



**Table of contents of the 7th International Conference
"Underground Space: Indoor Cities of Tomorrow"**

Plenary Sessions

Opening Ceremony

Opening Plenary

"Yesterday to Today : Genesis of an Indoor City"

" Conditions for the Emergence of an Indoor CityPanels"

Panels:

" Underground Parking in the City: Experience and Expectations!"

" Underground Safety: Who Pays the Bills?"

Conference Luncheons

"Geo-Space, the 21st Century City"

"When a disaster strikes...How to manage a successful comeback"

"Swissmetro, le futur aujourd'hui"

Closing Plenary

"The Future of Indoor Cities"

Closing Ceremony

The announcement of the 8th Int'l Conference in Xi'an (China), July 1999

Workshops

Workshops A - Partnerships

Workshops B - Interdisciplinarity

Opening Ceremony

Delegates to the 7th International Conference "*Underground Space : Indoor Cities of Tomorrow*" were welcomed by representatives of the City of Montréal, the Government of Quebec, the Government of Canada, and such international urban underground associations as ACUUS and AITES/ITA. Conference themes were presented.

Opening Plenary Session: "*Conditions for the Emergence of an Indoor City*"

Indoor cities, the evolutionary forms resulting from the use of underground space, owe much to the presence of a subterranean mass transit system, such as a subway. But is this an essential condition? It is true that a critical mass of users does constitute potential clientele for retailers in underground malls. But, what are the conditions needed to promote these indoor passageways to the user? How important is potential regulation that would encourage co-ordination of neighbouring property-owners with a partnership of public underground management organizations? Should we not insist on mandatory contributions from indoor-space designers, architects and other specialists to ensure both efficient pedestrian circulation and a quality interior environment?

The Chairman of the Organizing Committee gave an historic background of Montréal's Indoor City's 35 years of development : "*Yesterday to Today : Genesis of an Indoor City.*"

Panel Members : André Guillerme (France), Takashi Hiraï (Japan), Ken Jones (Canada), Ray Sterling (United States)

Panels:

"Underground Parking in the City : Experience and Expectations!"

Underground parking is costly but there is no question that it helps to improve accessibility to central areas by accommodating more motorists than parking spaces at outdoor lots and on the street. Does this risk adding to downtown traffic congestion? By encouraging the development of underground parking lots, are we favouring the automobile over public transit? Underground parking space in the public domain, particularly beneath parks and public places, can have a positive impact as it is associated with areas that add to a city's conviviality. Beyond this association, can underground parking also contribute to a city's artistic milieu? Should we think of new financial arrangements, based on direct contributions from underground parking lot users, that could be used to enhance the urban scene?

"Underground Safety : Who Pays the Bills?"

The security of property and individuals in vast downtown complexes is an important issue and underground spaces, whether public or private, call for even greater attention. Is the public perception that underground malls are safe legitimate? Are these expectations satisfied? Would a more regulatory, coercive approach or the adoption of specific building codes for excavated constructions be more efficient in providing underground spaces with the same protection normally guaranteed by municipalities? Can we provide the level of protection users demand in these private spaces by paying for public fire and police corps? Or, should we recognize the autonomy of private owners, leaving them free to adopt security measures adapted to their needs and carry insurance against these risks? How do they comply with security measures taken by neighbouring owners?

Conference Luncheons

Topic : *"Geo-Space, the 21st Century City"*

Guest Speaker : Dr Gideon S. Golany, Ph.D., Distinguished Professor of Urban Design, Pennsylvania State University (USA)

The author has introduced his new book on the urban underground, "Geo-space Urban Design" and looked at innovative avenues for urban underground, the objectives of indoor cities, site constraints and the planning and design of underground spaces.

Topic : *"When a disaster strikes....How to manage a successful comeback"*

Guest Speaker : Mr. Douglas G. Karpiloff, Program Director, New York, World Trade Centre Security Systems (USA.)

What happened when a terrorist van bomb detonated within one of the world's largest office complexes - The World Trade Center? What systems were affected and how did they recover from this catastrophic event? How did they strengthen their security to "harden their facility"? What hard-won security and disaster recovery lessons did they learn from this experience that can be directly applied to all commercial properties?

Topic : *"SWISSMETRO, le futur aujourd'hui, un nouveau système de transport souterrain"*

Guest Speaker : Mr. Enrico Zuffi, Responsible for promoting the SWISSMETRO project (Switzerland)

The SWISSMETRO project would link major Swiss cities via an underground transit system using a partial-opening tunnel that would enable vehicles to travel at a speed of 400 km per hour. The vehicle, resembling an airplane in its design, operates with a linear motor and is guided by a magnetic lift system. It could move between 200 and 800 passengers and cut the present three-hour travel time between Geneva and Zurich to 57 minutes. Its stations would be connected to major surface transportation systems in Swiss cities. The estimated

cost of the first 320-km line between Geneva and Saint-Gall is 13 billion Swiss francs. Preliminary studies and construction would last for about 15 years. Feasibility studies should be completed by 1998. The SWISSMETRO project has the support of the Swiss government and some 80 Swiss, German and Austrian companies.

Closing Plenary: "*The Future of Indoor Cities*"

The final plenary session of the 7th Conference had focused on "*The Future of Indoor Cities*". First, a summary of the theme workshops had featured presentations made in the meetings. Representatives of national urban underground organizations gave an overview of the international research agenda for our cities' future underground development.

Panel Members :

Marie-Élaine Desbiens (Canada): "*Appui et soutien essentiel à la réhabilitation des infrastructures urbaines au Québec*"

Jean-Paul Godard (France): "*Promotion de l'utilisation du sous-sol urbain: les actions de l'AITES/ITA*"

André Guillerme (France): "*La recherche souterraine en France: bilan et perspectives*"

Takeshi Kurokawa (Japan): "*Trends and challenges in Subterranean Utilization in Japanese Cities*"

Susan Nelson (United States): "*The status of underground space and underground construction in United States*"

Closing Ceremony: *announcement of the 8th International Conference in Xi'an (China), July 1999*

At the closing ceremony of the 7th International Conference "*Underground Space : Indoor Cities of Tomorrow*" the new ACUUS chairman has outlined the organization's business agenda for the next two years. The ceremony has been closed with the announcement of the 8th International Conference on Underground Spaces to be held in Xi'an (China), in July 1999.

Workshops

Workshops A: Partnerships

Workshop (A-1) : Partnerships - Urban Design / City Planning

Qian Qihu (China) : *The coming high tide of utilizing urban underground space in China*

Jean-Paul Thibaud (France) : *Les cadres sensibles de l'espace souterrain*

Pieter Sijpkens & David Brown (Canada) : *Montréal's indoor city - 35 years of development*

Workshop (A-2) : Partnerships - User Safety

Sylvie Lussier (Canada) : *La sécurité par le partenariat*

Lucie Dupuis (Canada) : *La sécurité des personnes dans le monde souterrain - un travail d'équipe*

Workshop (A-3) : Partnerships - Fire Prevention and Communications Security

Ghyslain Côté (Canada) : *La prévention des incendies dans le métro de Montréal*

Michel Champagne & Ronald Dubeau (Canada) : *Communications et opérations (incendie en souterrain)*

Ed Rust (USA) : *A Case study of the 1991-1992 Americold-Kansas City Facility Fire Incident*

Workshop (A-4) : Partnerships - Security and Building Codes

Frank J. Cihak (USA) : *National Fire Protection Association - Standard 130 and transit underground spaces.*

James D. Lake (USA) : *NFPA 520 standard for Subterranean Spaces.*

Denis Bergeron (Canada) : *CNRC - Les codes axés sur les objectifs*

Workshop (A-5) : Partnerships - Construction

Erwin W.A. Binneveld (The Netherlands): *Build, operate and transfer : maximizing a public private partnership construction (S)*

John Marcovecchio (Canada) : *Les défis de construire une galerie commerciale sous une cathédrale - le cas des Promenades de la Cathédrale.*

Denis Guimond (Canada) : *Déplacement des utilités publiques lors de travaux de construction sous le domaine public - le cas des Promenades de la Cathédrale*

André Guillerme (France) : *La conservation du patrimoine souterrain urbain (S)*

Workshop (A-6) : Partnerships - Signage / Communications

Judy Morgan (Canada) : *Toronto's PATH Program - A public/private partnership*

Jules Bélanger (Canada) : *Partenariats et signalisation dans la ville intérieure de Montréal*

Workshops B: Interdisciplinarity

Workshop (B-1) : Interdisciplinarity - Behavioural Studies and Policies

Grégoire Chelkoff (France) : *Transitions sensibles et intériorité souterraine : dispositifs et configurations.*

T. Hayakawa, T. Seiki et J. Nishi (Japan) : *A study on spatial legibility in the underground space and its improvement.*

Pierre Tremblay (Canada) : *Évaluation des effets de la ta télésurveillance sur la criminalité dans 13 stations du métro de Montréal.*

José A. Junca-Ubierna (Spain) : *Chiaroscuro in the indoor city / Clair obscur de la ville intérieure*

Workshop (B-2) : Interdisciplinarity - Urban Planning

Dimitri Christozov (Canada) : *Montreal underground : a case for indoor city planning*

Jiyao Hou et Hua Hou (China) : *The vision of the underground space of innercore cities for tomorrow (S)*

Jean-Paul Godard (France) : *Solution souterraine : choix raisonné ou nécessité ?*

André Assis & A. Ferreira (Brazil) : *Urban problems and underground solutions in Brazil*

Workshop (B-3) : Interdisciplinarity - Architecture and Design of Indoor Spaces

A. Kotsiopoulos & I. Sakellariou (Greece) : *Underground ex-tensions: forms and implications*

Roland Legrand (France) : *EOLE une architecture exigeante.*

Tatsuyuki Yamashita, Takafumi Seiki & Junji Nishi (Japan) : *The study of the present situation analysis and space design in the connective space: The situation of ventilation facilities in the underground spaces*

Jean Dumontier & Claude Bettinger (Canada) : *Création d'oeuvres d'art dans le cadre du Montréal souterrain.*

Workshop (B-4) : Partnerships - Security and Building Codes

Vincent Asselin (Canada) : *Paysages d'intérieurs*

Patrick Horsbrugh (USA) : *Geospace : the ultimate interior*

Alessandro Cassa & Pascal Bauer (Canada) : *Le paysage souterrain de la station Lucien-Lallier.*

Katsuhiko Yashiro (Japan): *The transformation of underground cave settlement in China (S)*

Workshop (B-5) : Interdisciplinarity - Legal and Fiscal Studies

Marcel Gerbeau (Canada) : *Le Montréal souterrain et la fiscalité municipale*

Guy Laplace (France) : *L'insertion d'EOLE dans la ville.*

Abel Mac Van (Canada) : *La responsabilité du tréfoncier*

Hong Wei Zhang (China) : *Legal aspects of developing the underground pedestrian and commercial facilities in China*

Workshop (B-6) : Interdisciplinarity - Economic and Feasibility Studies

Takaya Kato (Japan) : *The development of urban city and using underground space (S)*

Arthur Quarmby (Great Britain): *Going under to stay on top*

Jurrien Edelenbos & René A. Monnikhof (The Netherlands) : *Is there a future for the use of underground space in The Netherlands ?*

Daniel Farray (France) : *La ville problématique de l'espace souterrain*

Workshops C: Indoor Cities

Workshop (C-1) : Indoor Cities - Development Potential

Jacco K. Haasnoot, Jurrien Edelenbos & René A. Monnikhof (The Netherlands) : *Potential obstructions in the use of underground space in The Netherlands*

Takafumi Seiki, Junji Nishi & Yoshihiro Kikuchi (Japan) : *Future prospects of underground space use.*

Gahng-Ju Lee & Chang-Soo Kim (Korea) : *Determination of suitable directions for the systematic development of underground space in Korea.*

Raymond L. Sterling (USA) : *The Warren Centre Report on Underground Space in Urban Areas in Australia.*

Workshop (C-2) : Indoor Cities - Subways and Underground Stations

Jose Ramon Madinaveitia (Spain) : *The Bilbao subway and integration in the city.*

Alain Balan (France) : *EOLE : L'impact architectural sur le génie civil.*

Georges Amar (France) : *Transport intermodal et urbanisme souterrain, le projet coeur transport de Paris-la Défense.*

Mirjana Lukic (Yugoslavia) : *The first underground railway station in the center of Belgrad*

Workshop (C-3) Indoor Cities - Pedestrian Networks

Macklin L. Hancock (Canada) : *Subterranean space, a brief history and Toronto's involvement with its modern development*

Bai Qing Chen (China) : *The development plan for underground space system in Lujiazui Central financial District, Pudong, Shanghai (S)*

Sylvie Molé (France) : *Propositions pour une gestion intégrée des commerces sur rue et hors rue à Montréal*

Workshop (C-4) : Indoor Cities - Impacts on Mass Transit and Transportation

Monique Labbé (France) : *Du proche au lointain*

Jean Dumontier (Canada) : *Le Montréal souterrain : une solution intelligente (origine et destination)*

Serguei Kovaltchouk (Russia) : *Arbatsky Boulevard : traffic tunnel (S)*

Han Xuanjiang (China) : *The Development and Utilization of Urban Underground Garages (S)*

Workshop (C-5) : Indoor Cities - Commercial Function

Kenji Okuyama (Japan) : *Modernology study of underground urban space in Japan (a look at the safety comfort and economic attributes) (S)*

Michel Boisvert (Canada) : *Le zonage vertical : pour un nouvel aménagement de la fonction restauration dans la ville intérieure montréalaise.*

Gérard Beaudet & Paul Lewis (Canada) : *La répartition des commerces de vêtements dans les galeries marchandes et sur les artères commerciales du centre-ville de Montréal : complémentarité ou concurrence ?*

Ken Jones (Canada) : *Retail Dynamics of the Toronto Underground System; 1993-1997 (S)*

Workshop (C-6) : Indoor Cities - Impact on the City

Monique Labbé (France) : *Réflexions pour un projet sous la Seine.*

Jereon Trimbos (The Netherlands) : *Landscape of Multilayer Cities (S)*

Jacques Vuille (Canada) : *La rénovation du passage souterrain Georges-Vanier, un lien essentiel à la revitalisation du quartier Petite Bourgogne.*

A.D. Potapov, V. Zinatouline & T.G. Bogomolwa (Russia): *The development of underground space of cities development as an ecological way of development of the megapolises (S)*

Workshops D: Technological Innovations

Workshop (D-1) : Technological Innovations - Modelling and Databases

Temy Tidafi (Canada) : *La représentation tridimensionnelle d'espaces souterrains : une invitation à une logique de modélisation volumique. (S)*

Yoshihiko Tanabashi (Japan) : *Development of Geo-Space Image Database as Educational Supporting Tool and Information Browser.*

Olivier Legault (Canada) : *La planification et la promotion des espaces souterrains.*

Workshop (D-2) : Technological Innovations - Construction / Excavated Structures

Guy Huot (Canada) : *Les aménagements des centrales hydroélectriques souterraines de la société Hydro-Québec*

Svetlana Pankina (Russia) : *Engineering structures of the Manezh Square underground shopping and recreation complex. (S)*

Wang Side (China) : *La technologie de l'exécution des grands travaux sous la Place du Peuple.*

Takafumi Seiki, Junji Nishi & Yoshinori Kikuchi (Japan) : *Classification of underground space and its design procedure in Japan*

Workshop (D-3) : Technological Innovations - Construction / Geology

Mohammad Hosseini (Canada) : *Géologie locale de Montréal avec études de cas en relation avec les constructions souterraines en milieu urbain*

Pierre Duffaut (France) : *Insertion des ouvrages souterrains dans un paysage géologique.*

Nikolay A. Platov, A. Potapov & T. G. Bogomolowa (Russia): *The underground space of alluvial soils (S)*

Workshop (D-4) : Technological Innovations - Construction - Facilities

Guylaine Proulx (Canada): *Évaluation des portes-papillon comme moyen d'issue dans le Métro de Montréal*

Christian Thibault (Canada) : *Utilisation de la ventilation d'urgence pour obtenir un endroit sécuritaire en station en cas d'évacuation*

Zhongzhen Ma & Yu Shu (Chine) : *The shield engineering and technology development in China*

Workshop (D-5) : Technological Innovations - Tunnels

Mohsen Mohkam, T. Ciblac & M. Esfehiani (France) : *Approches numérique et expérimentale des mécanismes de rupture de tunnels en terrains meubles sans pressurisation.*

Jisong He & W. Vlasblom (The Netherlands) : *Mathematical Model of 2-D tunnelling for saturated soil with small rake angle*

Sebastiano Pelizza (Italia) : *Innovations of underground construction in urban area*

Workshop (D-6) : Technological Innovations - Infrastructure Rehabilitation / Public Utilities

Serge A. Boileau (Canada) : *Gestion et réhabilitation des réseaux souterrains pour le bien-être de la ville souterraine.*

Veikko Hokkanen (Finland) : *Helsinki's multi-purpose utility tunnels (chauffage urbain)*

René Morency (Canada) : *Des conduits qui nous ouvrent la porte à tout un monde souterrain.*

Raymond L. Sterling (USA) : *Trenchless Technologies and their Impact on Urban Utility Systems.*