

Planning & underground space

Prof. Hans Christian FISCHER, ITA President 1977-1980

It goes without saying that we have come quite a long way in utilizing subsurface space. There are a large number of examples of different underground applications, all well-known to members of ITA. However, there should always be times of reflection in order to further "improve tunnelling" - to see current problems so that we can meet tomorrow's demands.

The world's population increases rapidly. Explosively. Fastest in the developing countries. Urban areas quicker than rural. In 1984, the world had 34 metropolitan areas with populations exceeding 5 000 000. In the year 2025, populations are expected to increase, in some cities even up to 30 000 000. This means that

- more people need food and shelter
- more people need drinking water and sewage treatment
- more people need to commute and travel
- more people need energy - oil, electricity etc

In OECD it was observed that this implies very hard strain on the authorities to develop an infrastructure of the cities enough to cope with these problems. One challenge is to contain urban sprawl so as to preserve the city as a healthy, economically viable centre of management, commerce, information, and culture. Parallel to that is the challenge to maintain decent living conditions for those who reside in urban areas.

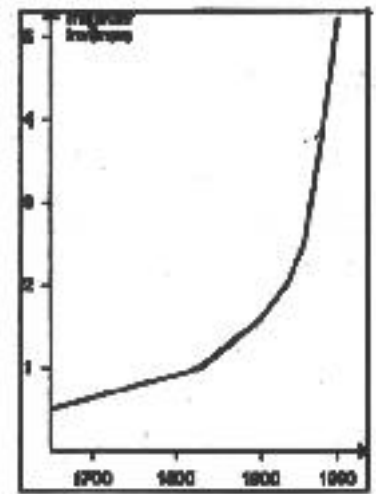


Fig. 1. Development of populations (in thousand million inhabitants) from 1700 up to the year 2000

TWENTY-FIVE YEARS AGO

From the beginning, ITA had 5 Working Groups (WGs): Standardization, Research, Subsurface Planning, Cost-Benefit studies, and Contractual Sharing of Risks. These subjects were all mentioned in the Recommendations from the OECD Advisory Conference in Washington 1970, and are closely related.

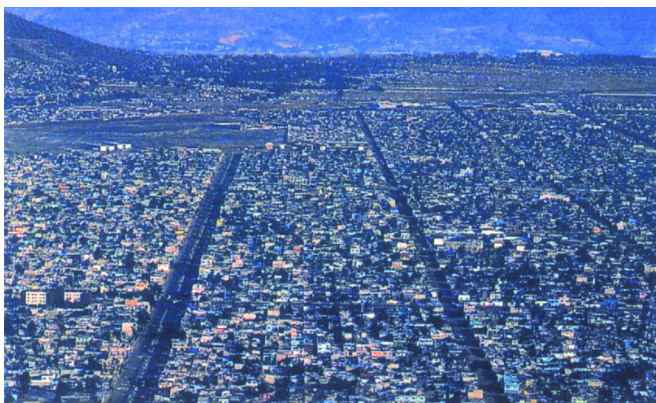


Fig. 2. The environment suffers and people in these areas are badly disturbed by noise, air pollution and vibration. In addition, traffic congestions implies an unnecessary waste of resources.

Appointed as the first Moderator for the ITA WG 4 Subsurface Planning, was the Swedish Planning Architect Birger JANSSON (who died in 1997). He held this position for some years and was well qualified for the task. He had participated in the OECD Conference, and was a key person in answering the Planning topics in the OECD Questionnaire in 1969 on behalf of the Swedish group.

Before retiring from his task as moderator for WG 4, Birger Jansson presented his ideas about future activities in a fourteen-page document *Draft Programmes for Studies within the field of*

Subsurface Planning. For the first time a scheme was presented showing probable demand among different groups for information and knowledge which in turn would lead to further studies.

“The concept of Planning is interpreted as the activity which, based on the best possible knowledge of the present, will give the best possible foresight from functional, economical, technical and human points of view. The wider knowledge of these items will, in the long range, affect the demand of subsurface utilization.”

What B Jansson proposed in the mid 70’s is what we now call databases, the contents of which can be presented in many different ways.

FUTURE OF TUNNELLING WITH ITA

Some of my reflections looking ahead...

OECD Questionnaire da capo ?

The OECD Questionnaire in 1969 was very comprehensive and unique. It gave a good presentation of the situation in the sixties and a prognosis for the seventies. It might be interesting to find out how good this prognosis was. That means, to repeat the 1969 Questionnaire - which would require much work, but could be the start of a tradition to up-date a database at intervals of, say 10 years.

ITA Pocket-Library - new type of publications?

The planning phase is an iterative process of considering the influence of the circumstances in the project. Many of these correspond to ITA Working Groups. Thus, the Planner could sometimes use the expert knowledge available within ITA. If the expert in question is available, they might meet and discuss. But, this is usually not the case and so the question arises. Where can the Planner find the documentation of the work of our Working Groups?

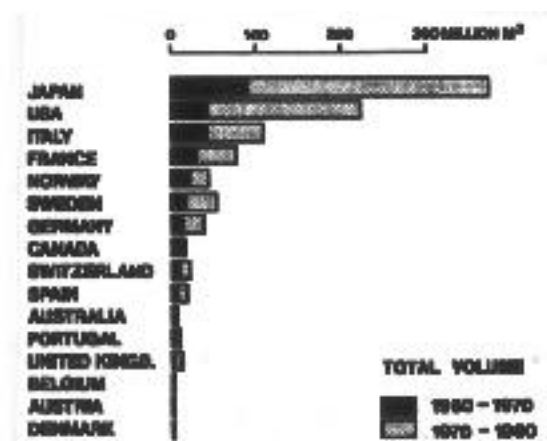
Would it be useful for the Planner to have one small publication with essential, basic facts about, say, Geology including Geo-hydrology, another about Hard Rock Excavation (Full-face Mechanical Boring and Drilling-and-Blasting), still another about Benefit-Cost analysis etc. Each of these might be 20-50 pages, presentations of fundamental concepts, many photos and diagrams, only a few tables with key numbers, a presentation that “can be read on the bus or plane”. It might be called “ITA Pocket Book”. There might be a need for about a dozen such Pocket-books and the collection would be the ITA Pocket Library.

Such a library would probably also be interesting for other groups of readers: local and national administrators and decision makers, journalists and especially for international academic education such as Italy has initiated. Of course, the whole Pocket Library could be bound into one thick text book, with the pocket books as chapters, but there are several advantages with the system of a number of separate small pocket books: it is much easier to find authors for the different sub-



Fig.3. Fields of knowledge connected with subsurface planning

Fig.4. Volumes of tunnelling in some OECD countries.



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jects, you can publish an updated edition of just one book at a time, you need not carry more than one thin pocket book in the bus, etc. Provided each ITA-Pocket Book includes an extensive list of References, it would be a kind of a "state-of-the-art report". The first step would be to contact our Sister Organizations (FIDIC, ISRM, PIARC and others) if they are interested in a cooperation.

CONCLUDING COMMENTS

Thirty years ago

Why was ITA established 25 years ago? Because a man had a vision about 30 years ago. Kenneth Orski in the Scientific Directorate of OECD in Paris was responsible for an international conference in Washington D.C. in the summer of 1970 (see diagram "Items from the History of ITA"). In an interview (T&T, March 1970) he says "From the very outset it was implicitly understood that this was not to be a technical conference in the conventional sense of the word - to keep up with the latest developments in the field of tunnelling. OECD had no desire to duplicate this information-exchange function. Rather, it's aim was to provide the governments of the Member Countries with a policy analysis of tunnelling technology."

K. Orski specifies his vision as two challenges 1) "to contain urban sprawl so as to preserve the city as a healthy, economically viable centre of management, commerce, information and culture", 2) "to maintain decent living conditions for those who reside in urban areas". This background for the conference appears again in the Conclusions and was adopted by the group responsible for the Oslo meeting 25 years ago. Use subsurface technology to help governments to meet the problems of the population explosion.

The final work product of the Conference was a set of explicit recommendations — prepared by a special Drafting Committee (Chairman: Sir Alan Muir Wood). The resulting document, dated June 26, 1970, was called Conclusions and contains a set of Recommendations with the titles:

- Need for a local agency in each country
- Planning the use of the subsurface
- Use of the total cost/benefit concept in investment and planning decisions
- Encouragement of technological advance and research requirements

The introduction starts: "The world's demand for "tunnelling", already considerable, is expected to grow at an increasing rate" and continues later... "This Conference is being used deliberately to focus attention on the social significance of a specific technology, namely tunnelling and the need to using it constructively for environment betterment. The Conference is therefore concerned with assessing the potential of tunnelling and with developing guidelines for a positive public strategy for fostering its growth."

Reading these documents caused me to try to remember what we have published on the social and environmental potential of tunnelling, and to provide the governments of the Member Countries with a policy analysis of tunnelling technology. What I found was the "Subsurface 82-UN Workshop on Subsurface Space Use in Developing Countries" which was held in Sweden in 1982 and attracted a number of administrators and decision makers from local and state governments as participants from more than twenty countries. This might have been a start of regular meetings for checking up increases in population and the progress in urban planning and use of underground space in each country, but that was not the case. However, it was a step on the way to cooperation with the U.N. These observations lead me to the question:

Do we have the expected balance between technical and social aspects in our activities?

It is up to all of us to give the answer.