

## **TOWARD A NEW 'READING' OF URBAN PATTERN NETWORKS**

### **INTRODUCTION**

Years after regime change in Serbia, planning practice is standing still. Because there is so much to be done, perhaps the professionals are forgetting to take one step at a time.

Paper shows pilot project done by NGO as a first step to creating quality living environment, addressed to general public in Belgrade.

The focus is on reviewing the possibilities of professional engagement in Belgrade planning practice based on contemporary theoretical approaches implemented in European cities.

### **1 RECOMMENDATION: INTERDISCIPLINARY WORK, SOLVING THE TRANSPORT AND TRAFFIC PROBLEM THROUGH INTEGRAL DEVELOPMENT POLICY**

In the context of contemporary methodological assumptions of planning in general as well as traffic and transport planning, it is necessary to analyze and evaluate the existing network from the point of view of relevance of various influences (topographic, historical, spatial conceptual and structural) on the generating of the network or parts of it. Some of the mentioned influences represent a constraining factor of managing the transport system.

The recommendations for the planning of transport, which come from the developed European countries, give priority to public transport as opposed to individual transport, the introduction of transport means that do not hinder the environment, the introduction of transit transport bypassing the city through the construction of ring routes. The idea is to lower the dependence of life in the cities from the automobile in a planned way. Finally, the possibilities offered by modern technologies and modern management systems in transport and traffic, with necessary (minimal) interventions in the physical structure and network should be used.

Toward year 2015. expected traffic growth is between 77%-170% (OECD and ECMT Studies). In the meanwhile, every regional city, as well as Belgrade, already has a very extensive traffic network and very high level of traffic consumption.

The mentioned studies identify three major components of an integral development policy: (i) the improvement of the existing practice, (ii) innovation and (iii) sustainable development. All three components are necessary in order to lower the level of automobile traffic, especially in the cities and to achieve sustainable urban development.

Following the sustainable development policy, many European cities are using the concept Tempo 30 that sums up the best practices as Livable Street, Integrated Street, Home Zone or Wonerf System in the different countries.

The Tempo 30 concept gives the framework for solving the transport and traffic problem through integral development in the relation to the use and to the environmental protection.

### **2 PROBLEMS: TRAFFIC FLOW IN BELGRADE**

The demands for the functioning of transport means on the network change when changing strategic development policy of transport in the cities. For European cities, this means the defining of a new policy that will mould urban development in such a way to make them less dependent on the automobile (this is recommended in the European Charter and the Istanbul Agenda). In the sense of this reaffirmation of the street network, various factors, which caused the creation of its concept, should be evaluated. In the case of Belgrade, this means an analysis of factors that created the concept of the network as well as of the factors influencing it today. [3]

The unfavourable concept of the traffic and transport network is determined by: (i) radial concept of the primary network that concentrates traffic and transport in the central part, (ii) incompatibility of physical and functional characteristics of street profiles, (iii) non-existent hierarchical relationships within the network, (iv) low level of traffic regulation and (v) the uncontrolled modal distribution of traffic - the mixture of various modes of traffic and the neglect of certain modes (bicycle, pedestrian).

Traffic regulation has a limited role regarding the role in coordination of modes of traffic in network and the correction of limits of the existing street network.

For the upgrading the traffic within the network as well as the conservation of the setting, the possibility of alternative use of routes achieved by the addition of rings between the radial routes was planned. This would change the radial concept of the network into the radial - ring type as a more advantageous one from the point of view of motor-vehicle traffic and transport. The upgrading of partial elements of the primary network with the goal of achieving adequate capacities and better conditions for transport and traffic is supposed to occur with the physical adaptation of street profiles to certain functions as well as the regulatory redirection of transport and traffic. This approach to the solution of the problem was used in all of the relevant studies from the General Traffic Program (1966) up to the Betras (The study of the Belgrade Transport System 2000). A similar concept was adopted in the Master Plan of Belgrade (1972) as well as in the reviewed plan in 1985, also in Master plan (2021). None of these Plans was ever realized.

A specific problem in the central city zone is the parking of vehicles. Stationary traffic, especially at peak hours, produces well known negative effects: noise, vibration, air and soil pollution, visual degradation, territorial occupation, to sum it up: no quality living/working environment. These problems are most present in the central zone as well as at high streets approaching the centre. Because of the fact of high percentage of residential area in the centre, the need for reconstructing the traffic flow in the network is set as priority demand.

### **3 PROJECT: HOW TO IMPROVE EXISTING PLANNING PRACTICE?**

#### **3.1 GOALS**

##### **GOAL 1.** Create healthy environment, reduce pollutant emission

Reaching high standards of livable environment is possible by acting in the framework of traffic control. Transport requires new development or reorganization to help create places that connect with each other sustainably. Aim is to provide the right conditions to encourage walking, cycling and the use of public transport and overall to 'focus' people in front of traffic. Reorganization of the ways of using traffic networks in accordance to principles of sustainable development, could contribute to solving problems with traffic in central city zone. Proposed actions include: (i) establishing limited traffic zones, (ii) separating bicycle lanes, (iii) creating new and widening existing 'pedestrian islands', etc.

##### **GOAL 2.** Create livable public space

Creating livable public space that celebrates characteristics of every different street or square in order to raise attractiveness of public realm, ease of movement and ease of understanding.

Public space should be a social arena, a place for meeting, relaxation and recreation and in the same time significant way of communication for the residents.

Promoting various elements of the street scene could contribute to the identity of the place, including sculpture, lighting, railings, litterbins, paving, hard landscape, seating, bollards, kiosks, cycle racks, signage and water features.

Proposed actions include: (i) alternative ways of using existing network of public spaces by emphasizing social and cultural function of the street, (ii) improving existing spaces by creative designing.

### **3.2 IMPROVING EXISTING PLANNING PRACTICE, NEW NETWORK CONCEPT**

Reaching the Goals is possible with (i) new categorization of street network in central city zone and (ii) alternative traffic regime. Proposal is based on concept of keeping existing physical characteristics of the network (street profiles) and changing functional characteristics.

Theoretical approach followed, when dealing with new categorization of street network, includes (i) widening existing pedestrian zone, (ii) establishing Tempo 50 zone and (ii) Tempo 30 zone or residential street network.

New network concept defines street space shared by all participants in traffic: pedestrians, motor vehicles, public transport, bicycles. All of the modes of traffic are fitted in existing physical characteristics of street profiles [10].

#### ***WHY PEDESTRIAN ZONE?***

After modernist interpretation of the street as highway (just for moving from point A to point B), postmodernism introduced the street as multifunctional space and a place for living used for other ways of communication beside vehicles [8].

In the central city zone, 90% of all traffic is pedestrian. Because of the mentioned negative effects of motor traffic, central city zone gained status of car free or Pedestrian zone.

After researching on function of pedestrian traffic there was a suggestion for hierarchical network of pedestrian paths according to concept of controlled and balanced integration of all modes of traffic. Residential or access streets (Tempo 30 Zone) are used as gathering paths for pedestrian and motor traffic (without differentiation of side- and motorways) while high street (Tempo 50 Zone) are providing undisturbed and safe pedestrian traffic on sideways separate from motorways.

Pedestrian Street in the city centre strictly for pedestrians (with the exception of occasional goods delivery) boasts a high degree of communicativeness and space usability.

It has many purposes, demanding both short-term and long-term flexibility and offers a possibility of a wide range of activities and uses in the future. People, occasional vehicles and goods delivery (very often conflicting) unfold in the pedestrian street as well as activities defined by a purpose of the facility in the zone of contact between exterior and the interior, especially those on ground floors. The basic purpose is access to different facilities, differently motivated stopping, contacts, relation, fun and games. Different user's potential (degree of mobility, wishes) and time (season and climate) require that the space be flexible and able to be transformed.

Methodology of planning and designing pedestrian streets as a part of entire traffic and transport system includes [1]:

- (i) establishing areas for pedestrian communication - zones and contact places where exchanging different transport modes and
- (ii) traffic and transport plan based on concept of optimizing all modes of traffic through controlling and managing.

#### ***TEMPO 50 ZONE***

Transit streets or high traffic streets with maximum allowed speed 50 km/h are passing through or next to residential zones allowing functioning of the traffic flow for regional and inner city traffic. The network of the high streets defines city Tempo 50 Zone.

The entire city street network is divided into residential or Tempo 30 zone.

### TEMPO 30 ZONE OR STREETS IN HOME ZONE, WHAT IS HOME ZONE?

Home Zones [2] are residential streets where the street space is shared between drivers of motor vehicles and other users including people walking and cycling and children. The aim is to change the way the streets are used and to improve the quality of life in residential streets by creating them as places for people not only for motor traffic.

Home zone is based on concept of changed perception of the street by its users. Drivers of motor vehicles should feel entering the pedestrian environment where people are using the whole street.

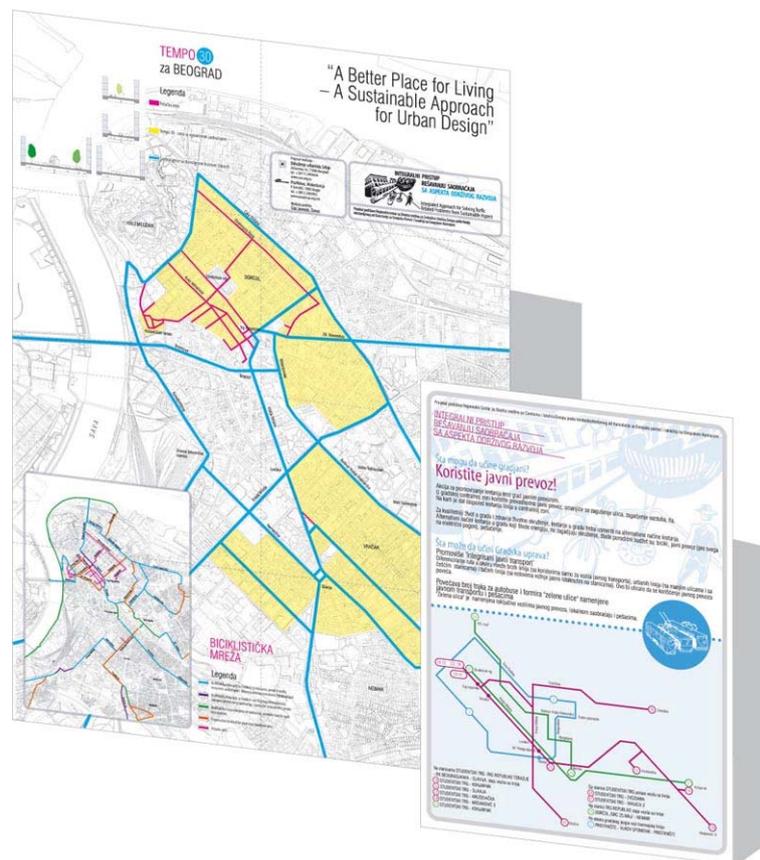


Figure 1. City map showing proposed Tempo 30 Zone for Belgrade with explanation and showcases on back, Figure 2. Flyer used in Project encouraging using public transport with printed timetables and routes (both by authors)

Essential benefit of introducing the Home Zones is that it defines a residential street as valuable public space and not just a place for movement.

Introducing Home Zones contributes to road safety. Special signing is planned to mark the limits of the area.

Successful introducing of Home Zones could also:

- (i) reduce the dominance of car in residential areas,
- (ii) encourage a sense of community,
- (iii) encourage diversity of activities and use of streets by residents,
- (iv) reduce traffic speed significantly to under 20km/h,
- (v) encourage walking and cycling within the neighbourhood and
- (vi) improve the quality of built environment.

Home Zone is not a car-free or anti-car but does offer effective way of reducing car use with all its negative effects in residential areas.

### **EXISTING AND NEW HOME ZONE STREETS**

There are two categories: (i) remodelling of existing streets ('retrofit' schemes) or (ii) designing as integral part of new housing projects - 'new build' schemes.

There are important differences between two categories in away they are conceived, designed and realized.

In the existing streets, involving the community in planning and design process is essential. This would ensure that the streets reflect local resident's needs and aspirations.

Home Zone streets in new developments is planned and designed by developers and rarely consulted with the future residents. It is the responsibility of local planning authorities to consider if the space will meet needs of the community.

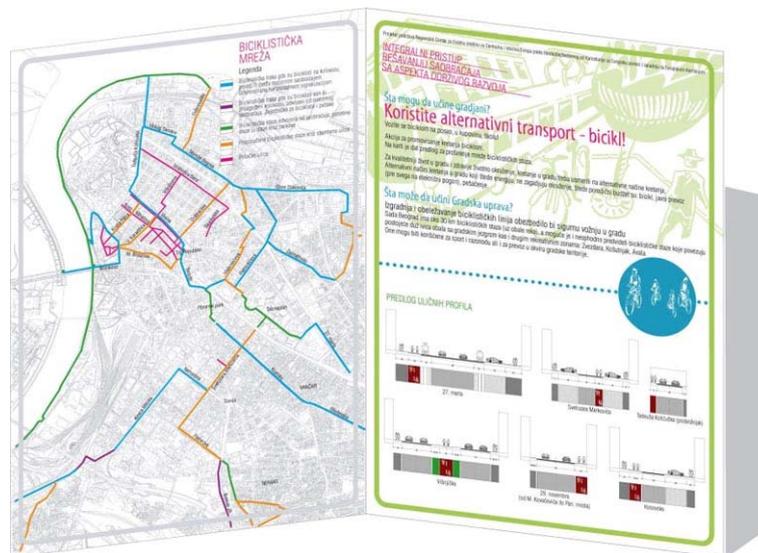


Figure 3. Flyer used in Project encouraging alternative ways of transport – use of bicycle (by authors)

### **LEGAL FRAMEWORK**

Experiences of many European countries that practice concept of Tempo 30 and/or Home Zone for a couple of past decades show that is necessary to codify and sanction behaviour of users in these Zones. Appropriate Legislative must support introducing and delivering of planned Zones.

Belgrade planning practice has the experience in pedestrian streets/zones in small area of city centre. Attempts to introduce concept of integrated streets have been dismissed several times in the final phase of planning development as unfamiliar to local planning practice. The other reasons are non-existing legal framework in the area of expertise and divided jurisdiction between local authorities.

### **3.3 WORKING ON PROJECT**

Work on project falls into four different phases [10]:

- (i) definition of the problem (air pollution, noise, vibration, air and soil pollution, occupation of territory - territorialization),
- (ii) definition of the potentials (living a new 'Sustainable' style of life, using Alternative ways of transport and saving energy),
- (iii) definition of the recommendations (Toward a new 'reading' of urban pattern networks researching Tempo 30 Zone and Home Zones), and
- (iv) disseminating materials (including flyers and brochures: What citizens can do? What government could do? What professionals are doing: projects, campaigns, realizations...)

The 'Pilot Project' was addressed for educational purposes of general public in the city of Belgrade.

#### **4 CRITICAL VIEW: CHALLENGES FOR THE PLANNING PROFESSION, URBAN PLANNING IN BELGRADE**

In semiological interpretation, the context gives the right meaning to the subject. In the attempt to answer the ongoing questions in the planning practice, the review of the local planning practice is needed. The other part of the answer is the presented project.

Urban planning in Serbia was late to come in comparison to other European experiences in planning [3]. This lag applies to modern methodological assumptions as well. The implementation of the plans is poor for various reasons in different time frames. Above all this is a consequence of an underdeveloped methodology and unrealistic planning, a prolonged period for procedures, which lasts for several years. During the last decade, the process of transition and which is reflected in all domains including urban planning.

Transport and traffic planning as a special domain in urban planning was even later in arriving (in 1973 American planners helped in drawing up the traffic and transport plan for the Master plan of Belgrade due to the underdeveloped planning methodology) passing through the same phases.

In the post-war decades, the institutions for urban and regional planning were a state instrument in the planning domain. In later years, planning became an integral part of social and general development.

Towards the end of the seventies and the beginning of the eighties, the first signs of a crisis appear along with the slow abandonment of the planning models used up to then. The discrepancy between the planned and achieved, the receding of the spatial processes in relation to the planned as well as institutional control resulted in the conflict between urban development and an elaborate, abstract planning methodology codified and controlled through urban legal aspects.

As the direction of planning did not consider economic and financial aspects, a complete 'financial collapse' was on the horizon as a consequence of this type of urban organization and planning [3].

The historical and socio-political events, which occurred during the nineties, gave impetus to the nonstrategic chaotic development of the city. The problems faced by the state - its disintegration and reorganization, the war in the territories of the former republics and an enormous number of refugees (300 000 in Belgrade alone); the process of socio-political and economic transition, have completely pushed aside the concern for the development of the city.

A phase of change and identity loss of the city was entered. Belgrade, once the centre of a state of 25 million people, is today the centre of a state of 10 million inhabitants.

In practice 'the principle - build wherever there is a free space' is the only strategic 'principle' of today's urbanization of Belgrade. This brings up the question of professional ethics on the one hand, and the impotence of those who abide by a professional moral code, but are unable to change the situation.

Drastic examples of construction occupying the inside of the internal ring of a traffic route, the occupation of the corridor for broadening railway traffic, 'illegal garbage dumps' that threaten to block traffic, as well as the fencing off of certain traffic routes and their use for other purposes - (space for street selling, outdoor restaurant tables) abound. These objects in due time become 'closed', 'covered' and finally a part of the main building. The phenomena of fencing off part of the traffic routes for parking purposes can also be noted.

The problems, which are now becoming apparent, are the lack of free and green spaces, infrastructure overburdening, garbage collection problems and a lack of parking space.

The need of investor to build (residential or business buildings) and existing (partially) unplanned physical structure are the context and the reality that urbanists/planners of Belgrade are facing.

The new opportunities for planning enterprise need guidance through developing strategic planning and integral solving of transport and traffic problem.

#### **4.1 UP-TO-DATE PLANNING FRAMEWORK – MASTER PLAN FOR THE YEAR 2021**

Experts started working on Master plan for Belgrade for the year 2021, alongside with new Urban planning Legislative since year 2000. The Legislative, finished on May 2003, was prepared in intolerant and unsynchronized atmosphere, without taking into the consideration the opinions of broad public but based on various not coherent expert opinions from numerous institutions. The same institutions used to be in charge for spatial and urban planning covering entire Republic territory, in the period before the Legislative [7].

Both Legislative and Master plan prepared flexible framework for the interpretation of the existing planning practice. For example:

- (i) introduced process of recognizing the buildings built without a license, mainly in the last decade, the so-called 'legalization of illegal buildings'
- (ii) Claimed not valid all the plans that were designed in previous period, as well as the obligation for designing new plans for the entire Republic territory, within short deadline of 18 months
- (iii) introduced valorisation of the existing plans of all cities and regions, within short deadline of 4 months
- (iv) granting continuity in building construction during transitional period of designing new plans, based on temporary rules of construction that is often misused in practice for the accepted old valorised plans and there where are no plans

The plan itself defines 'flexible' use of space and welcomes change in the use upon investors demand. This is the complete opposite from the planning practice in the second half of the 20th century that strictly defined planned, normative use of space, financially supported by the State.

Theoretically, it gives the opportunity for modelling space upon direct demands with the control and engagement of the professionals. The lack of professional control opens up the possibility for unplanned and speculative development of the city suiting the investor's demands.

In these conditions defined by neoliberal capitalism, planning and construction is determined by free market - offer and demand. In the new transitional processes restrictive mechanisms that should reflect on creating and protecting public space and public interest, are not yet articulated in a way to contribute to a greater picture of the city development.

Could this be an economical framework for the creative space?

#### **4.2 UP-TO-DATE PLANNING FRAMEWORK – REDESIGNING STREET NETWORK; EXAMPLE OF THREE CENTRAL CITY STREETS IN RESIDENTIAL AREA**

A specific problem in the central city zone is the parking of vehicles. Parking, especially at peak hours, produces well-known negative effects: noise, vibration, air and soil pollution, visual degradation, territorial occupation, to sum it up, not quality living/working environment. These problems are present in the central zone as well as at high streets approaching the centre. Because of the fact of high percentage of residential area in the centre, the need for reconstructing the traffic flow in the network is set as priority demand.

### **INITIATIVE?**

One of the first examples of redesigning a one-way residential street was carried out on fall of year 2001. (Kralja Milutina Street, no 47-59). Redesign followed few months of infrastructure work on replacing sewer and water supply systems. Design was not planned but constructed on-site, nevertheless it was significant step for the residents to use the footways. Because of the lack of restrictive Legislative and marked parking lots, the footways were completely occupied by automobiles. It took a while for the residents to learn to use the footways again for the pedestrian communication.

In the office of the local city authorities redesigning a part of this street was recognized as a positive practice toward designing public space, so the street was opened with a small ceremony.



Figure 4. Kralja Milutina Street, reorganized right angle parking (by authors)

Design characteristic: existing lighting and planting, no paving materials on footway, a strip of block paved drainage canal on both sides of motorway

Effects: Moderate traffic calming with reduced road width and narrow entrance, separation of foot- and motorway by reorganized right angle parking and raised footways

### **INITIATIVE!**

Kralja Milana street was redesigned on spring, year 2002. It was an example of first major initiative for improving quality of public space by redesigning street profile. New street plan was designed without public or professional involvement (there was no public competition), but created by architect, introduced an attractive pavement with elements of street design.

Establishing clear pedestrian paths on high raised footways boasts a high degree of communicativeness and space usability. Remodelling of transversal residential streets along the back of this direction was started, as well as the building of public garage that should partly solve the problem of parking in the zone.

Design characteristic: existing lighting, new planting, new signing, colored brickwork paved footway with relief strip for blind

Effects: High-density traffic with increased width of road, separation of foot- and motorway by raised footways and excluded parking.

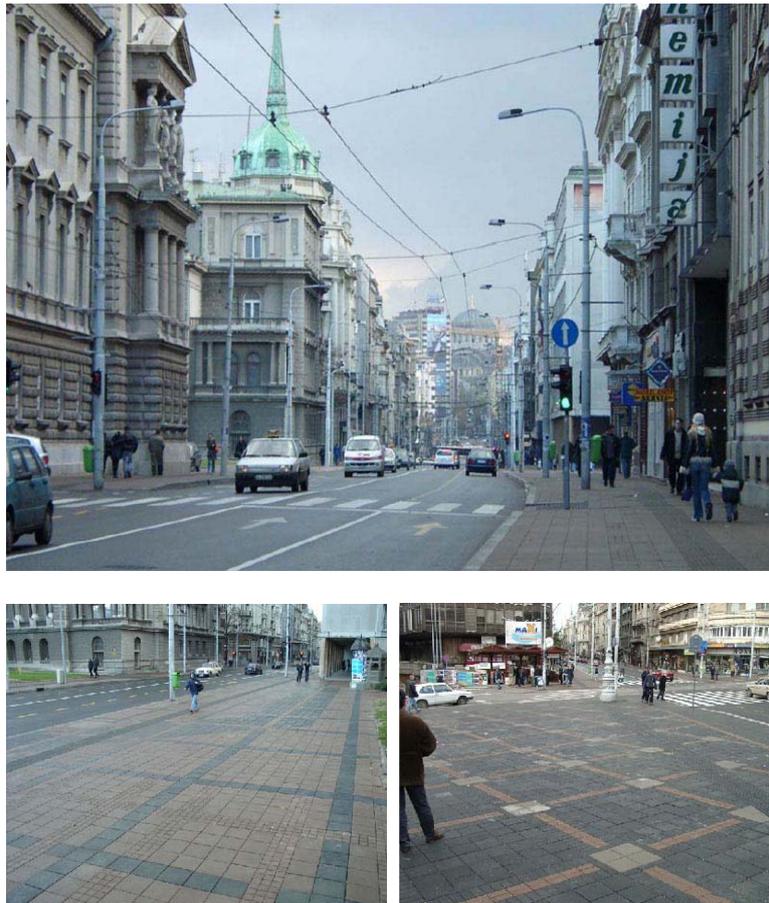


Figure 5. Kralja Milana Street, colored paved footway (by D.Bazik)

### **PLANNED DEVELOPMENT?**

Njegoševa Street was redesigned on spring, year 2003. Redesigning was also connected with major infrastructure work on introducing remote heating system in the area. New street profile was designed at Urban Planning Institute of Belgrade meeting needs of users: pedestrian footways and enough parking spaces that was an evident problem. In the process of construction Developing company 'Beograd-put' made on-site changes downsizing the number of existing parking space to half (introducing parallel instead of right angle parking) and over sizing the footways with no planting. The redesign resulted in making a priority parking problem and attracting commercial and business use (at existing and new building development) in an all-residential area.

Design characteristic: existing lighting and planting, colored brickwork paved footway, a strip of block paved drainage canal on both sides of motorway

Effects: Moderate traffic calming with reduced road width and narrow entrances, separation of foot- and motorway by reorganized parallel parking and raised footways.

Ongoing work on redesigning the street space is, after four years, continued at another part of one-way street Kralja Milutina, no 1-27. Redesign did not follow any infrastructure work, it is without planned design and delivered by the same Developing Company working in entire city 'Beograd-put'. Still a couple of new design details can be noticed. The workers are carrying out the construction with paying attention to detail such as block paved entrances to private houses or curved bank around the grassed area and street planting. These intuitive aesthetical effects on street design details without proper planning only push problem of traffic into the surrounding area without contributing to the quality improvement of the living environment.



Figure 6. Kralja Milutina Street, reorganized parallel parking (by authors)

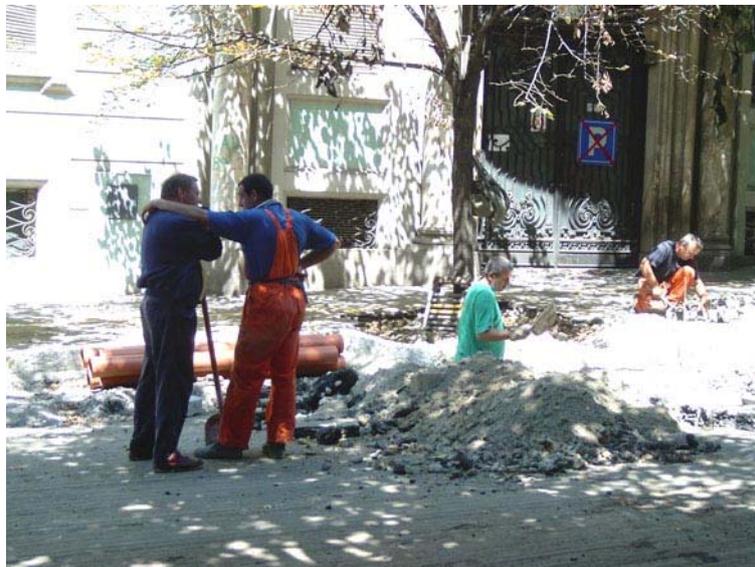


Figure 7. Kralja Milutina Street, on-site designing (by authors)

Design characteristic: existing lighting and planting, no paving materials on footway, a strip of block paved drainage canal on both sides of motorway, block paved entrance paths to private houses.

Effects: Moderate traffic calming with reduced road width and narrow entrance, separation of foot- and motorway by reorganized right angle and parallel parking and raised footways.

## 5 QUESTIONS: ROLE OF PLANNERS IN DEVELOPING CITIES

The questions that planners in Serbia are facing and trying to find answers are:

Who are the designers, planners of the space and through what mechanisms these processes are undergoing? In what extent could legal framework contribute?

In what extent could professional knowledge contribute? What is the responsibility of the authorities that conducts the plans? In what extent do the private investors influence planning process and its realization? Finally, what is the role of users?

## REFERENCES

- [1] Bogdanović, Ružica (2003) *Improving Design in the Streets of the Central City Zone, Urban Regeneration and Urban Design*, Proceedings of International 14th Urban Design and Implementations Symposium, MSÜ, Istanbul
- [2] *Home Zone, Design Guidelines* (2002) The Institute of Highway Incorporated Engineers
- [3] Bogdanović, Ružica & Petrović, Jelica & Gajić, Ranka (1998) *How to improve traffic in a compact city model: the case of Belgrade*, Conference Proceedings, 4<sup>th</sup> International Conference on Urban Transport and the Environment for the 21<sup>st</sup> century, Wessex Institute of technology, Lisboa, Portugal
- [4] *Urban design in the planning system: Towards better practice*, Ed Tomas Telford, CABE, London
- [5] *Paving the way; How we achieve clean, safe and attractive streets* (2002) Ed Tomas Telford, CABE, London
- [6] *From Design Policy to Design Quality, the Treatment of Design in Community Strategies, Local Development Frameworks and Action Plans* (2002) Ed Tomas Telford, London
- [7] Grozdanić, Milica (2005) *A Critical Analysis of particular Legislative concerning Planning and Building and their Implementation in Urban Planning Procedure*, Conference Proceedings, Planning cities and Region, STPA, Belgrade
- [8] Fyfe, Nicholas (1998) *Images of the streets, Planning, identity and control in public space*, Ed by Routledge and Taylor & Francis Group
- [9] Bogdanović, Ružica (1997) *Street - A Communicative Artifact*, Second International Interdisciplinary Symposium, Streets Places Like Space Of Spectacles, Yustat, Belgrade
- [10] *Integrated Approach for Solving Traffic Problems from Sustainable Transport* (2005) Promotional material, Belgrade