

- 4 FOREWORD  
Shipra Narang Suri, ISOCARP Vice President  
Han Admiraal, ITACUS Chair
- 6 PLANNING FOR UNDERGROUND  
SPACES “NY-LON” UNDERGROUND  
Elizabeth Reynolds  
Paul Reynold
- 34 NAPLES AND ITS PARALLEL CITY  
Vincenzo De Stefano  
Valerio Di Pinto  
Carlo Gerundo
- 54 NETWORKING UNDERGROUND  
ARCHAEOLOGICAL AND CULTURAL SITES:  
THE CASE OF THE ATHENS METRO  
Marilena Papageorgiou
- 72 UNDERGROUND AND CAVERN SPACE  
DEVELOPMENT IN HONG KONG  
Liang Huew WANG
- 88 THE UTILIZATION OF UNDERGROUND  
SPACE PLANNING IN TIANJIN (CHINA)  
CENTRAL CITY (2013-2020)  
Shi Wujun  
Xiao Yu  
Gong Yuan  
Zhao Guang  
Liu Wei

## FOREWORD

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Jan Rotmans, Professor of Transitions and Transition Management at the Erasmus University, Rotterdam, the Netherlands, is often quoted as saying: *'We do not live in a era of change, rather we live in a change of eras'*. The world is facing challenges on an epic scale: rapid urbanisation, natural hazards, and the effects of climate change, to name just a few. All these challenges are impacting our cities and they all need to be considered when looking at the cities of the future. But more than just looking for some quick fixes, we need to consider that the world is transitioning to a new era. This requires us to think in bold new ways based on new paradigms.

It was Eugène Hénard, French architect and planner, who in 1910 first used the phrase 'The Cities of the Future' in relation to underground space. During the Town Planning Conference in London that year he presented his now famous paper<sup>1</sup>, in which he set out his vision how the use of the subsurface would enable cities of the future to exist, because, as he propositioned: *'Whatever form its future expansion may take, there will always remain, in every large urban community, a centre of intense activity wherein the buildings will always be placed close together, as they are in our cities of the present day.'* It was this density that intrigued Hénard and made him think of utilising new spaces, hitherto not considered. His most famous comment on considering the subsurface must be the following: *'All the evil arises from the old traditional idea that "the bottom of the road must be on a level with the ground in its original condition." But there is nothing to justify such an erroneous view. As a matter of fact, if we were to establish as a first principle the idea that "the pavement and carriage-way must be artificially constructed at a sufficient height to allow thereunder a space capable of containing all the installations needed for the service of the road," the difficulties I have just pointed out would disappear altogether.'*

Hénard wrote these words and presented them over 100 years ago. It is now more than ever that we can take heed of these words in our current search for new spaces for our cities. ISOCARP and ITACUS joined forces to commission five case studies on the use of underground space beneath our cities. This has led to five very different studies ranging from the identification of long lost spaces beneath the city of Naples to purpose-built caverns in Hong Kong. One case study looks at how it was possible to build a metro in Athens and not destroy the archaeological assets buried in the soil beneath the city. If you were to compare New York City and London, what can you say about the use of underground space and the key factors governing this development? One of the case studies does just that and comes up with interesting

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<sup>1</sup> Royal Institute of British Architects, Town Planning Conference London, 10-15 October 1910, Transactions (London: The Royal Institute of British Architects, 1911): 345-367.

conclusions. The fifth case study looks into how underground space planning has been utilised in the Chinese city of Tianjin.

Five case studies undertaken by planners, urban designers and architects. Five case studies that intend to show the richness of underground space. Five case studies that start to give some insights into the possibilities but also the impediments of underground space use. If all the case studies illustrate one point, it is that the use of urban underground space is very much situational and often restricted not just by geology or underground ecology, but equally by legislation that never considered the possibility of large-scale subsurface development and use. One overriding consideration seems to surface from all case studies, and that is the need to plan. Without a vision on the use of urban underground space, without planning and without a strategy for managing the use of this vast spatial asset, all developments will be based on 'first come, first served'. This will lead to spatial congestion and competition between resources. Many cities are already developing large energy schemes by driving vertical pipes into the underground. Whether these are making future horizontal alignments of transport solutions impossible, just for example, is often not even being considered.

A contemporary of Hénard was George Webster, Chief Engineer and Surveyor of Philadelphia, USA who in 1914 wrote about the necessity to plan the layout of what he called "the subterranean street"<sup>2</sup>. Webster was concerned with the placement of utilities in the subsurface and chaos arising if not planned. But his vision went further, like Hénard he saw a future for underground space. Hénard and Webster were followed by French architect Édouard Utudjian who famously wrote<sup>3</sup>: '*It is necessary that the urban planner thinks deep and that underground development of cities is done not through random necessities, but according to a definite commitment, legislation and a predetermined plan.*'

This joint publication by ISOCARP and ITACUS hopes to stimulate some innovative thinking on the use of underground space. We urge planning practitioners not only to consider the possibilities, but also to think deep and to make underground space part of the planning of our future cities. In doing so, we reaffirm that the time has come for new planning paradigms as we are transitioning to a new era in which our cities will continue to play an evermore important role for people; cities of the future, which are resilient, inclusive and above all liveable.

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<sup>2</sup> Annals of the American Academy of Political and Social Science, Volume 51 (1914): pp 200-207.

<sup>3</sup> L'Urbanisme Souterrain. Édouard Utudjian. Presses Universitaires de France (1952).