

Theory and Practice of “Intelligent Urbanism”

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ABSTRACT. Today it is not a secret that urban development is spontaneous and irrelevant process leading to a number of problems that can be irreversible and result in the loss of individuality of historic towns. To avoid these problems, it is necessary to study, share and adjust the modern international experience to our needs. Intelligence Urbanism (Principles of Intelligent *Urbanism* (PIU) is one of the most important theory among the modern theories of urban development, which has been developed from city planning guidelines, and has been established by the International Congress of Modern Architecture (CIAM). The theory consists of 10 guidelines that are developed at the Harvard University Graduate School of Design under the leadership of *Josep Lluís Sert*. The theory was finalized by Christopher Charles Benninger and his colleagues in so-called Asian context. They have established architectural school at Ahmadabad (India) University, which was founded by Benninger in 1971. These principles were also implemented by Benninger in the planning of the new capital of Bhutan, Thimphu. The report covers theoretical and practical aspects of this theory, which we believe can be considered as guidelines when developing the urban plans of our cities. © 2018 Bull. Georg. Natl. Acad. Sci.

Key Words: Urban development, sustainability, architecture, conservation, cultural heritage.

Today, it is no secret that urban development of our city is being undertaken in a spontaneous and irrational way, thus creating the multitude of problems which may become irreversible and lead to loss of the characteristic nature and identity of the historical cities. Prevention of this problem requires scrutiny of the modern international experience, realization and adjustment thereof to our needs.

Urban development planning in the developed cities till 1960 counts the long history in terms of the effective ideas for development of the small and large cities and regions. It was the time when the

urbanists and politicians were penetrated with the "great ideas", followed by the era of "garden city movement", "new urbanism" and other movements. Since 1987, higher attention was attached to concepts of sustainable development and environmentalism. It was the time when increased discussions on sustainable development revived neglected or discredited consumption that the urban development plan of the cities can be effective and wide-scale.

At present, this sphere teems with the terms, such are: "safe city", "resilient city", "future city", "smart city" etc.

Intelligent urbanism (PIU) is of the most important theories amongst the modern urban development concepts, which has been developed from the urban planning guidelines and has been formulated by the International Congresses of Modern Architecture (CIAM). This theory comprises 10 guideline principles developed by the Urban Design Department of the Harvard University headed by Josep Lluís Sert. Finally, this theory has been clearly formulated by Christopher Charles Benninger and his colleagues in so-called Asian context. They have established the Architecture School of Ahmedabad (India) University, founded by Mr. Benninger in 1971. These principles were implemented by C. Benninger within the urban development plan of the new Capital of Bhutan – Thimphu.

In the hereby paper, we examine the theoretical and practical aspects of this theory and the city of Thimphu as one of its examples, which further may serve as the guideline principles upon formulation of the urban development plans of our cities.

The key characteristic of so-called “intelligent urbanism” is communication of the urban development and management aspects of the city, solution of various needs and problems to create the harmonic and comfortable milieu for the residents in view of which, 10 guideline principles have been developed within this theory – the axioms, as urban specialists often refer. These principles are as follows:

- Balance with nature;
- Preservation of cultural heritage (conservation/restoration), balance with traditions;
- Appropriate technology;
- Conviviality;
- Efficiency, infrastructural effectiveness, effective management;
- Human scale;
- Opportunity matrix;
- Regional integration;
- Balanced movement;
- Institutional integrity.

All hereof principles are introduced in the hereby paper on the example of Bhutan.

The city of Thimphu was selected as the Capital of Bhutan in 1955 and in 1961, it was officially recognized as the Capital of Bhutan, after which the city was rapidly developed. The first urban development plan of Thimphu was developed in 1964 but was never realized. The second urban development plan was elaborated in 1986 serving the guideline up to 1990s. In 1998, the Thimphu development strategy plan has been set to elaboration according to the intelligent urbanism principles.

The preliminary studies during development of the new urban development plan revealed number of the problems in Thimphu, namely: lack of residential area and municipal amenities, traffic jams, polluted ecology, chaotic construction, destruction of the forests and green cover, flooded lands and economically fragile areas, irrational partition of the land, development with limited purpose, failed service and infrastructural provision, unplanned development, problems with public transport, utility fees etc. The authors of the plan aspired to solve all these problems. In 1998, the Cabinet of Ministers of Bhutan published the urban development management directives stating that the new plan aimed at conversion of the city of Thimphu into the dream city of all Bhutan citizens and that Thimphu would become ecologically sustainable, human-friendly city oriented to own traditions, comprising the potential of future development.

Thimphu Strategic Plan (TSP) includes 22 main topics based on 10 fundamental strategies of intelligent urbanism and balance with nature is one of the first of them.

The first principle of the intelligent urbanism implies that urbanization means the balance with nature instead of misbalance. According to this principle, intensity of utilization of the natural resources by the people and human habitation shall not exceed the amount of the resources, which

nature will be on annual basis able to replenish season over season.

This first principle of the intelligent urbanism emphasizes the edge, beyond which urban development entails misbalance with nature. What does misbalance stand for? It implies reduction and destruction of green cover, land erosion, destruction of subterranean waters, frequent floods, damaged and destructed ecosystem, landslides etc.

We shall find and adhere to the edge, beyond which the habitat is destructed not only for flora and fauna but for the habitats as well.

This principle, first of all, implies environmental assessment, identification of fragile (easily damageable) zones, identification and detection of the threats to the ecosystem. After all these studies, the identified problems may be solved through:

Conservation (maintenance of the natural zones untouched upon reclamation);

Density control (i.e. density of the populace to be kept within the intelligent scale);

Land use planning;

Open space design.

The Thimphu development plan clearly formulates the capacity for urban development and restrictions as well; the plan provides the assessments and estimated alternatives. The proposals in the plan conclude creation of the environmental improvement zones through creation of the open national area system. Natural environmental zones and open space system imply maintenance of the available green cover and creation of new recreational zones; as well as discharge of the greatest part of the city (historical center mostly) from the highways and arrangement of the pedestrian paths, streets, so-called ladder-roads and bridges. 2017.

The Second principle envisages preservation of cultural heritage (conservation/restoration). This urban planning principle requires respect to the historical and cultural heritage and traditional values. This principle shall ensure “balance with

the tradition” of constantly emerging novelties in the modern city; the novelties shall not “absorb” and “swallow” the traditional iconographic signs of culture, symbols forms or life pattern; it shall ensure maintenance of the generic knowledge system of the traditional culture(s) and simplified organic inclusion thereof into the “spatial structure of urban parameters”.

Balance with tradition means not only maintenance of the certain architectural monuments, their conservation/restoration but maintenance of the unique artistic visuals of the historically generated urban spaces so characteristic for the traditional spatial structures and certain cultures; as well as maintenance of the artistic dominants and emphasizes within this area. Briefly speaking, the entire environment shall be preserved according to this principle, within which the local residents hold the historically generated lifestyle unchanged. [1]

Thimphu development plan completely covers hereof issues. The structural plan identifies the monuments of the cultural heritage requiring restoration, conservation, and improvement of access thereto. The plan particularly emphasizes the religious and historical educational centers in Bhutan, such are Tashichho Dzong (means the “fortress of auspicious doctrine”), [2]

Simtokha Dzong (means the “Palace of the Profound Meaning of Secret Mantras”), “Prayer wheel”, Memorial Chorten, as well as Thimphu adjacent villages. The access road routes have been as well developed. One of the structural aspects of the plan envisages creation of the road system (urban corridor, arterial roads, connecting roads and pedestrian networks) to ensure easy access of the visitors to the sites and interconnection of the monuments.

It is paramount that the specifications, lifestyle, and activity of the local residents of up to 20 districts of Thimphu have been preliminarily studied. All these parameters have been exposed to the detailed analysis to create the non-discrete, so-

called "mixed-use districts" unlike the Western discrete, so-called "grey districts", envisaging the essence of the Bhutan essence of life – "Dharma".

The areas of these districts originally purposed for residence, religious or other domestic activities have been organically absorbed to the new industrial, commercial and retail trade areas, which was the source of the new energy for the old districts giving the new vital capacities thereto.

As to the new districts, they have been constructed according to the contemporary standards with certain restrictions on the number of the floors, with prohibition of the new constructions along the riparian line. Construction of the new premises has been admitted at the altitude of 30 m from the river level and the style of the hereof premises has been at maximal extent approximated to the Bhutan architecture, which was expressed in repetition of the characteristic structure of the roofing of the premise.

The third principle – use/selection of the appropriate, adequate, environmental-friendly technologies – concerns the building material, construction technology, local construction traditions, infrastructural systems and project management. Environmental-friendly technologies imply application of the building material, constructions, infrastructural systems and management methods, which are consistent with the local context, i.e. all these aspects shall comply with the local conditions (situation, circumstance(s)). People's capacities, geo-climatic conditions, available on-site resources, and suitable capital investments all temper technology shall be considered. Naturally, local resource shall be preferably used and appropriation of these technologies with the outlined tasks and objectives shall be defined.

In case of Thimphu, this issue has been thoroughly scrutinized to outline the ways for adjustment of the appropriate environmental-friendly technologies to the certain needs.

The fourth principle – conviviality, which means the social aspect, comprises relations and social aspects. Any society consists of the certain social groups, which subordinate to some "social

hierarchy" and ultimately forms the social system. [3] According to the authors of the intelligent urbanism theory, the urban area of the city shall envisage the interests of all social groups and shall provide the opportunity for interaction and communication between the certain group members and various groups. The authors of the theory well realize that such relations in the modern world are displaced to the virtual area but the direct communications and relations between the people and respectively designated areas for this purpose are of particular importance not in virtual but in real milieu, considering that any urban area shall provide the structural elements, facilitating to this interaction. According to the intelligent urbanism, the strong society means interactive, social engagement and offers their members numerous opportunities for gathering and meeting one another.

According to the social structure of the society, the theory of the intelligent urbanism envisages creation of the respective areas:

For standalone individuals (for seclusion);

Friendship areas/structures/places;

Spaces and structures for the householders;

Areas for the neighborhood;

Spaces for the communities and community organizations, allowing management of the shared resources and solution of the common problems;

Areas for the city domain, public gathering areas, so-called "public spaces" – squares, parks, passages, malls etc. (Jacobs, 1993).

The Thimphu plan also defines the social service and amenities spaces providing the local residents with access to the healthcare and educational institutions.

The fifth principle – efficiency implies effective management of all the systems of the city – efficiency of infrastructure that is.

The efficiency principle facilitates the balance between consumption of energy resources and comfort for the residents. The comfort implies the aspects, such are safety, security, access, tenure,

productivity, hygiene etc. This principle facilitates to optimum sharing of public land, roads, facilities, services and infrastructural networks, reducing per household costs, while increasing affordability, productivity, access and civic viability.

A major concern of this principle is transportation and related problems: parking, detours, crossroads, traffic rules etc.

In Thimphu, efficiency has been achieved through the strategic location of urban hubs and district nodes, where high density allowed effective infrastructural services.

The sixth principle was defined by the authors of the theory as the human scale. This principle envisages people-oriented urban development and maintenance of the human scale within any urban area.

It is oriented to people, is based on anthropometry and aims at formation of the areas in the city according to the anthropometric parameters. This principle facilitates to removing the artificial barrier between the people and spaces and between the society members and promotes face-to-face contact in the city zones, such are parks, gardens, glass-covered gallerias, arcades, courtyards, street side cafes, river- and hill-side stroll ways, and a variety of semi-covered spaces.

For the comfort of the residents and to meet the major needs thereof, the social services in Thimphu are accumulated in the public transport stops, in open spaces, as well as at the work places, near public institutions or residential areas. This principle ensures inclusion of the “human dimension” to the modern urban space and thus, creation of the milieu for the residents free from mental pressure.

The seventh principle of the intelligent urbanism is one of the key principles – opportunity matrix.

This theory considers the urban plan not only the physical plan but the social and economic plan where the main emphasis is made to the opportunity system.

The city is the space for personal, social and economic development and offers various opportunities for employment, economic or social involvement, education and leisure.

The city is the economic growth engine. Moreover, cities are agglomerated places, or clusters of people, where individuals can increase their knowledge, skills and sensitivities efficiently. This principle envisions the city as a vehicle for personal, social, and [economic development], through access to a range of organizations, services, facilities and information providing a variety of opportunities for enhanced employment, economic engagement, education, and recreation. This principle aims to increase access to shelter, health care and human resources development, as well as increase safety and hygienic conditions.

The eighth principle – regional integration. Regional integration envisions the city as an organic part of a larger environmental, socio-economic and cultural-geographic system within the whole region.

According to the theory of the intelligent urbanism, the city is envisioned within the socio-economic and cultural-geographic system of the whole region as the organic part thereof, which is essential for its sustainability. Evidently, the city with its economic infrastructure (roads, hydro-power stations, irrigation channels, water reservoirs and related distribution networks, various warehouse economies etc.) is closely connected with the whole region and development of this connection shall be oriented to increase of integration of the city and the region, which will facilitate to equal development of the city and the region.

The ninth principle – so-called balanced movement. Intelligent urbanism envisages establishment of the integrated transport system comprising the paths for walking, cycling, driving, railways, subways and tunnels. According to this theory, the balance between these modal splits shall be kept. The expensive transport communications

shall be accumulated into so-called transport nodes, which are made as the public areas generating the close multi-functional districts for the pedestrians with the comfortable movement system.

The tenth principle envisages institutional integrity. According to the intelligent urbanism, all the hereof principles can be implemented in case of the competent and accountable local governance solely. The precondition necessary for effective implementation of these principles envisages the local government to operate in the strict and rational institutional scopes. The activity of the administrative bodies shall be ensured in a transparent manner and in strict adherence to the established norms and rules. The city development administrative system shall clearly define the path for development of every city and its regions with active involvement of the population. The city authorities shall develop the appropriate and effective forms for cooperation between the local population and the administration in various formats (meetings, discussions, set up of the target groups etc.). In some cases, the role of the authority shall be preferably restricted upon decision-making and higher attention shall be attached to the opinion of the population taking their needs into account. The authority shall ensure wide engagement of all actors.

According to this theory, development of the city and of the adjacent regions shall be ensured not in the spontaneous manner but according to the preliminarily elaborated structural plan, constituting the legal document communicated

with all parties concerned about the growth, development and municipal amenity of the city.

And as a conclusion, it is crystal clear that even the most insignificant decision shall be based on the wide vision of the future, the precondition necessary for formation of which according to this theory is the joint vision of the city residents and the authorities.

All these principles have been included in the urban development plan of Bhutan and are eventually implemented year over year as the city is the living growing organism with never-ending development. Thus, elaboration of the urban development plan is the eternal process.

As we see, the theory of the intelligent theory and 10 principles thereof are in full compliance with the ecology and sustainable development concepts. The intelligent urbanism principles, along with 10 fundamental strategies and 22 major themes, also provides all aspects of the modern principles of the urban development plan of the city. In every particular case, realization of these principles shall be preceded by identification of the local problems to serve the basis for development of the certain action plan to facilitate the specialists and the politicians participating in development of the city and region plans to convert the human dwelling area – the city into the comfortable and acceptable place.

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ხელოვნების ისტორია

„გონივრული ურბანიზმის“ თეორია და პრაქტიკა

ნ. ბუღაძე

აპ. ქუთათელაძის სახელობის სახელმწიფო სამხატვრო აკადემია რესტავრაციის კვლევითი ინსტიტუტი

(წარმოდგენილია აკადემიის წევრის რ. მეტრეველის მიერ)

დღეს არავისთვისაა საიდუმლო, რომ ჩვენი ქალაქების ურბანული განვითარება სპონტანურად და სრულიად გაუაზრებლად ხდება, რაც მრავალ ისეთ პრობლემას ქმნის, რომელიც შეიძლება შეუქცევადი გახდეს და ისტორიული ქალაქების სახასიათო სახისა და მათი იდენტობის დაკარგვამდე მიგვიყვანოს. ამ პრობლემის თავიდან ასაცილებლად აუცილებელია თანამედროვე საერთაშორისო გამოცდილების შესწავლა, გაზიარება და ჩვენ საჭიროებებზე მორგება. ურბანული განვითარების მრავალ თანამედროვე თეორიას შორის ერთ-ერთი მნიშვნელოვანია ე.წ. „გონივრული ურბანიზმის“ თეორია (PIU), რომელიც განვითარდა ქალაქგეგმარების გაიდლაინებიდან და რომელიც თანამედროვე არქიტექტორთა საერთაშორისო კონგრესმა (CIAM) ჩამოაყალიბა. ეს თეორია 10 სახელმძღვანელო პრინციპს მოიცავს და ისინი შემუშავებულია ჰარვარდის უნივერსიტეტის ურბანული დიზაინის დეპარტამენტის მიერ ხოსე ლუის სერტის ხელმძღვანელობით. საბოლოოდ კი ეს თეორია მკაფიოდ ჩამოაყალიბდა კრისტოფერ ჩარლზ ბენინგერის და მისი რამდენიმე კოლეგის მიერ ე.წ. აზიურ კონტექსტში. მათ ჩამოაყალიბეს ქ. აჰმედაბადის (ინდოეთი) უნივერსიტეტის არქიტექტურული სკოლა, რომელიც ბენინგერმა 1971 წელს დაარსა. ეს პრინციპები ბენინგერმა პრაქტიკულად განახორციელა ბუტანის ახალი დედაქალაქის ტიმფუს დაგეგმარებისას.

მოხსენებაში ჩვენ განვიხილავთ ამ თეორიის თეორიულ და პრაქტიკულ ასპექტებს, რაც შემდგომში, ჩვენი ქალაქების ურბანული განვითარების სამომავლო გეგმების ჩამოყალიბებისას, ვფიქრობთ, სახელმძღვანელო პრინციპებად გამოდგება.

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