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**Opening Ceremony  
of the 13th IABSE Congress**

**Cérémonie d'ouverture  
du 13e Congrès de l'AIPC**

**Eröffnungszeremonie  
des 13. Kongresses der IVBH**

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## Welcome Address

Discours de bienvenue

Willkommensansprache

### **Kurt WIDBOM**

Chairman

The Finnish Group of IABSE  
Helsinki, Finland

Arvoisat kutsuvieraat,  
Mesdames et Messieurs,  
Meine Damen und Herren,

Mr. President,  
Ladies and Gentlemen,

The Finnish Group of the International Association for Bridge and Structural Engineering, together with the Association of Finnish Civil Engineers has the great honour and pleasure of welcoming you all to the 13th IABSE Congress in Helsinki.

The Congress with its theme, "Challenges to Structural Engineering", is dedicated to new concepts in Civil Engineering. The theme will be highlighted through deep analysis of the achievements of today and presentations of new and exciting tools and methods for design, decision making and implementation.

The Helsinki Congress will give us a glimpse of the future, and we hope that all of you will gain something to take home for the benefit of your own work.

We are also pleased to present you the unique Finnish scenery at its best. Finland is famous for its clean and untouched nature. There are thick forests everywhere – the Finnish green gold. Thousands of lakes with their islands, and the nightless nights of northern Finnish Lapland attract the visitors from all over the world.

Helsinki, the capital of Finland, which was founded in 1550, is called the Pearl of Baltic – and with a good reason. Sea and islands, big ships, yachts and small boats, lively market places and cool, green parks are typical features of Helsinki.

The best of Finnish architecture can be found here – for example the Finlandia Hall, designed by the world famous architect Alvar Aalto, venue of our IABSE Congress.

Mr. President,  
Ladies and Gentlemen,

Bienvenue à Helsinki!  
Willkommen in Helsinki!  
Welcome to Helsinki!  
Tervetuloa Helsinkiin!

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## Opening Address

Discours d'ouverture

Eröffnungsansprache

### **Olavi SYRJÄNEN**

Director

National Housing Board  
Helsinki, Finland

## **The Challenges of Structural Engineering**

The period immediately following the Second World War was a time of tremendous construction in Finland. The first stage in this was the resettlement of the people of Karelia (which was ceded to the Soviet Union) and building new dwellings for them. The second stage was caused by the restructuring of society, and the industrialization associated with this, which resulted in the migration of large numbers of people from rural areas to the population centres of the country, especially to the Helsinki Metropolitan Area. Housing construction, for its part, illustrates this time of tremendous building activity. As a result, the Finnish housing look is very young. At present it comprises about two million dwellings, 60 % of which were built after 1930. Since the end of the war, the annual production of housing in Finland has been on average 9.7 dwellings per 1000 inhabitants. A record year was 1974 when 15.6 dwellings per 1000 inhabitants were produced. At the moment our annual production is just over 40.000 dwellings, or 8.6 per 1000 inhabitants, which is one of the highest in Western Europe. Perhaps I should point out here that in area Finland is the third largest country in Europe and that population density is about 16 persons per square kilometer.

Without advanced structural engineering, Finland would not have been able to achieve the volume of construction which I have just described to you. This Congress also shows that the development of structural engineering is the result of strong international co-operation. Different countries have developed different types of construction systems which in turn have been adapted by other countries to suit their own circumstances. This happened also in Finland in the 1980s when we began the strong development of industrial construction. The representatives of many Finnish construction firms, as well as officials and planners, were regular visitors to European industrial building sites and industrial plants. Thus at the beginning of the 1970s Finland developed further an industrial construction system suitable for housing construction which was based on the BES system of load-bearing partitions and hollow slabs. Without this system the record breaking figures in housing production would not have been possible. But techniques must develop and indeed this has happened. New forms of construction, improved quality and the growing needs of the people have brought about development. I firmly believe that this Congress will provide us with some new ideas for developing our construction systems and techniques.

Good planning, high-quality building materials and skilful implementation are a part of Finnish construction. Finland has tried to be a country which looks to the future and one which is continuously developing its construction methods. In the planning and implementation of housing areas, Finland has a long tradition of organizing special housing exhibitions. This summer the 20th National Housing Exhibition will be organised in the city of Turku where a new and genuine housing area has been built. The people who have purchased the houses will move in at the close of the exhibition. These exhibitions are a joint venture of the city where the exhibition takes place, the Finnish Association of Housing Exhibitions, private developers and construction companies. As a result of these exhibitions there has been continuous discussion about housing development and future needs. Experts in this field, the press and the people of Finland have participated in these discussions.

In the coming decades one of the most significant challenges in the field of construction in Finland will be the modernization of the housing stock built between 1950–1970. We hope to accomplish this without resorting to such measures as the blowing up of apartment buildings, as has happened in the United States and Western Europe. It is the task of structural engineering to find moderately priced and clear-out solutions, which can be used to revitalize the facades of apartment buildings, build new balconies, extra rooms and the other demands of a quality environment. I believe that in this way, together with new construction, we can make the community structure more coherent and thus achieve the desired results both in quantity and quality.

As I have said earlier, structural engineering is rather international. The same goes for building. This is especially seen in the amount of export construction and its continuous expansion. Finland, for its part has, since the middle of the 1970s, been able to increase export construction as the volume of housing construction in the domestic



market has decreased. Especially in export construction both the exporter and the recipient country can, and perhaps are even forced to, develop together their own structural engineering systems. The opening of international markets and the sure, but so far regrettably slow, international harmonisation of building norms in each country will, through building exports, decisively increase the interaction between different countries. 1992 will present a special challenge to harmonization. Before then Finland also has reason to ensure that the greater part of its building norms correspond to general European norms.

I am certain that this IABSE Congress will positively influence building development in the participating countries and the participants will leave with knowledge that will be of considerable help in the construction of their own countries. Naturally I hope that you, our foreign guests, for your part, will also leave behind know-how which we can use and which we can further develop in the construction of our country. Perhaps most important of all, however, is that the participants have an opportunity to form friendships on an individual level.

With these words I now declare this Congress open, and on behalf of the Government of Finland wish it every success in its work.

## Opening Address

Discours d'ouverture

Eröffnungsansprache

### Hans VON GUNTEN

President of IABSE  
Zurich, Switzerland

Dear Colleagues,  
Ladies and Gentlemen,

I have the honour and the pleasure to contribute to this opening ceremony of the International Association for Bridge and Structural Engineering Congress 1988. Each Congress of our Association is an important milestone for our organization. They mean more than just an exchange of scientific knowledge. Once more I would like to draw your attention to the fact that our time is marked by growing fear and dislike of technology. We, as civil engineers, and therefore our Association, are part of these discussions and debates. We are all expected to be aware of the possible political implication of our actions, which are outside our professional knowledge. We must try to explain to our fellow men these problems and help them to understand our solutions and achievements, which may eventually lead to a new understanding for progress. Our Association, as an "International Club of competent civil engineers" is in a position to accept this role and acquire through it a higher reputation and a better image. I call upon all members to contribute to this aim when, and wherever possible.

It used to be a tradition of our Association that the President of the International Association for Bridge and Structural Engineering addresses his welcome speech in all three official languages of our Association. I took up this gesture two years ago and would like to say a few words first in French and then in German. You may listen to the translations with the help of headphones.

C'est pour des raisons linguistiques que je ne vous exprime que maintenant mes souhaits de bienvenue, mais je pense que la langue française est la plus appropriée pour m'acquitter de cette agréable mission.

Je désire, en particulier, saluer les dames qui illuminent par leur présence les activités du programme social du Congrès. Les personnes accompagnantes sont les bienvenues à nos manifestations et nous ne voudrions en aucun cas manquer leur présence et leur charme.

Je présente ici mes respectueux hommages à son Excellence l'Ambassadeur de la Confédération Helvétique, Madame von Grünigen. Votre présence souligne les liens étroits qui existent entre la Suisse et l'AIPC.

L'image de l'Association Internationale des Ponts et Charpentes est le résultat du nombre et de la qualité des participants. Les nombreux auteurs de contributions, les présidents de séance et les membres du Comité Scientifique sont les garants du haut niveau de notre Association. Qu'ils acceptent notre reconnaissance et l'expression de nos sincères remerciements!

Die deutsche Sprache scheint mir für die Verleihung von Preisen und Ehrungen sehr geeignet. Unsere Vereinigung war in dieser Hinsicht lange Zeit eher zurückhaltend, doch bürgern sich in jüngerer Zeit Traditionen ein, die wir mit Freude und Überzeugung fortsetzen können. Wenn wir auch dieses Jahr den "Award of Merit" nicht verteilen, so hat doch der Vorstand beschlossen, den IVBH Preis 1988 zu verleihen; er ist als Zeichen der Anerkennung für hervorragende Leistungen auf dem Sektor des konstruktiven Ingenieurbaus gedacht und soll jüngere Mitglieder der IVBH motivieren.

Im Namen des Vorstandes der Internationalen Vereinigung für Brückenbau und Hochbau präsentiere ich den IVBH Preis 1988 an **Dr. Santiago Calatrava** – Architekt und Bauingenieur aus Spanien, wohnhaft in Zürich – in Anerkennung seiner neuartigen und bahnbrechenden Leistungen auf dem Gebiete des konstruktiven Ingenieurbaus und der Architektur.

On behalf of the Executive Committee of the International Association for Bridge and Structural Engineering I have the great pleasure to appoint **Mr. Gerard F. Fox** – partner in an architects, engineers and planners' firm in New York, USA – as Honorary Member in appreciation of the eminent services rendered to the Association and for his contributions to the development of international technical co-operation.



Finally, I would like to address our hosts, our Finnish friends, and especially the organizers of this congress. It is, for all of us, a notable event to be able to meet in your beautiful country. It is a pleasure to be received in a country that has accomplished such remarkable achievements in the field of civil engineering, especially architecture. We are extremely impressed by your hospitality and we know that some interesting days are ahead of us, which we await with great expectations. For this I would like to express our deep respect and gratitude.

## Opening Address

Discours d'ouverture

Eröffnungsansprache

### **Markku MANNERKOSKI**

Director General  
Technical Research Centre of Finland (VTT)  
Helsinki, Finland

### **Building Bridges Between Engineering and Society**

**Challenges to Structural Engineering** has been chosen as the theme for this Congress. One of the most demanding challenges facing the profession is the relation of the man-made environment to the natural environment. As emphasized by the President of IABSE in the invitation to this congress, at the same time as withstanding the forces of nature, man-made structures are expected to remain in harmony with nature. In the same way the whole engineering profession is expected to remain in harmony with human society. In order to achieve this goal, it is necessary to maintain channels of communication and thus build firm bridges between us and society at large. The successes achieved by engineering sciences do not detract from the importance of these bridges. On the contrary, the recent advances in technology make them all the more crucial. Technology influences our employment opportunities, our working habits, our leisure-time activities, our while living and its circumstances and even our way of thinking. Because of the strength of such influence, our situation is unique, although technical innovations have been an essential part of man's cultural achievements since earliest times.

One hallmark of a society will always be the environment that it builds up for itself. The beauty of ancient cities, buildings, bridges, roads and other structures is a source of inspiration for us today, and we, the engineers in society, have the responsibility for carrying this inspiring tradition forward.

There is an interesting change taking place in the industrialized countries at the present time. Now that the necessary heavy infrastructure has been largely built, increasing resources must be devoted to the maintenance and renovation of such structure. This change of approach has to be recognized by the engineering profession, government authorities and the public alike.

The maintenance and renovation of houses, roads, sewage systems, railways, bridges, harbours etc also calls for new technologies. The renovation of buildings, for example, is a labour-intensive undertaking at the present time and involves occupational hazards. There are therefore many opportunities open for developing new equipment and working methods which are flexible and cost-effective, also for evaluation of the condition of the existing capital stock which is a vital prerequisite for any actual renovation.

The traditional building industry, too, has to brace itself for the impact of high technology. Information technology can be of help at the design stage and in construction site management, while robots will inevitably make their appearance in this sphere, too, first of all in the factories manufacturing building materials and elements.

Considerable R&D efforts have been made to hasten the development of new building technologies and some remotecontrolled robots, for example, have already been tested on building sites. Such advances emphasize the importance of purposeful research and development in this field. Generally speaking, the days are long past when significant innovations could be brought into being by individual inventors with only a superficial scientific knowledge. Today development work is science-based and the domain of dedicated professionals.

Experience in other industries tells us that when a new technology is introduced the need for channels of communication is accentuated. There are always some people who consider new technology to involve a risk, while for others it is an opportunity. The values of a society or subculture influence the way in which new technology is viewed, and much depends on the manner in which it is introduced.

One mistaken assumption concerning new technology is that it will always be resisted on the shop floor. A recent survey nevertheless showed that almost a half of the chief shop stewards and occupational safety officers in the Finnish metalworking industry felt that the introduction of new technology had not caused any conflicts at all. Only one percent of those interviewed said that there had been a lot of conflicts.

Another common and evidently erroneous view on information technology is that it impoverishes work, whereas 73 % of wage earners affected by such innovations are reported in a Finnish survey to feel that automation of their old tasks had "clearly improved the situation".



In addition to the structural change in the economy, caused by new technologies, society also has to adapt to the growing internationalization of markets. International competition is becoming keener and signs of intensifying international competition in the building industry, too, are clearly visible. More reliance is then being placed on research and development as means of securing a competitive advantage in international trade.

It is not enough, however, to persuade companies to commit themselves to R&D for their own sake. Society at large must continue to understand why research is necessary and what it can accomplish. This is yet another reason for building bridges between engineering science and society. Here the basic links lie in education and the dissemination of scientific knowledge.

One of the most urgent educational tasks is to prevent the formation of two separate cultures, one technically and scientifically literate and the other not. Engineering cannot realize its full potential unless society can appreciate its achievements, and certainly not if it is hostile towards them.

At the same time the engineering professions have to understand fully and take into account the new demands being made upon them by society, including environmental standards and aesthetic values. This means new challenges again, but not insurmountable ones for professional problemsolvers.

An individual engineer cannot master everything that society now requires of the profession as a whole. Therefore, the universities of technology should concentrate on producing specialists of technology with varying supplementary skills in economics, law, psychology, collective bargaining, environment etc. We would then have a pool of necessary minimum expertise in different non-technical fields within the engineering profession. But even as individuals, it is highly important that we should relate our expertise to a wider perspective. While remaining proud of our specialist skills, we must avoid the trap of developing one-track minds.

It should be relatively easy to create a popular image for the engineering sciences because of the way in which they impinge on everyday life. Everyone can see technical advances at work and in the home and realize how they make life easier, more fun and even longer. Even so, disseminating scientific and technical knowledge to the general public is not a straightforward matter. Reports of steady progress and advances made by dint of hard work do not usually reach the headlines or pass the news thresholds imposed by the media. We can be confident, however, that such difficulties in bridgebuilding can be overcome. In an open, technologically advanced society problems can be much more easily solved than in a culture that would try to avoid opportunities technology has to offer. Success will be the more probable the more carefully we engineering professionals avoid compromises in the everyday application of technology that do not do justice to our skills!