main features of the recorded ground motions was compiled by a group of Italian investigators [2] under the umbrella of Italian Geotechnical Association (AGI) and the National Network of Earthquake Engineering Laboratories (ReLUIS) project. A detailed report on seismological and geotechnical aspects of the earthquake was produced by an international group of researchers [1] sponsored by the Geo-Engineering for Extreme Events Reconnaissance (GEER) project. The brief note at hand refers to geotechnical damage and is based on the above works. Information about structural damage is available at ReLUIS web site (www.reluis.it) and elsewhere.

According to Italian Institute of Geophysics and Volcanology (INGV), the main shock took place along a normal fault oriented NW-SE, with local magnitude M_L = 5.8 and moment magnitude M_W = 6.3. The hypocentral depth was estimated at approximately 10 km. Four accelerometric stations (AQV, AQA, AQG, AQK) were located within the surface projection of the fault and recorded peak values ranging from 0.4 to 0.6*g*. Peak computed ground velocities were estimated at around 35 cm/s. All stations were located in the Aterno river valley, NW of L'Aquila city and in the city itself (Fig. 2).

Figure 2. RAN accelerometric stations in the meizoseismal area around the city of L'Aquila (image from GoogleEarth)