



VOLVO

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Transportation, Traffic Safety and Health – Human Behavior

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With 95 Figures
and 45 Tables



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PREFACE

Åke Nygren
Karolinska Institute, Sweden

I would like to welcome you on behalf of Karolinska Institute, one of the organizers and initiators of this series of conferences on traffic safety. The conference we are opening today is the fourth in the series.

Karolinska Institute is the largest medical university in Sweden. It is dedicated to improving health through research, education and dissemination of information and ideas. The series on traffic safety is one of the ways in which we are disseminating information and ideas on an international front.

Karolinska Institute is 190 years old. The Medico Chirurgiska Institute was originally established in 1811 by royal decree after wars and cholera epidemics. In 1822, it became known by the name "Carolinska".

Amongst many other international endeavors, Karolinska Institute is perhaps best known for the nomination and appointments of Nobel Prize winners in medicine and physiology. Under the terms of Alfred Nobel's will, the prize winners are nominated and chosen by the Nobel Assembly of Karolinska Institute. During the hundred years that the prize has been in existence, several researchers from Karolinska Institute have become laureates. These are Hugo Theorell in 1955; Ragnar Granit in 1967; Ulf von Euler in 1970; and Sune Bergström and Bengt Samuelsson in 1982.

In 1987, the medicine prize was awarded to Tonegawa from

Japan and in 1994 the literature prize was awarded to Oe Kenzaburo. This year, the medicine prize was awarded to Gilman and Rodbel from the United States for their work on nitro-oxygen.

Nobel Prize winners are awarded their prize by the King of Sweden, and attend the biggest, finest, most famous official dinner in Sweden.

I am in charge of the Section for Personal Injury Prevention at Karolinska Institute, which is the university department dealing with traffic safety. The medical university is very interested in doing research in this area because road traffic injuries constitute a major health problem.

The study of road traffic safety can be divided into three phases: pre-crash, or primary prevention of road traffic collisions; crash, or secondary prevention such as use of airbags and seat belts; and post-crash, which involves such issues as emergency services and prevention of injury-related disability.

Karolinska Institute is the home of a World Health Organization center for international collaboration. But to do this research effectively, it is vital to have both an international and an interdisciplinary approach. It is for this reason that researchers at Karolinska Institute collaborate with the Royal Institute of Technology, Karolinska Hospital, the insurance industry, and car manufacturers like Volvo, which is co-sponsoring this conference.

Most of the epidemiological data is gathered through the insurance industry. Through its collaboration with Folksam, which is one of the largest insurance companies in Sweden, Karolinska Institute has one of the largest and most comprehensive databases on traffic injuries in the world. The collaborative research between Folksam and Karolinska Institute has yielded five doctoral dissertations, and, perhaps more important to the average Swedish driver, three new insurance procedures providing discounts for safe driving practices, and two new laws. These laws oblige rear passengers to use seatbelts, and require that children travel in high quality child restraints. These laws have saved many lives and have prevented many cases of lifelong disabilities.

The collaboration between university and car industry is important in preventative work. Karolinska has had a long and productive collaboration with Volvo. This kind of collaboration makes it

possible for university researchers to evaluate the traffic problem and make suggestions for preventative measures. The new chair for protection against whiplash is the WHIPS. Volvo constructs the chair in collaboration with Karolinska as reference group.

Another important activity in traffic safety is the spreading of information to society. Conferences like the one we start today are an example. Especially when a conference book accompanies it.

This conference is number four. The first one was held in Gothenburg in 1995 with the theme "New Mobility". The second one was held in Brussels and covered the topic "Man and Machine". Last year it was held in Washington with "Prevention and Health" as the main subject.

In this conference the focus is on behavioral aspects of traffic.

Arne Wittlöv
AB Volvo, Sweden

It is my distinct pleasure, on behalf of the organizers, to welcome you all to the Fourth Annual Conference on *Transportation, Traffic Safety and Health*.

Together with the *WHO Collaborating Centre for Neurotraumatologic Prevention, Critical Care and Rehabilitation* and the *Karolinska Institute*, Volvo has realized three conferences. They have been held in Stockholm, Brussels and Washington D.C.

And this year, Tokyo!

Let me take the opportunity of thanking the Japanese Ministry of Transportation for kindly receiving us here in Tokyo.

Why this conference?

Traffic-related injuries are an increasing problem throughout the world, affecting both industrial and emerging markets. A recent Harvard study, as I am sure you are familiar with, shows that these injuries will be ranked third amongst global burden diseases in the next few decades unless safety promotion and control are given greater priority.

Today, in this room, we find industrial executives, leading scientists and policy makers in various technological, medical and societal areas. This 2-day conference will give us a unique opportunity to share expertise knowledge in discussing different aspects of how to

reach our common goal: reducing the number of people killed and injured in traffic accidents.

When looking through the conference programme, with speakers and moderators representing a large number of nationalities, one can conclude that we have succeeded in bringing together a truly global forum for traffic safety. And I would like to remind our non native-english speaking participants that the conference will be conducted in English but that we do provide interpretation for those of you who would feel more comfortable with that.

The Conference Theme of this year is *Human Behavior and Traffic Safety* - in other words - how road-user behavior can cause, or prevent, accidents and how decision-makers from various sectors of society may influence this behavior. Modern vehicles and new infrastructure and traffic systems require more sophisticated technologies. However, in addition, we also need to develop these vehicles and systems to 'suite' the human behavior; its limitation but also its ability. The incoming signals to the driver in the traffic environment of the 1990's are becoming increasingly complex. Something one cannot fail to notice especially here in Tokyo! Perfect co-operation between man and machine requires improvement in several areas.

During the last few decades, much research has focused on the understanding of the anatomy and physiology of human behavior. For instance, we know that different aspects, such as age, gender and emotions, influence the normal pattern of driving. Also, the presence of pathological behavior in daily traffic, due to different causes such as drug abuse, are other factors influencing traffic safety. Increased knowledge of normal and pathological behavior can contribute to strengthening primary prevention with the goal of reducing traffic accidents.

Obviously, addressing transportation and health, as well as traffic safety, needs involvement and measures from several actors, amongst those in industry, government, research and the international community.

Why is this an important commitment for a company like Volvo?

You are going to hear this many times during these two days, but it is worth saying over and over again: if nothing is done, traffic accidents will very soon be the third most common cause of death in the world. When we add the number of people seriously injured we are

addressing a problem of gigantic proportions in terms of human suffering and societal economic loss. In a real sense, what has been called "*The Silent 'Epidemic'*".

An automobile is driven by people. The guiding principle behind everything we make at Volvo, therefore, is and must remain - safety.

This is the first Volvo position on safety, issued by one of our founding fathers, Assar Gabrielsson, way back in 1927, the very first year in Volvo's history. The statement is very lucid and shows why safety has always been, and will continue to be *the* most important issue for us, throughout our entire organization, our work, our research and development. All our products concern people; are driven by people, are handled by people.

As a vehicle manufacturer we are also highly involved in research activities, with leading transportation safety experts in the world and, we will spare no effort to live up to this goal.

In working with traffic safety it is important to build bridges between various sectors in society. For me the key-word is *co-operation*. Co-operation across all boundaries is an absolute necessity

Our dedication to co-operation is also the main reason for our presence here today.

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