

lar characteristics of source and target cities. The basic problem was the used method. The size of the sample and chosen statistical method in fact couldn't guarantee significant differences between cities. The consequence was the inability to distinguish co-relations between researched elements.

Nevertheless, the results of the research chapter don't mean that the whole project approach, i.e. establishing guidelines for choosing and transferring measures between cities, was impossible. The results show that municipal traffic experts are in the best position to choose measures for their cities, because of their knowledge on local political conditions and public sympathy. Therefore they have to be given access to high quality information on present measures in a structured form. The latter is enabled by the established LEDA database, representing an important European instrument for traffic experts, thus fulfilling the goals of the project.

The chapter and the results of the workshops facilitated the participants in the project with access to different practical information on possibilities and problems for transferring measures between cities. The common denominator of most researched target cities is that those measures, tied to stimulating public transport, cycling and pedestrian traffic, can be transferred relatively easily. On the contrary, measures tied to limiting the use of private cars, are confronted with much more obstacles, especially political opposition and poor reception from the public. The latter is much less pronounced in cities that have a lower level of motorisation, i.e. cities in EU accession countries.

Simulation of transferring the selected measures into target cities pointed out numerous possible obstacles, tied to municipal strategic goals, political climate, public opposition and issues on control. Clearly all obstacles cannot be removed. Much depends on the dedication of participants in the project, public participation and urban structure.

## 6. Conclusion

The results of the project help in understanding the conditions needed to succeed with the measures for achieving sustainable traffic development in cities. They also point out the often used measures, as well as those that are not so well known. Possibilities for transferring measures between cities and countries were also made clear.

An extremely useful result of the project is the database with more than 200 legal measures and their detailed description, available on the project's web page or on demand in digital form.

An important conclusion is in the recognition that local authorities have immense freedom in execution of activities tied to the traffic system. The result is not surprising, but it does have significant consequences in achieving sustainable traffic in cities. Relatively broad jurisdiction of local authorities enable them to begin implementing adequate measures immediately, especially parking management, traffic calming, public transport, cycling and pedestrian traffic, without delays caused by changes brought about on upper governmental tiers.

The wide overview of European circumstances in the field of traffic allowed the participants in the LEDA project to formulate additional suggestions for local experts. Success of a

particular measure is tied to its role in a comprehensive municipal traffic policy that can ensure mutual support and translations between the measures. In cities that are significantly lagging behind comparable European cities, it would be sensible to use the »best practices« approach when introducing a new measure or to utilise the available knowledge and experience from other cities. Thus cities are strongly advised, to use all of their jurisdiction and potentials and co-operate with other cities in the European context and exchange experiences and knowledge. A very operational tool for such exchange is the ELTIS initiative established by the European commission. Complementary support will be given by the methodology for transferring measures, developed by the LEDA project, that supports the joint and structured approach for the wider utility of locally developed measures.

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### Notes

- 1 The article was previously presented at the 5<sup>th</sup> Slovenian congress on roads and traffic, Bled, 25<sup>th</sup> October 2000.
- 2 LEDA = Legal and Regulatory Measures for Sustainable Transport in Cities
- 3 RUG = Regional User Groups

*For literature and sources, turn to page 34.*

## Živa DEU

# The visual image of prefabricated houses and new directions in the urban and architectural development of settlements

## 1. Introduction – the quality of present living conditions

Natural and cultural landscapes, settlements being a part of the latter, change with the development of civilisation. Changes are not always for the better, as illustrated by the present circumstances of our development. In various research's prepared for the Ministry of environment and physical planning and Office for physical planning (responsible for the state of environment and settlements), numerous experts from different fields of expertise pointed out the comprehensive devaluation of the physical environment, expressed not only in the pollution of natural resources, but also the degradation of larger urban structures<sup>1</sup>, cultural landscape and space as a whole (Drozg 1996; Fišter 1993; Koželj 1998; Mušič, 1999; Pogačnik 1997; Plut, Ravbar 1995).

In the newly designed and redesigned built structures predominantly high quality changes have occurred as a result of expansive growth of construction-engineering knowledge, transport infrastructure, tele-communication and culture of living. However one can also discern a lack of environmental (ecological) values, but also aesthetic (artistic) values, expressed as increasing pollution of natural resources and the loss of landscape, urban and architectural identity, all interdisciplinary qualities. Through historical development, the latter (cultural landscape, settlements and buildings) was achieved by adequate respect for particularities, such as the local natural settings (geological and geophysical characteristics), and by protection of natural resources, agricultural land and open space. These were independent of added value, tied to various levels of cultural, social and economic development (improving living conditions, changing attitudes to beauty etc.). A consequence of the described devalued state is the decrease in quality of living in most of the settled Slovenian space.

A brief description of the general circumstances co-creating the visual image of cultural landscapes can be presented from the key findings taken from individual research findings (Drozg 1996; Deu, Drozg, Premzl 2000; Fister 1993; Gabrielčič, 1997; Koželj 1998; Pogačnik 1997; Plut, Ravbar 1995 and others). Most of them deal with settlements and urban management of mainly smaller settlement and can be presented in an organised fashion. For example:

### 1.1 Extensive building, the phenomenon of dispersed settlement

Physical development of settlements is directed into growth on green sites in the surrounding area, the present built-up fund less used and open spaces within the built-up tissue neglected. The share of renewal and restructuring of present surfaces is negligible, compared to the new surfaces used for housing development. We can state that during the 90s, renewal and restructuring were insignificant.

Residential neighbourhoods composed of single family houses built by private investors prevail among the new types of settlement. The share of organised development is minimal. These neighbourhoods create the suburbs, edges of smaller settlements or resemble cancerous growth dispersed throughout space (forming a continuous dispersed city). The environmental quality of these housing neighbourhoods with scattered disposition of particular objects (areas of dispersed settlement, dispersed suburbs) is poor. They occupy a lot of territory (the average plot size in smaller settlements is 1000 do 1500 m<sup>2</sup>), access is time consuming, the road and communal infrastructure are irrational and expensive, often badly built and in most cases directly destroying natural resources.

Particular homes with otherwise high living standard are because of badly thought out spatial disposition, layout, inadequate use of materials, poor or non-existent heat insulation energy consuming and wasteful.

### 1.2 Visual, artistic degradation of built structures

Besides the noted features in the described areas, visual (artistic) degradation is rampant. For all individuals that understand utility, practicality, functionality of buildings and

aesthetic criteria, but also all individuals that know something about order and harmony, our settlements of varying size depict urban planning and architectural disorder. Unimaginative urban layouts with complicated and unbalanced buildings with a myriad of types, roofs at all possible angles with different tiles, all coupled with varying degrees of bad taste in architectural detailing are fighting a futile urban design and architectural battle. The collateral damage is felt by all users and seen as chaotic image in most Slovenian settlements or their particular parts (beauty is order that rules; Le Corbusier: »Order is one of the basic elements of art.«).

*Neglect of visual harmony has unwanted effects. An extremely important fact in a country that cares for the well being and health of its people and a country that has to develop tourism and supplementary activities. All of which need culture and art (Pogačnik, A., Urban image is also important; Cities and urbanisation, No. 3/1999; Ljubljana 1999, pp. 23).*

### 1.3 Built structures not adapted to local circumstances

The traditional settlement pattern with pronounced beauty and harmony between natural and created amenities is disappearing. It is being replaced by construction of single family homes, that are seldom adapted to the selected place: its natural features, employment patterns and residential needs, with no respect for the present developed cultural, economic, social and other elements.

Contemporary urban and architectural development of small settlements doesn't belong to a certain place or its people. It isn't a superstructure of residential needs and knowledge passed down through historical development of established criteria. These are in fact degraded and obliterated (stopped identity) or because of the lack of new timely design measures. *Rural settlements and the landscape are losing their cultural identity and architectural tradition. Both are signs of unbalanced development. If such development continues, no good will come out of it (Agenda 21 for Slovenia, Ljubljana 1995, pp. 30).*

### 1.4 Poor communal infrastructure

Because of low densities, the infrastructure network, i.e. length of communal lines needed for a single home, exceeds the normative value by at least three times. Most residential buildings have access to water, electricity and tele-communication supply. Cesspools for the disposal of sewage are common, often trickling out to the nearest stream.

### 1.5 Low level of urbanity in cities

Cities are no different. There the share of urban qualities and degraded areas is equal.

Development aiming at expansion ties with miserable functional and design layouts of most Slovenian settlements. Detached homes generally cannot establish urban spaces; housing estates subdivide cities into clear, but mutually disconnected and in-penetrable blocks. Urban elements are rare. The share of roads with no elements of urbanity is growing. Most of them are parts of the technical system and not the living environment.

## 2. Starting points for rehabilitating degraded built structures

Ecological and aesthetic devaluation of the living environment and recognition of limited and unique natural resources are the basic conditions that have brought about new guidelines for different, nature and environment friendly, sustainable spatial management on the international level.

In the guidelines for sustainable spatial development, the part dealing with development and rehabilitation of settlements states those co-creating the cultural landscape, with emphasis on the relation between buildings establishing spatial identity – comprehensive built-up heritage – and established culture of construction (values, measures).

Studies and detailed analyses have shown that the devised measures from the building culture of the past have numerous values, equal to those on which new guidelines and directives for sustainable development of architecture and urbanism are based (contemporary building has lost them).

Besides the environmentally economic values, building heritage still present in our smaller settlements also manifests the conscious tendency towards beauty<sup>2</sup> in design. Alongside generally accepted criteria on beauty in architectural design, builders readily accepted innovation widely accepted in urban and architectural design (style) in the broader area. Acceptance and enforcement of artistic innovation (architectural style) in the building tradition of a cultural landscape was connected to numerous factors. In the forefront was economic and cultural development (particular, discerning artistic characteristics). Thus, as established by architects and art historians, according to new guidelines in architectural design and all other spatially created and natural conditions, thorough their creative work together with local artists and masters (builders, sculptors, stucco-workers etc.), builders artistically upgraded building into architecture. They created and importantly emphasised difference and belonging (recognisable variety of cultural landscapes). Their products were complementary parts of built heritage and also important artistic tradition, but also a significant part of the whole national cultural heritage.

### 2.1 Comprehensive protection of settlements and built heritage

*New directives in »sustainable« development of built structures (normative and value principles)*

Aligned to all international value and normative guidelines and normative directives of sustainable development, new development and management of settlements with architectural design of buildings is based on the rehabilitation of present conditions. Processes of settlement rehabilitation include the built heritage with its continual use of all mentioned values.

If these directives are fully understood, they imply such planning and spatial uses, whereby protection, renewal and new development maintain the present, recognisable traditional landscape, urban and architectural identity or establish a new, equal one or one that is even better. This means, that by protection and renewal the existing building fund has to

be preserved and functionally, technically and artistically upgraded (renewed establishment of discontinuity in urban and building development). New development has to be planned in such a way, that recognised, high quality and continuously useful values of the past are upgraded with knowledge and wisdom of the present.<sup>3</sup>

New international directives concerning physical planning and complying with principles of sustainability have already become part of our normative documents and values. Among the present normative documents one can include the Constitution, laws (Law on spatial management, Law on management of settlements and other development, Law on building, Law on environmental protection etc.), national spatial plan and ratified international documents. The value guidelines include numerous international agreements concerning future management of settlements and cities (Agenda for change, Agenda 21 for Slovenia, Agenda Habitat, Istanbul declaration on cities and other settlements, Irish declaration etc.). They also include results of research projects, dealing with the management of settlements and planning development, carried out recently (Urban Planning Institute, Geographical institute, Faculty of architecture).

### 2.2 Conclusion

The previous statements lead to the obvious conclusion, that harmony between building and natural circumstances, cultural, social and economic development and harmony between present urban image and landscape identity are important values. Harmony benefits quality of life and is aligned with new environment friendly, sustainable development principles.

Under the new conditions urban design and architectural planning have to be harmonious with natural circumstances and the pertaining typical built structures. With such planning numerous qualities can be regained, above all neglected and lost aesthetic and visual values of the cultural landscape, settlements and buildings will be revitalised. However the most important benefit is that such planning will help maintain the increasingly valuable and recognised cultural values of local environments. Despite globalisation of the modern World, it is interesting to note that differences between cultures (cultural environments) are gaining in importance. In Slovenia, these differences can still be distinguished in the historical development of cultural landscapes and built structures.

## 3. Visual (artistic, aesthetic) image of prefabricated wooden homes

*Critical evaluation compared to presented guidelines on comprehensive heritage protection in the framework of sustainable development*

In future development of prefabricated construction will help in the implementation of new, sustainable, environment friendly development, mainly because of its inherent advantages (economical, healthy, quick, serial and functionally adaptable construction, organised development). The aim is to create humane environments with a high quality of life. However, these goals cannot be attained by producers of

prefabricated timber homes, without radical changes in, above all, architectural design.

The present architecture of prefabricated homes is what the producers offer on the market (exceptions confirm the rule), i.e. it is global, cosmopolitan, without necessary ties with the natural and cultural environment, identity of urban and settlement structure. All are typical for detached homes, creating a structure that in Slovenia co-creates recognisable differences in the cultural landscape. According to the new principles of sustainable development and comprehensive protection of the built heritage, globally designed prefabricated buildings cannot be envisioned in compact coastal villages or the Brkini and Kras regions. Neither can they be integrated in ensembles of remote hamlets in the hilly regions of Kozjak, Pohorje, Peca and Uršlja Gora. They are also misplaced if used as substitute houses in settlements along the roads in the Slovenian plains.

These buildings are useless for purposes of integration and superstructure development (continuity of identity) in our six thousand settlements. All of them have different architectural identity. All of them present fantastic integration with the landscape, their designs honestly present autochthonous materials, their layouts are adapted to daily use and lifestyles of their inhabitants (not all Slovenes live in cities!). Similarly they are useless in rehabilitating urban areas (supplementary development, extensions etc.) or for designing compact neighbourhoods in cities. According to new guidelines in urban management, compact neighbourhoods should have immense advantage over detached homes. Last, but not least, even from the aspect of aesthetics (values of beauty), prefabricated homes, at least what is presently produced and offered in Slovenia, cannot be included in demanding development of urban structures. A detached home with a modified balcony parapet, typical for rural architecture in Gorenjska (Northern part of Slovenia) cannot be built in a residential neighbourhood in Ljubljana or Koper. Moreover, because of design criteria applying to comprehensive protection of built heritage, they are also useless in sensitive rural environments.

### 3.1 Proposals for improving the state of architectural design of prefabricated homes

Very soon designers and producers of prefabricated homes (detached single family homes prevail) will have to understand and start implementing Slovenian normative provisions (laws, ratified international agreements, spatial plans and other planning documents), but also numerous domestic and foreign values. I have to mention the preparation of the new national spatial plan, in which particular settlement areas will be equipped with design criteria for settlement management. Producers and designers of prefabricated and industrially built homes, executed in large quantities, will have to adapt to these new, added measures. The hint to the producers is that these homes could be seriously considered and promoted in the development planning of cities and smaller settlements.

In the architectural design of prefabricated detached homes, visible differences between them should be enforced (not only in the aesthetic, but also functional sense). After all, one cannot neglect the position of the house, whether it will be built in the city, the suburbs or a settlement in the more or

less urbanised countryside or even a sparsely populated area. Building conditions in the described settlements are so different, that they cannot be met with several universal types of buildings. We have to seriously consider the vast differences between building conditions. For example, in cities, where innovation of all kinds is desired, demands for rational compact building are even greater. The opposite applies to settlements in sparsely populated areas, where in most cases new development has to include most if not all elements of autochthonous architecture. Since there are enough producers of prefabricated homes in Slovenia (in view of needs), division of labour could be possible, i.e. catering to needs of particular, above mentioned, areas. I have to point out once again, competition in architectural »monumentalism« between particular producers of industrial prefabricated houses, will be counterproductive.

In architectural development of prefabricated timber homes the broadest Slovenian professional public should be involved. With their knowledge they could help in developing such an industry of prefabricated or assembled architecture (even if based on a previously set programme), that will eventually diminish described environmental issues and help in co-creating high quality settlements and cultural landscape. Only a developed system adaptable to landscape, urban and architectural identity will enable the successful marketing of prefabricated homes domestically and abroad.

## 4. Conclusion

Quality environments are therefore healthy and (aesthetically) beautiful environments that can be achieved in the future only if we balance construction with natural conditions and present identities of cities, but also all smaller settlements. Guidelines, seen as measures for achieving quality are already included in the Slovenian laws and by-laws. However, in most cases they haven't been given adequate consideration or have been completely ignored. Such is the case of the timber prefabricated building industry. An illustration of the point is that most laws of other countries concerning environmental impact assessments, also demand an estimate, whether the planned development will maintain, upgrade (continuity of identity) or degrade the urban and landscape image.

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### Notes

- 1 Degradation (definition of the concept of degraded urban area): Degradation of an urban area implies the processes of loss in value and changes to layouts, buildings and objects from higher to lower states of utility (from higher to lower living quality, note: Živa Deu) (Koželj, J.: Degraded urban areas, Ljubljana 1998, pp. 15).
- 2 The visual effect of designing facades depends on the aesthetic impression, achieved by architectural composition of particular elements. In the »interdependency and harmony of all details of the language, meaning artistic form, lies the secret and simultaneous narrative force of expression of large, truly creative parts of the architectural art« (Mole, V., Art, form and style, Oblika in stil, Ljubljana 1941, pp.76).

<sup>3</sup> In order to prevent mistaken understanding by numerous representatives of the expert public, here I specially emphasise that comprehensive protection of settlement and building heritage in planning or development, doesn't imply the archaic interpretation of particular development or architectural design. Neither does it imply the protection of built structures co-creating identity in an unchangeable archaic form. The latter of course doesn't imply especially valuable urban and architectural heritage, that have after expert evaluation been granted the special status of cultural heritage, and are maintained and restored under specific conditions (Law on the protection of cultural heritage, Official bulletin, No. 7, dated 5. 2. 1999).

## Pictures

**Picture 1:** According to directives concerning protection, areas of »dispersed settlement« have no qualities. They occupy too much open spaces, traffic and communal infrastructure is irrational and expensive and often poorly executed, thus directly destroying natural resources. Because of their poorly thought out setting, layout or unprofessional use of material and poor construction, particular homes offering a high living standard are spatially irrational and wasteful (two photos).

**Picture 2:** »the logic of traditional construction, stemming from specific local conditions is in its primeval form a consequence of thorough reflection and is thus rational even today. On the contrary, almost all of new development is unimaginative and irrational in all its aspects, i.e. spatial disposition, plot organisation, organisation of modern homesteads and selection of material. We can easily establish that numerous new development isn't technologically advanced« (Koželj, J., Round table discussion: Why is authentic architecture in the Kras region disappearing, Kras magazine, April-May 1999, No. 32-33) (two photos).

**Picture 3:** At present more than half the Slovenian population (50,5 %) live in urban areas. Urban areas are the most polluted regional ecosystems and the pollution of air and water is worst. Other manifestations of urban pollution are also the pollution of soil, noise etc. (Pirc Velkavrh Anita, The environment in Slovenia in 1996, Ljubljana 1999, pp. 30).

**Picture 4:** »Professional and public estimates point out changes and growth of urban settlements are achieved at the cost of traditional urban and landscape identities« (from Pogačnik, A., Urban image is also important; Cities and urbanisation, No. 3/1999; Ljubljana 1999). From the description of conditions we can establish, that the present structure and image of settlements are created by processes following sub-urbanisation, increase of services and use of motor vehicles, as well as spontaneous market mechanisms,

**Picture 5:** According to analyses of architectural composition and applied research on particular typical architecture in Slovenian regions, we can conclude that all of them are harmonious (based on simultaneous symmetrical relations – relations of rhythm, size and proportions) and sensible (layouts adapted to work and space and their translation to the façade). All buildings whatever the material used (stone, timber or brick), disposition (on a plain or slope), size (three-, four- or multi-cellular; single- or multi-storeyed), richness of style etc., are all built according to general measures of architectural design. They are a consequence

of anthropometric ratios of the human body similar to the system of harmonious relations, developed by Le Corbusier, and relate to the basic dimensions of the human body.

**Picture 6:** Because of all its advantages, prefabricated construction should be developed into the part of the construction industry, that would be promoted as the qualitative example for development of new urban areas and other smaller settlements.

This is a task for architects, employed by developers (bad architecture, that results in poorly organised and unplanned new urban areas is in most cases a result of »self-help«, usually ignoring the provisions in a building permit). Planners (designers) of prefabricated homes put on the market, should be the first in respecting and fulfilling new guidelines of the sustainable development philosophy, even in the education of users. Their sales methods do have immense influence! Unfortunately many experts have discovered that prefabricated construction in the prevailing architectural image is and remains the development that only aggravates the chaotic image of our settlements!

**Picture 7:** Proof and stimuli that the noted guidelines can be implemented, are seen on the prefabricated building designed by architect Marjan Suša, according to principles and directives of »sustainable« development, built by the Slovenian producer of prefabricated homes Kager from Ptuj.

For literature and sources turn to page 43.

Tomaž NOVLJAN

## Underground spaces/ cybernetic spaces

Cybernetic space: mutual hallucination, experienced daily by billions of computer operators of all nations, children learning new mathematical expressions ... Graphic presentation of abstract data bases from each and every computer of humanity. Unbelievable complexity. Light streams, spreading through the non-space of intellect, swarms and managed clusters of data. The distant lights of a metropolis ...

William Gibson, Neuromancer, 1984

### 1. Introduction

In known history of human settlement and even nowadays, the term underground contains the attributes mystery, sanctity, darkness, social unacceptability, generally it is an environment unsuitable for life. Compared to the World above it can be understood with the basic duality. It resembles the relationship from Plato's understanding of rational versus irrational or the ancient Chinese philosophy of I Ching – Yin and Yang, where the earth embodies the feminine principle Yin, compared to the celestial male principle Yang (Walter, 1994).