

Marginal and neglected topics in architectural education

Ján Legény, Robert Špaček & Pavel Gregor

Slovak University of Technology in Bratislava
Bratislava, Slovakia

ABSTRACT: Several marginal and neglected topics in architectural education are addressed in this article. The authors have highlighted proxemics (the study of *space* around humans) based on zoning and mutual distances that directly affect the organisation and design of spaces. In architecture and urbanism, spatial relations as a setback, tangency, direction, view or sound volume play a key role. The tactile zone of buildings, city and public spaces interact with dwellers and influence the quality of urban space. The comfort of sensory perception is introduced through the *Sensulor* conceptual scheme subdivided into tactile, thermal, olfactory, acoustic and visual zones. In the article, the authors discuss the impact of human senses, such as smell, flavour, touch or visible contact with objects on the determination of feelings and well-being in an urban milieu. Finally, ethical aspects regarding the city are presented, such as urban democracy, urban decency and safety. According to the authors, they contribute to the overall concept known as the *right to the city* that should be anchored in architectural education through the presented marginal and neglected topics.

Keywords: Marginal topics, architectural education, perception, Sensulor, proxemics, human senses

INTRODUCTION

Things are predominantly intricate by their very nature. Humans have evolved to become dependent on society. It is alleged that the genus, *Homo sapiens*, has transformed into *Homo communicans*, *Homo oeconomicus* or *Homo virtualis*. The more the population grows, the more this is apparent. In architectural education, the city and the majority of its related processes are closely associated with inhabitants, their number and behaviour.

The decision-making, perception, emotions and influences on city dwellers are the subject of the authors' interests and research. They have been writing for a long time about ecological and cultural sustainability. Dealing with serious issues over the long term can lead to a desire for some abreaction, as opined by Milan Kundera in the book, *The Unbearable Lightness of Being* [1].

Marginal issues are often addressed by people who have completed compulsory academic duties and are perhaps *tired of* complex issues. This phenomenon of marginal and neglected subject matters occurs in education as well. Smallness or inexpedience does not always mean insignificance. Such issues are part of cohabitation and the quality of daily life. In this article, several peripheral areas of architectural education are presented that are often beyond designers' perceptions and interests. Nevertheless, the authors believe that such topics represent a significant part of the living space and social life of dwellers.

The extent and content of education are subject to discussion historically and geographically. How many years are needed to obtain adequate and good professional knowledge? How many years is it meaningful to finance this acquisition of knowledge? These discussions regarding the European area were examined by the authors previously [2].

Teaching needs to be optimised while responding to societal, generational and technical/technological changes. Typically, the study programmes compress the knowledge to a necessary extent while incorporating some rigid, topic-specific modules. Marginal and neglected issues can find their position in the curricula through optional subjects or through *selected chapters* from the given area that can also be multi/inter/trans- disciplinary. In such cases, study results are presented mainly through essays written on the lecture topic that occasionally are published in magazines. Other platforms include informal educational events or even ideas competitions. The authors in this article have aimed to outline several subject matters that can be involved in architectural education. One is monitoring and analysing the interactions of human sensory and social zones with the environment.

PROXEMICS AND SENSULOR

People interact and communicate daily in person or through communication technologies. *Kinesics* is the study of patterns in gesture and posture. Edward Twitchell Hall, Jr in the 1960s coined the term, *proxemics*, for the place and position of people in space and their proximity to others. In architecture and urbanism, spatial relations, views and sound play a key role. Hall showed that a person's distance from others depends on cultural background or social relationships. There exist four interpersonal distance zones for humans: *intimate zone* (up to 0.5m), *personal zone* (0.5m - 1.5m), *social zone* (1.5m - 3m), and the *public zone* limited by voice (see Figure 1a) [3]. From the participants' distances, it is possible to determine the division of communication tasks. These four fundamental zones might be further differentiated according to physical and mental space or related to the scale of a city, object or interior.

When teaching the organisation of space based on typology some errors may occur. Typology and economic considerations assume dimensions of a standardised human body and their ergonomics. For instance, a chair will be designed such as to be optimal in terms of space, but little attention is paid to the fact that sitting in a row too close to others puts people under stress if they are sensitive to intimate/personal zones. In the current pandemic (2021), safe virus transmission distance changes space requirements. *The direct personal contact, once natural and spontaneous, is now subjected to sanitary regulations*, as Gyurkovich states [4].

Considering proxemics and comfort communication zones, Le Corbusier introduced a set of *modulor* (modular) harmonic proportions (see Figure 1b) and Špaček et al introduced the *Sensulor* in 1986 [5]. In contrast to Hall's social distance determinants, Sensulor is a consideration of the comfort of sensory perception and corresponding spatial frameworks. This conceptual scheme is subdivided into *tactile*, *thermal*, *olfactory*, *acoustic* and *visual* zones reflecting Putscher's five senses [6] (see Figure 1c). Listed in Table 1 are the influences on the perception and design of spaces within cities.

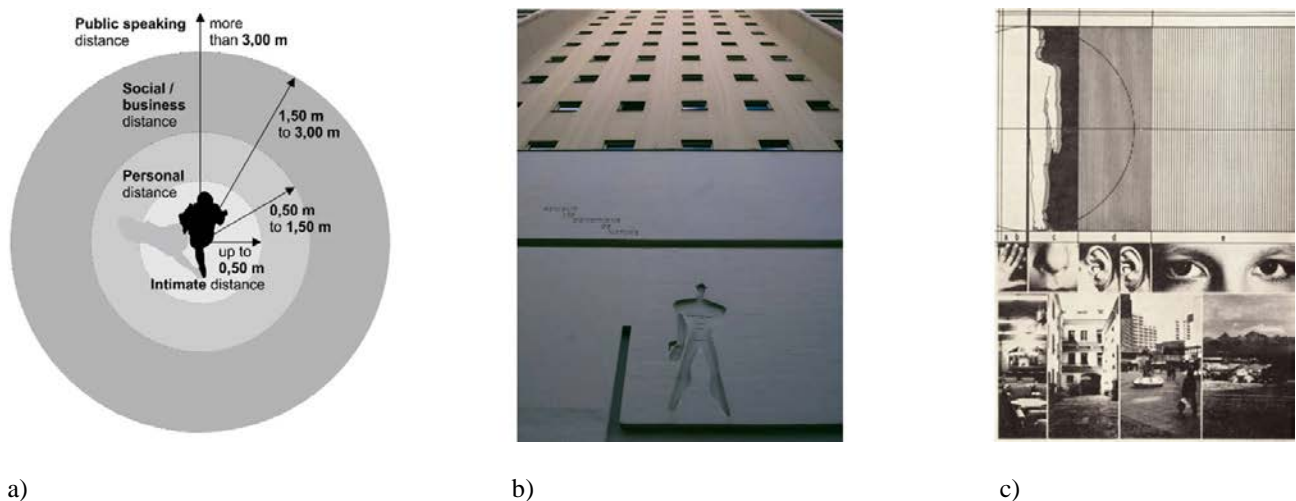


Figure 1: a) E.T. Hall's proxemic zones (by the Authors); b) *Modulor Man* by Le Corbusier depicted at the façade of Unité d'Habitation in Berlin (by the Authors); and c) *Sensulor* with its sensory perception zones [5].

Table 1: Human-based principles influencing the perception and design of spaces within architecture and the city.

Principles	Ergonomics	Typology	Sensulor	Proxemics	Pandemic social distancing
Determining aspect	Human body		Human sensors	Subconsciousness/intuition	Current externalities

TACTILE ZONE OF CITY AND PUBLIC SPACES

The city structure, surfaces and building volumes can be seen, heard, smelled and felt. Most perceptions are mediated by eyes. Nevertheless, according to Montagu, skin is the most important human organ as he argued:

The skin, like a cloak, covers us all over, the oldest and the most sensitive of our organs, our first medium of communication, and our most efficient of protectors. The whole body is covered by skin. Even the transparent cornea of the eye is overlain by a layer of modified skin. [...] In the evolution of the senses, the sense of touch was undoubtedly the first to come into being. Touch is the parent of our eyes, ears, nose, and mouth. It is the sense which became differentiated into the other; a fact that seems to be recognized in the age-old evaluation of touch as the mother of the senses [7].

Superficial areas are not only perceived through direct physical contact. Eyesight conveys information about the roughness or softness of a surface and warns of risks. The *tactile zone of a city* is not a well-established notion. Hypothetically, in analogy to tactile or haptic zones of man, it lies between the intimate and social micro space defined by Hall's proxemics and the cultural and social area set by the concept of *habitus* introduced by Bordieu [8].

This habitus represents a collective, historically acquired system of unconscious ways of thinking and perceiving. There exists a varietal relationship to the city and architecture of different social groups and cultural communities. Undoubtedly, the *surface* of the European cities is *touched* by senses and recognised differently by the members of Eastern cultures compared to Western and *vice versa*. Projecting this approach into education might benefit intercultural apprehension.

The building often needs to indicate to passengers *noli me tangere*, which means they should not approach or *au contraire*: closeness does not matter. One of the many options is to communicate this attitude through prohibitions and orders. Architects can apply barriers; however, this is usually neglected in teaching. A barrier should preferably signal discomfort rather than aggression. This intention can be carried out by the building design, its surfaces or surroundings.

For example, an empathic façade invites people to get closer or enter the building. Houses may be set back from streets and squares to prevent contact with their *intimate zone*. Typical row-terrace houses may include a fenced-off forefront basement courtyard accessed by steep staircases and entrances designed to keep pedestrians at an appropriate distance from the houses.

The extreme examples of *tactile discrimination* are protective measures around representative and government buildings or even prisons located in the inner-city or particular design solutions and technologies that restrict entry to a specific area. Therefore, there is a *social sphere* of buildings which must accommodate safety considerations (see Figures 2 and 3).

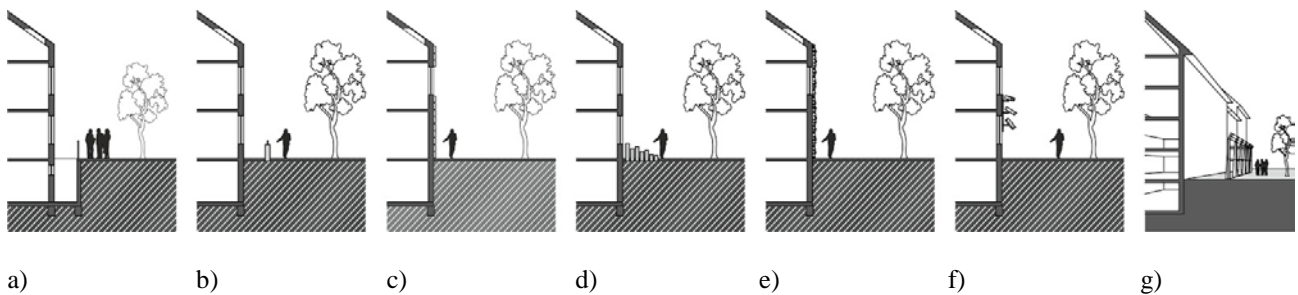


Figure 2: Tactile zones of buildings and interaction with the environment; a) window well or forefront basement courtyard; b) fencing; c) bossage (building façade surface); d) morphology of tangential zones of the building; e) green wall; f) CCTV and monitoring of building surrounding; and g) electric fencing (by the Authors).



Figure 3: a) the US Embassy in the Bratislava city centre fenced by various types of protective agents, i.e. CCTV, fencing, retractable posts and barriers (photo by J. Legény); b) row of traditional terraced houses in Sydney, Australia, representing a cultural transfer from Britain (photos by R. Špaček); and c) Wismar port area with architecturally well-mastered detail of the intimate zone separation of a building (photo by R. Špaček).

The *tactile zone of public spaces* interacts with the social use by a person. Public space surfaces are either user-friendly or repulsive if designed with respect to safety. The properties of materials and the character of surfaces guide the users in space and the environment. The urban milieu communicates subconsciously or spontaneously with people; architects and urban planners design the amiability, character and colour temperature or deadness of not only interiors, e.g. it is uncomfortable to walk on rough pavements often found in city centres. In the era of climate change, urban surfaces should be water-permeable while contributing to water retention. Other attributes should meet the requirements for accessibility by disabled people or be gender-neutral, as noted by Kern in *Feminist City* [9].

OTHER HUMAN SENSES

According to Merleau-Ponty, a peculiar kind of touch is *touching with eyes* in seeing striking and memorable visual images [10]. One of the externalities of the city is *advertising*; against which it struggles or coexists with. Advertising posters, neon signs, banners or billboards invade bus stops, specially designated walls or entire constructions. Buildings become the basis for anarchic information aggression. They *fight for* consumer attention and directly influence the *visual purity of urban space*. Closely linked with the economic imperative, the language of advertising modifies urban characteristics. Within advertising, surprise becomes one of the crucial parameters for success but is also its disadvantage. The streets of Hong Kong probably are the epitome of *visual smog*. The question is whether inhabitants have a right to an aesthetically clean space that they inhabit. Such a *city in a gift pack* is losing its identity and becoming a carrier of short-term commercial information. The *right to beauty of public space* should belong to the principal rights of city dwellers and its visitors.

Air is the medium that enables the spread of sound and speech and it communicates perceptions. Communication in various forms keeps the city liveable. The intensity of the sound of a city characterises the life of its inhabitants, and the predominant forms of transport, such as bicycles, cars and trams.

Scents are chemical signals from animate and inanimate things that fit into the concept of *mental mapping* introduced by Lynch in 1960 and used in behavioural geography [11]. His five elements of the city (nodes, edges, districts, paths and landmarks) extend the olfactory perception supporting the creation of a person's point-of-view of the area of interaction. The unique smell contributes to the formation of the symbolism and character of the place. It can also act as an indicator of the air pollution level. *Talking Nose* by Tolaas identified 200 characteristic smell molecules at sites in Mexico City using the city-walk method [12]. *Nasalo*, a unique language, communicates the smell impressions linked with specific locations by notations, such as the AFFISH (African fish shops), TARR (asphalt), CAA (transport), GOOWHA (wet dog), SHIIZA (canalisation), FREE (wet and rainy street). In the author's words:

The study of urban smell provides an additional dimension to our understanding of cities. It enriches our sensual experience and provides input for urban design and architecture. The invisible city can communicate and be understood [12].

The health consequences of the SARS-CoV-2 disease confirm that there is no taste without smell. The *Perfect Sense*, the movie formerly known as *The Last Word*, illustrates what happens if an epidemic causes humankind to lose their sensory perceptions one by one. The so-called *severe olfactory syndrome* (SOS) resulted in no taste and smell, so memories had nothing to evoke. The city generally is tasteless but can be perceived through its cuisine, as well. Manchester City tastes of fish and chips and mushy peas; Bologna is associated with the local sauce. Thus, the surrounding world is diffused by more than the visual dimension. The *visual-spatial perception* of architects is substituted by the *sensory-spatial perception* engaging all the human senses in order to fully restore the ability to see the world [10][13].

Although the city can be perceived as a *poem*, it is difficult to include such poetry into a methodology of urban design and architectural education. Nevertheless, the authors hold the opinion that such interpretations should be part of it. This argument reinforces the *Jane's Walk* world festival view that encourages people to share stories about their neighbourhoods, discover unseen aspects of their communities and use walking as a way to connect with their neighbours [14].

URBAN DEMOCRACY, DECENCY AND SAFETY

In parallel with the investigation of ecological sustainability of architecture and cities, the authors' research interests are aimed at addressing urban democracy, urban *decency* and safety as integral parts of the sustainability of dwellings and settlements. The city, the most complex unit created by man, can be tactile and visually decent; conversely it may be aggressive. The authors set out from the presumption that manifestations of *decency*, such as thoughtfulness, politeness, kindness, respect for the elderly and disabled people, though part of the behaviour of people, can be observed inside the architectonic and town-planning complexes, as well [15].

Urban decency expresses the balanced relation/application of weaker city-systems against more aggressive ones. That means the transport system shall respect the pedestrian zones or squares and their operation; that new buildings shall follow the street line; the architecture of an expanding company shall be compatible with smaller architecture and elements of the original urban settlement; that dominants shall respect the image of the city and its skyline. In the case of barrier-free and universal design, this precept may become a rigid postulate of architectural and urban design methodology.

As a rule, the application of *tolerance* makes a functional system more human: coherence and dependence are reciprocal. Another issue is the communication of the city. The information systems can oscillate between two extremes - *order* and *empathy*. In this regard, the following questions can be asked. How can something be politely and at the same time uncompromisingly advanced to users? Can people behave decently in an aggressive environment? Is decency a manifestation of one's own will or the result of fear of consequences? The communication method of the city, in general, must be efficient, decent and polite. Otherwise, it evokes naturally indifferent, neutral or unexpected reactions. Unfilled

trash bins, graffiti or asocial areas are part of city communication. The visible signs of crime, anti-social behaviour and civil disorder create an urban environment that encourages further crime and disorder, as the *broken window theory* describes [16]. Therefore, an amiable and decent milieu is crucial for urban life.

According to this interpretation, urban democracy could be perceived as a multi-layered and complex urban phenomenon. The level of democracy in political and social life or state management, is transferred into the city organisation and its politics. The essence of democracy should be taught in the context of the city's public spaces and not only through regulations. The democratically formed city is open and based on the equality of access. It offers plenty of accessible areas and public parterres of building; the democratic urban space enables gatherings of people. It has no obstacles, barriers and few restrictions. It is urbane, clear and readable for visitors and flexible in availability. It respects the pedestrians, people of various age, gender and disabilities. It implies the importance of designing urban public spaces applying the fundamental desires of people as a guiding principle, analogous to Gehl's proper humanistic use of urban space (see Figure 4) [17].

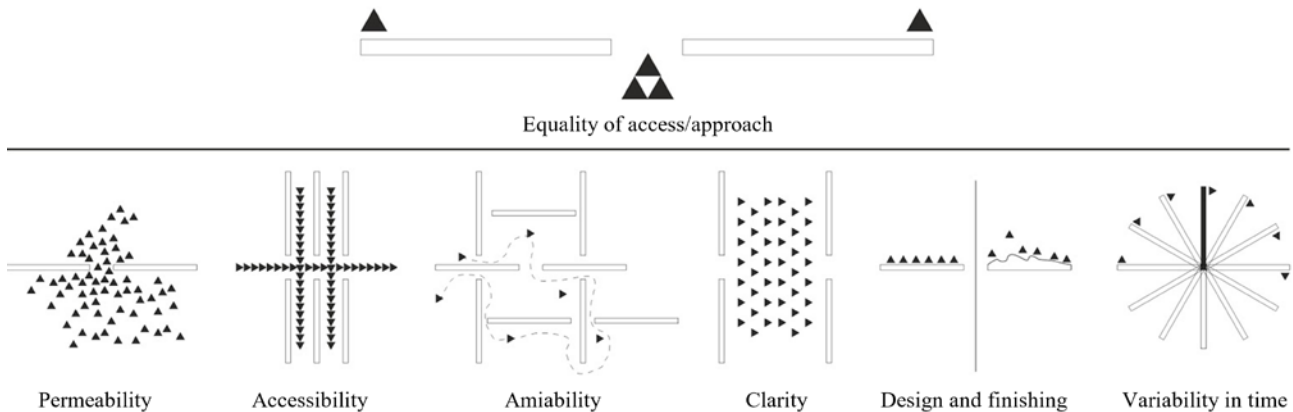


Figure 4: Democracy as equality of access and approach in urban public space.

A decent and democratic city must be safe. The need for security was one of the main reasons for the creation of cities. Aside from the history of building, the walls and other fortifications, research and education should be focused on the security of the current (open) city. In this context, a globally evolving strategy known as *Crime prevention through environmental design* (CPTED) has been developed in collaboration with security experts. It is argued that *...the prevention of crime relies on the combination of social prevention, the use of the police and criminal justice system, and environmental design. In this context, the environmental design includes all aspects of the design and management of the physical environment* [18]. Insufficient public control usually can lead to the creation of private, closed and guarded enclaves. To reflect this strategy in architecture and urban design, police experts have to be considered as the legal partners of architects. The safety in the city also relates to the structure of a traffic network. In the case of traffic jams or unpredicted obstructions, the number of alternative routes on how to reach destination B from location A is very important.

Weizman's research on military strategies is not a well-known topic in urban design education [19]. He describes the *inverse geometry* as the reorganisation of the urban syntax utilising a series of micro-tactical actions applied by the *Israeli Defense Forces* (IDF). The *Going-through-walls* strategy physically breaks the walls so soldiers can move safely within the city across 100m-long *over ground-tunnels* carved through a dense and contiguous urban fabric; such tactics secure the city in conflicts. Such topics should become a subject of interest in architectural education, as well (see Figure 5).



Figure 5: a) *La nuova topografia di Roma Comasco*, by Giambattista Nolli, ca. 1692-1756. It shows the public accessible space in the city: public spaces and public buildings (white) in old Rome during the Roman Empire [20]; b) analysis of Milan traffic network (by the Authors); and c) Israeli Defense Forces (IDF) and Palestinian manoeuvres through the Old City centre of Nablus in April 2002. The IDF made the attack through the built fabric instead of the main roads (solid black lines). Dotted lines denote movement through buildings [19].

CONCLUSIONS

There are several marginal topics relevant to architectural research. Inverse geometry deals with destroying cities. Then there is *thanatology* - dying and resurrection - as a metaphor for the reconstruction of buildings or cities. *Forensic architecture* is a relatively new discipline. The authors believe these topics have a place in architectural education. Are they just marginal or they are relevant and necessary for architects and urban planners? Architecture and urbanism determine and directly affect the living conditions of city dwellers. In the era of population growth and fossil fuel depletion, there are many serious issues for architects to deal with. One of the main tasks of the architectural profession is to cultivate the (urban) life and to ensure its vitality. Architectural education and the profession deal with engineering matters, but also the rights of citizens and developers. They take into account regulations, which may vary depending on cultural background, the state or the city. These marginal topics are associated with rights and the city. They contribute to the overall concept known as the *Right to the city* that should be anchored in architectural education by the introduced marginal and neglected topics.

ACKNOWLEDGEMENTS

This article is part of a grant-aided project *SU:DE:EN - Sustainable design of (human) environment* supported by Slovak University of Technology in Bratislava, Slovakia.

REFERENCES

1. Kundera, M., *The Unbearable Lightness of Being*. London: Faber & Faber (1999).
2. Špaček, R. and Legény, J., Trapped by crisis: the plight of architects in Europe. *Global J. of Engng. Educ.*, 16, 1, 20-26 (2014).
3. Hall, E.T., *The Hidden Dimension*. New York: Anchor Book Press (1990).
4. Gyurkovich, J., New challenges in teaching architecture students in the third decade of the 21st Century. *Global J. of Engng. Educ.*, 22, 3, 162-167 (2020).
5. Keppl, J. and Špaček, R., Latentné formotvorné činitele architektonického priestoru. *Architektúra a Urbanizmus* 20, 4, 237-252 (1986) (in Slovak).
6. Putscher, M., *Die fünf Sinne Beiträge zu einer medizinischen Psychologie*. München: Moos (1978) (in German).
7. Montagu, A., *Touching: the Human Significance of the Skin*. New York: Columbia University Press (1971).
8. Bourdieu, P., *Outline of a Theory of Practice*. Cambridge: Cambridge University Press (1977).
9. Kern, L., *Feminist City: Claiming Space in a Man-Made World*. *The Unbearable Lightness of Being*. New York: Verso (2020).
10. Merleau-Ponty, M., *The Visible and the Invisible*. Evanston: Northwestern University Press (1968).
11. Lynch, K., *The Image of the City*. Cambridge: The MIT Press (1960).
12. Tolaas, S., *The City from the Perspective of the Nose*. Mostafavi, M., Doherty, G. (Eds), *Ecological Urbanism*. Baden: Lars Müller Publishers (2010).
13. Pallasmaa, J., *The Eyes of the Skin: Architecture and the Senses*. New Jersey: John Wiley & Sons (2012).
14. Borucka, J., City walk: a didactic innovative experiment in architectural education. *World Trans. on Engng. and Technol. Educ.*, 17, 2, 158-163 (2019).
15. Zervan, M. and Špaček, R., Hypothesis of urban decency. *Životné Prostredie*, 35, 24, 173-178 (2001).
16. Kelling, G. and Coles, C., *Fixing Broken Windows: Restoring Order and Reducing Crime in Our Communities*. New York: Simon & Schuster (1997).
17. Gehl, J., *Life Between Buildings: Using Public Space*. Washington D.C.: Island Press (2011).
18. Poyner, B. and Fawcett, W.H., *Design for Inherent Security: Guidance for Non-Residential Buildings*. Telford: Thomas Telford (1995).
19. Weizman, E., Lethal Theory. *Log*, Winter/Spring, 7, 53-77 (2006).
20. Cityeu, Wonderfull Maps: Nolli (2010), 31 January 2021, <https://cityeu.wordpress.com/2010/11/03/wonderfull-maps%C2%A0nolli/>

BIOGRAPHIES



Robert Špaček finished his study of architecture at Slovak University of Technology in Bratislava (STU), Slovakia, in 1976. In 1981-1982, he was a postgraduate student at the University of Hannover. He is a member of the Institute of Ecological and Experimental Architecture of the Faculty of Architecture and Design at Slovak University of Technology in Bratislava (FAD-STU), which he founded in 1990 with Professor Julián Keppl. In his research, teaching and publication work, he focuses on sustainability, urban democracy and ethics, as well as architectural theory and review work. He is an author, co-author or editor of dozens of scientific and popularisation texts, including the books, *Efficient Housing*, *Manual of Sustainable Architecture* and *Solar Cities*. He is a member of scientific and publication boards, as well as other associations. Between 2010 and 2018, he was the Vice-Dean of the FAD-STU for Research, PhD Study and PR.



Ján Legény is a graduate in architecture from Slovak University of Technology in Bratislava (STU), Slovakia, where he also earned his PhD in 2013. He was awarded twice by a postdoctoral position at the STU with his research topic *Intensification of solar energy use in urban space*. Presently, he is working as a researcher in the Institute of Ecological and Experimental Architecture of the Faculty of Architecture and Design at STU (FAD-STU). He has authored or co-authored scientific and professional articles on solar town planning, solar design, sustainability and architectural education, and co-authored the scientific monograph titled *Solar Strategy of a Sustainable City*. He has been participating in various national and international research projects. He is a freelance architect and a co-founder of an architectural studio *TRESarchitects* and has gained experience from the Office of the Chief Architect of the City of Bratislava. Since October 2018, he has been Vice-Dean for Research of the FAD-

STU, and is a member of its scientific board and publication boards of three journals.



Pavel Gregor is the author and co-author of more than 70 built architectural projects, many of them with the highest awards, as well as numerous research publications. His pedagogical and professional activities are focused on the issue of protection and restoration of architectural heritage, including the new architectural designs in the historical environment. He has developed a concept for specialised teaching of the restoration of architectural heritage, and more recently, a transformation of the design studio teaching in the Faculty of Architecture and Design at Slovak University of Technology in Bratislava (FAD-STU), Bratislava, Slovakia. Since October 2018, he has been Dean of the FAD-STU, he is a member of a number of scientific and publication boards. He is the President of ICOMOS Slovakia, a non-governmental national committee of the International Council on Monuments and Sites.