

## **Life and Rock Mechanics Practices in Korea: A Perspective**

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### **The Decision**

One beautiful autumn afternoon, although it was already winter for me, I was having lunch with Dr. S.K. Chung, currently the President of KSRM, and he asked me about my thoughts on Korean life, rock mechanics practices and also on Korea itself. I thought to myself that it is an intriguing idea and replied that I will write about that before my departure. So, here I am writing about my thoughts and perspectives on my one year stay in Korean soil.

Before I begin let me rewind the clock to a July afternoon in 1991 at the University of Alabama to explain how I was motivated to visit Korea in the first place. I was a graduate student then and just arrived there to pursue my M.S. and Ph.D. programs. I went to see the Head of the Department and I saw two other professors were in the room. After my introduction, the Head asked me "what is your favorite subject?" "Rock Mechanics", I replied without any hesitation. I did not know then the oriental professor who was there in the room will accept me because I uttered those two words. Then I was formally introduced with Dr. D.W. Park, a Korean dissident and he became my advisor for 6 long years. There I met many Korean graduate students who became my life long friends. So, my attraction to visit Korea was there long before I set foot in this beautiful country.

### **The People**

In my view, Korea is a hierarchical society where wisdom, experience and intellect percolate from top to bottom. In my one year of stay in Korea, I have met many people some of whom will be my friend for rest of my life. Especially, it is a universal truth that people within rock mechanics community are closer than many other societies not only because we are small in numbers but also due to the strong feeling of "brotherhood". I found no exception of this rule within rock mechanics society of Korea. In last one year, even a foreigner like me found ample space within this society and in mind of its members.

I am fortunate to be invited by KIGAM to spend one year of my life in Korea. My geography lessons from middle school taught me that people in this part of the world are very courteous, polite and possess deep sense of respect to elderly people. Last one year I mostly spent my time within the rock group of KIGAM and found that all these societal values are fully intact with added quality for dedication to their works. Except for the language, I was never felt an outsider within this group and for those reasons special thanks goes to my generous and friendly host, Dr. S. O. Choi.

In many occasions I met with people from other institutes, agencies and companies during societal meetings and symposiums. I felt very warm by their welcome and in some occasions by the curiosity of the people to talk with me.

## **The Food**

My most memorable experience in Korea would be the opportunity to taste different foods which I have never been tasted before. I have never known that raw fish can be that tasty. Korean foods, in general, are balanced and healthy. I had ample opportunities to try different types of foods some of which are delicious and acceptable to me. I was intrigued by the number of side dishes served in any restaurant containing so many different kinds of item. Sometime I felt that I taste the entire sea starting from fish to weeds. I was often asked “do I like Korean food” or “what are my favorite Korean foods”. It is well known that taste and ingredient of Korean foods are much different than Indian cuisines. But for me it was a different and unforgettable experience altogether and I liked most of it.

## **The Language**

It is no doubt that for a foreigner, language is always a barrier in a non-English speaking country. Except in my work place, I experienced this problem elsewhere. It is my view that most of the Korean professionals and students that I have met understand English. However, they are little shy of speaking it. It is quite understandable since one fears of making mistakes. But it is also true that practice makes a thing perfect. Thus I feel that there should be more opportunities for students and professionals to express themselves in English either by introducing classes or discussions in English. I strongly believe that in near future English will become a favorable second language in the country.

## **The Challenges in Rock Mechanics**

In rock mechanics, we have progressed a significant distance within a very short period of time. Korea progressed with the rest of the world and contributed to the understanding of its principles and applied its concepts in the development of country's infrastructures. However, rock mechanics is a recent subject and even younger than the soil mechanics. In the theoretical, experimental, field investigations and numerical analysis fronts tremendous advancement have been done within last two decades. But unfortunately rock is not engineered material and we have no control on its properties. We have to deal with the given rock mass whether it favors us or not. Thus I am not surprised that after four decades, rock mass classification is still an active research area in many countries since there is no single or unified system which is suitable for every problem.

There are many challenges facing the geotechnical engineers and researchers in all over the world. Dealing with highly anisotropic nature of rock mass, excavations in the highly stressed area, numerical simulations of joints and supports, support requirements for large excavations, excavations in the soft rocks and under the sea are few of them. In the next decades or so, Korea may embark on large projects which include extension of KTX, large underground caverns for storage, URL, tunnel under the sea and development of underground limestone mines. Apart from that stability and safety issues of surface structures will arise when towns or cities will be extended over the abandoned mines or natural cavities. All these issues have to be analyzed judiciously and scientifically. In my view, a systematic approach with the knowledge of modern methods and techniques is necessary to undertake these projects. In addition, these days, rock excavation projects are huge in size and Government demands high quality job within very short period of time. With the time constraint for completion, a single agency or company may not be sufficient to undertake such huge projects. Thus, shaking hands with partners, exchange of ideas, and timely publication of research findings are the key factors for the success of future endeavors. In this regard, KSRM can play a vital role by arranging regular meetings and developing common platform for discussions among the key contributors.

I am glad to see that engineers and researchers are now participating in great numbers to international conferences and symposiums and also attracting researchers from other countries to work in Korea. In this global village, it is now almost impossible to grow scientifically living in an island. The new ideas, expertise and examples from outside have to be incorporated to enhance inland facilities and understanding of a specific problem. In this regard, KSRM can play the role of a moderator.

### **The Country**

After one year of stay, I can now say that where ever you live in the rest of the year, during autumn and spring you must be in Korea. The natural beauty of "Fall Color" in the mountainous region is too good to miss. During spring, different flowers in the road side trees, in the garden and greenery in the mountains are unforgettable. A foreigner like me will be attracted by the natural beauties of this country.

Activities of rock engineering are forced upon due to mountainous region covering almost 70% of Korean territory. Numbers of tunnel and bridge were and are being constructed to build the world class highways and rail roads. Due to the constraints of surface space, storage facility for fruits and vegetables, LNG and others are now shifting to underground caverns. This country is also the birth place of many multi-national construction companies, excellent research laboratories and world class academic institutions. With all their combine efforts, I am confident that Korea can face any rock engineering challenge head on.