

# THE DEFINITION OF URBAN HABITAT AS SAFETY TOOL AGAINST GLOBAL RISK

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## Abstract

The objectives of this research are: 1) Implementation of a strategic management of protection against global risk by developing the concept of safety-bearer habitat as the support space, which presents a high risk-security level, meaning that it is not liable to be destroyed, as well as the space endowed with patrimonial values that create and identify individuals' feeling of belonging to a community and the social sentiment of the being and 2) Formation of a poly-nuclear system of special safety centers, able to relocate in the post-disaster stage the affected population, named emergency habitat support system able to generate post-disaster reconstruction.

The results of this research is the implementation of a strategic system for global risk protection through the development of the concept of secure habitat, which has to involve the entire society, authorities, legal and physical persons in implementing a multilevel safety system involving: the building - object; vicinity - building assembly; town and territory.

The methodology employed is 1) investigation and mapping of the characteristics specific for hazard of the location, the exposed risk elements, their vulnerability and the resulted risk (direct and indirect loss), as well as establishing the accepted risk and 2) the identification of the secure habitat typology with patrimonial identity for urban development and post-disaster reconstruction.

The project is proposing the scientific substantiation of some management operations for the reduction of disaster risk of the built space and the space under post-disaster reconstruction with keeping the continuity and specificity of the urban habitat, in order for the feeling of civic affiliation to be preserved.

*Keywords: safety; patrimonial habitat; post-disaster reconstruction*

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## THE CONSTRUCTED ENVIRONMENT AND THE SUSTAINABLE DEVELOPMENT CONCEPT

### ***Bucharest – a capital exposed to earthquake***

Bucharest – capital of Romania is one of the European towns exposed to earthquakes. With an area of 228 km<sup>2</sup> and a population of 2,021,000 people, a great density in the central area, high buildings built between the 2 world wars, Bucharest had during the earthquake from March 1977 over 1500 dead and damages of over \$ 1,000,000. In this context, the efforts of the specialists and central administrative authorities are focused on the implementation of a risk reduction management regarding disasters, by direct methods – consolidation, as well as by indirect methods – of legal type, for developing and urban strategy.

Determination of the type of habitat necessary to solve a post-disaster residential crisis is made on the basis of a complex investigation, based on criteria of urban sociology statistics, which will determine: estimation of demographic growth, structure of population by groups of age, family structure by sexes, family structure by occupations, social and religious affiliation, economic context, local and national specificity, traditions of geo conformation – climatic, ethnical, religious.

The intervention in the calamity-stricken areas must assure the population a climate of security of life, renewal and stimulation of the economy and increase of the habitat quality and implicitly of the quality of life by restructuring. Reconstruction of the patrimonial reference marks, identification of the identity spatial strategies generating psychosocial security by reference to the “mental map” memory.

### ***Risk management by the fundamental principal of durable development***

Entitled suggestively „Our common future”, the BRUNTLAND Report described very clearly and for the first time the process of the environment degradation, both on a local -regional level and on a global level, in close connection with the economic development, underlining at the same time the systematic transfer of certain degradations on to the future generations, substantiating the concept of durable development.

The definition of durable development is followed, in the Brundtland Report by its explanation through two integrated notions:

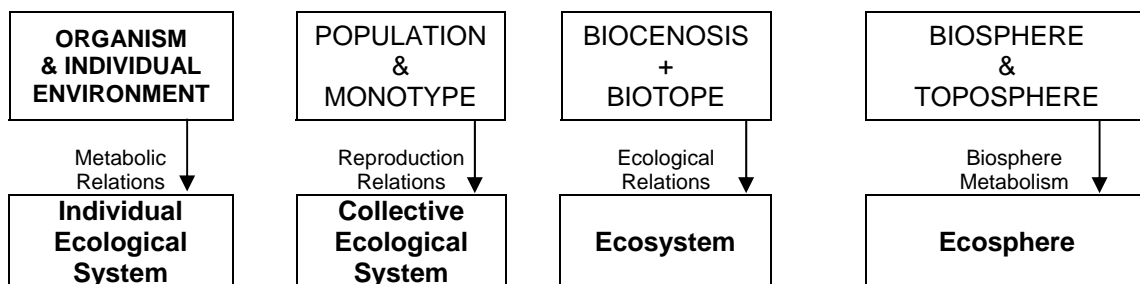
- the concept of need - in particular the essential needs of the least favored who need to have priority;
- the concept of limits, imposed by the current state of technology and social organization over the ability of the environment to respond to our current and future needs.

The ***six components of sustainability*** are respected in order of:

- maintain and enhance quality of life
- enhance economic vitality
- ensure social and intergenerational equity
- maintain and enhance environmental quality
- incorporate disaster resilience and mitigation into actions and decisions
- use a consensus-building, participatory process when making decisions.

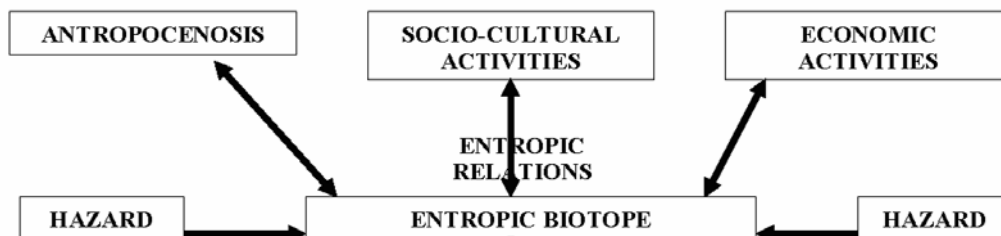
One of the principles on which the concept of durable development based is the principle of the eco-systemic approach, which derives from the ecologist vision of environment protection. According to its definition, the ecosystem is „ the aggregate of the physical, chemical and biological conditions that the life of an animal or vegetal species depends on”. An ecosystem is a living dynamic organism, characterized by a circulation of fluxes in the interior or between the interior and the exterior of the system, to which the system adapts itself through its own forces, changing its characteristics and thus evolving. The ecosystem consists of two major components – the living as an individual, populations, biocenosis (biomass) and the non-living – the environment, the support space of the living. The ecosystem-based approach within the framework of the durable development supposes, on the one hand, that we should understand the environment that we must respect it by understanding its constituting ecosystems and on the other hand, that we should understand other non/natural systems by assimilating them as ecosystems. The constructed existential space, given by the relation between the support environments (defined as habitat), where the individual lives, the collectivity defined as antropocenosis, are forming the architectural ecosystem – urban ecosystem.

### Organization of the ecological system



**Fig. 1.** Biological System + Environment = Ecological System  
(Gociman, 1999a)

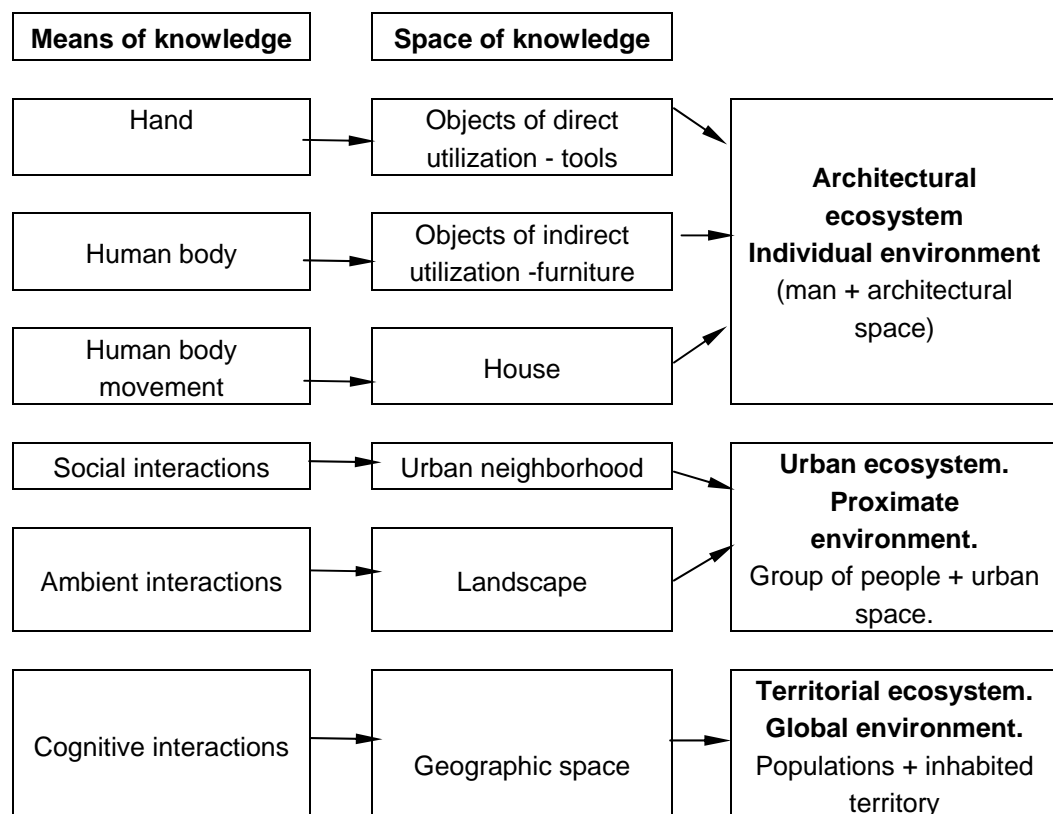
**The Ecosystemic Disasters** are defined by the introduction of turbulences or strong aggressions in and around the biotope provoking changes, which in turn destroy the ecosystem's equilibrium, forming an entropic ecosystem.



**Fig. 2.** Entropic ecosystem - Specific concepts for risk management  
(Gociman, 1999b)

## THE ARCHITECTURAL ECOSYSTEM – A CONSTRUCTED EXISTENTIAL SPACE

In his book „Existence, Space & Architecture” C. Norberg-Schulz decodes the hierarchy of the existential space levels as reported to man and to his actions. This structure points out people’s specific operating scenes, created through the interaction with the existing architectural space and it also illustrates the cognitive theory of space. The six levels of the existential space decoded by the author can be identified by three environments recognized by the population of a certain place and develops on their own territory: the individual, the proximal and the global environments which are in direct interaction with the architectural space as constructed existential space.



**Fig.3.** Organization of the architectural – urban ecosystem (Gociman, 2006a)

This perception of the space organization establishes a hierarchy of the relationship of the individual - collectivity (the anthropogenesis) with the environment (the biotope), fact that creates behavioral reference points that are fundamentally necessary to reconstruct in case a disaster occurs.

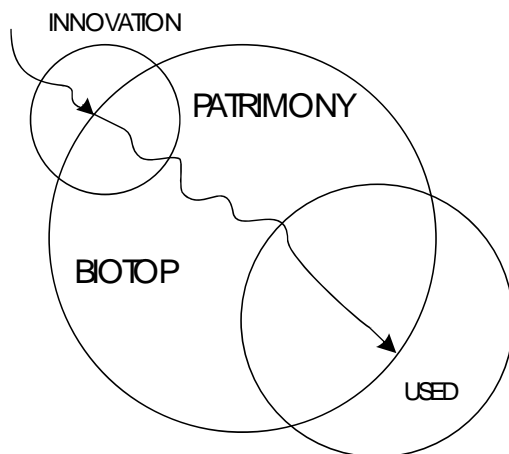
## HABITAT – SUPPORT SPACE

The habitat is a special-functional network in which the dwelling as a basic structure coexists with the complementary public structures, commercial, educational, health and leisure facilities. The configuration of the habitat is an expression of the geo-climatic, social-political and religious determinations of each community as a result

of its organic development. This characteristic forms a historical as well as a cultural dimension of the community. ***The brutal destruction of the habitat as a result of natural or anthropical disasters represents one of the major losses of a collectivity.***

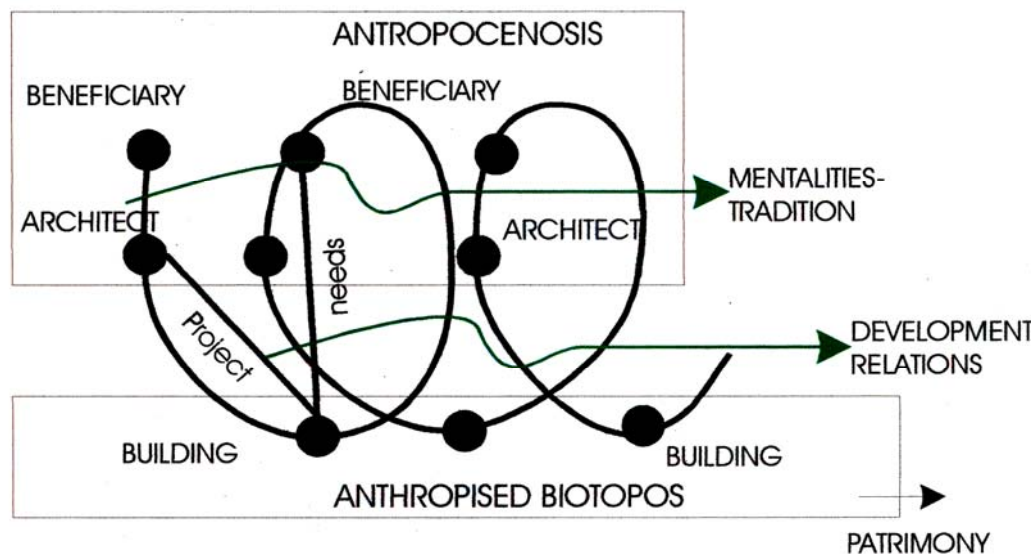
### ***The patrimonial habitat***

The patrimonial habitat is finite from a spatial point of view – by accumulation in the territory, but infinite from a temporal point of view, by continuous selection during the evolution of the collectivity, with certain specificity, expressing an energetic balance between tradition and innovation. This mobility and power to adapt itself enable it to assimilate in the contemporary world the true values, describing a mode of functioning specific to the living organism – self-adjustment.



The evolution of the urban ecosystem both on the level of the needs as well as on the level of responses creates the premise of a transgression of essences, able to open and to incorporate any manifest gesture as a fiction of a future tradition. The assimilation, the sedimentation of constructed gesture will create a conservative definition of the space, which will interact with the future act of construction, with the resistance of the “tradition”. The impulse generated by the couple architect-beneficiary and the response of the biotope (natural environment,

architectural environment) will form a biunique relationship – one of self-adjustment. Analyzing the result of this interaction, we find at the level of the biotope an accumulative sedimentation, the one keeping with the patrimony, and at the level of the anthropogenesis an essentialization of mentality – conceptualizing the identity and the tradition.



**Fig. 4.** Evolution of the urban patrimonial ecosystem (Gociman, 2006b)

### ***The habitat – reference point***

After the destructions caused by World War II, starting from the existing problem of city reconstruction, the architect Kevin Lynch set on to demonstrate that existential and architectural space as imagined by humans are the result of a mental process by which the exterior world is perceived. According to Lynch, this image is the result both of immediate sensations and of the memory of past experience.

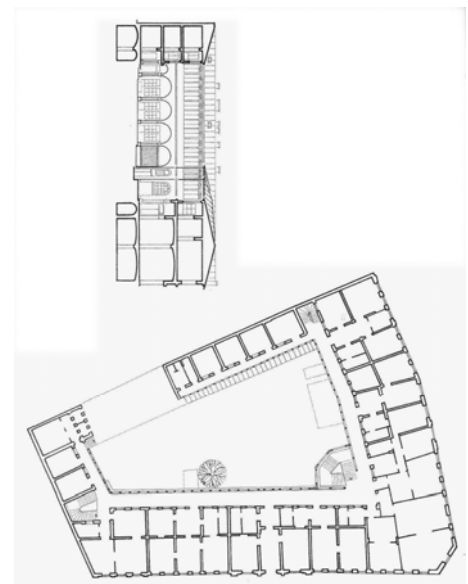
In his study "Toward an Architectural Design Epistemology Regard as a Place Creation Activity" - John Muntanola Thornberg maintains that architecture, by creating places that contain life, has a human value.

According to Lynch's research on citizens and the perception of constructed environment, he points out that each individual carries with himself an "image map", a mental projection of the reality marked by physical, cultural and psycho-social components, by "places".

Localization of space (of every space) is submitted to certain relations with certain "places" – fundamental childhood reference points: home, church, school. Identification of space is connected with its personalization: important routes in a network, as reference marks – points on a route, materials, texture, color, light – which can be identifiable.



**Fig. 6.** The "Patria" Inn, Bucharest – facade and sidewalls (Joja C-tin., 1999a)



**Fig. 7.** The Melik Residence, Bucharest – facades (Joja C-tin., 1999b)

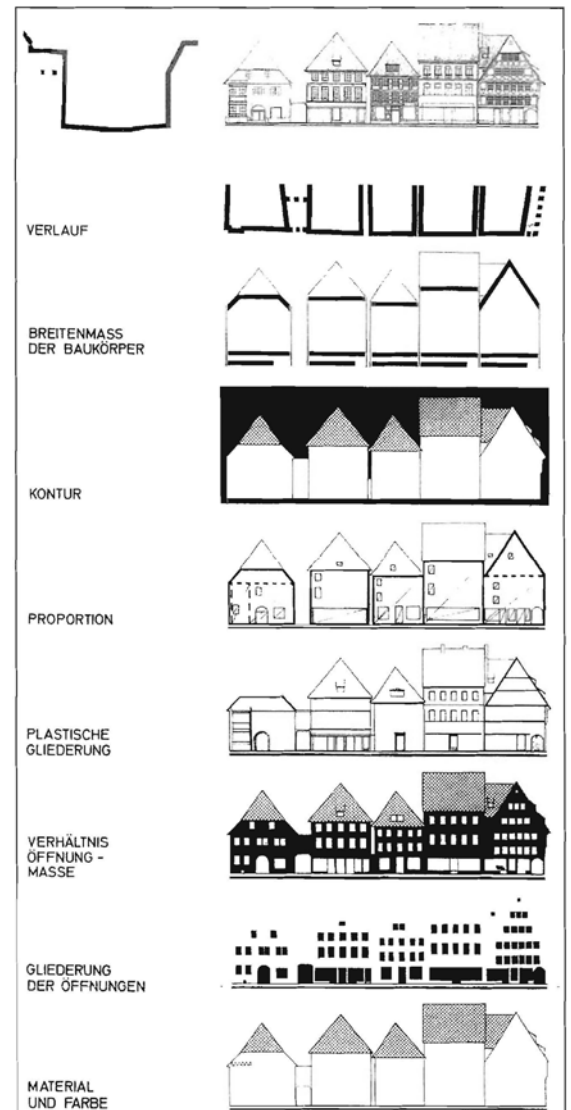
Localization is submitted to associations with certain events: cultural, religious. The identification with a certain characteristic responds to a necessity of repeatability, even to one historic information.

Localization is connected to the memory of certain emotions and feelings experienced in a certain space. Identification of a spirit of the place – generator of affinity, familiarity, sadness, joy etc.

### ***The visual perception***

The constructed space proposes to each receptor a particular representation, cognition of the perceptive images is accomplished only through an analysis of the individual spatial representations, which are tightly connected with the mental representation of the individual with respect to his environment and with the way in which he receives the information as a message coming from the constructed and social space.

The mental image of the city, structured into a mental „map” is partially sequential and sectorial, the known areas being interconnected by linear visual flows corresponding to the axes of movement and in which an important role is performed by speed of movement, the clearest parts of the mental map being those connected to the usual ones and to the activities, that is those connected to recognition and functional identification. In the relationship of the individual with the constructed space, the transfer and reflection at the level of the subjective image of the mental „map” is performed through some main perceptive criteria, more precisely through scale, reference points, visual sequences, together with distance, duration and speed of perception. These criteria were identified and pintoed out as connecting elements between the mental and the real space, as constitutive components of the architectural space.



**Fig.8.** Houses group analysis in Pferdemarkt, Hameln, Germany

Marcel Proust described the difficulty of presenting a fixed image of the character of a society or of a passion. In this universe in which the fragments of classical world



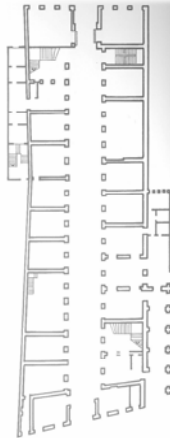
are atomized different past present and future temporalities are mixed up in an imperceptible way and in an unstable balance, decoding images and explored spaces becomes an object of permanent reading again. "One of the functions of architecture is to reveal the unconscious memory hidden in forms", says Fumihiko Maki.

### ***Possible spatiality***

The moment when the habitat gets de-structured pursuant to a calamity, the collectivity loses its „orientation“, the affiliation to the space of „mental map“ memory requires a re-creation, a reconstruction of the former reference points now disappeared, in order to give behavioral stability to the community.



**Fig. 9.** Linden Inn, Bucharest  
(Joja C-tin., 1999c)



**Fig. 10.** Visual sequences  
Frankfurt – The Römerberg Front

### ***a. The intermediary – Romanian Space***

The indefinite Japanese space, deriving from the Buddhist idea of vague, ambiguous, floating frontiers specific to the Hara logic, the gray space defined by Kurokawa, represents an area of coexistence.

The Romanian space also pointed out by Constantin Joja as a space of shade, of the porch and large eaves, which dematerialize the house, constitutes a point of tangency of two different worlds. An intermediary space between the indoors and the outdoors, between shade and light, monovalence and plurivalence, place of reverie and meditation, the porch scrutinizes the horizon as a huge eye open to the world, in a total assimilation with its best friend – the nature. Its resemblance to a circle that closes and opens itself, as C.Noica remarked in his "The Romanian Feeling of Being", reminds us of the complementary conciliation of the antagonistic Ying and Yang in the well-known Chinese symbol.

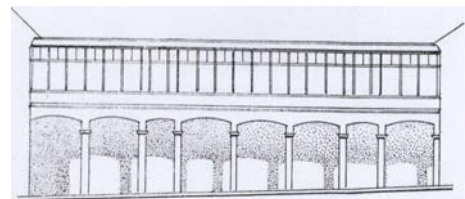
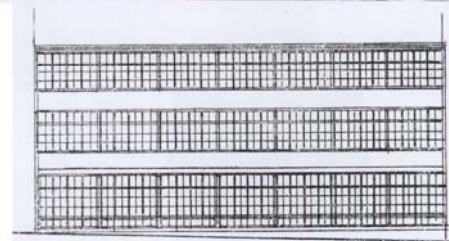
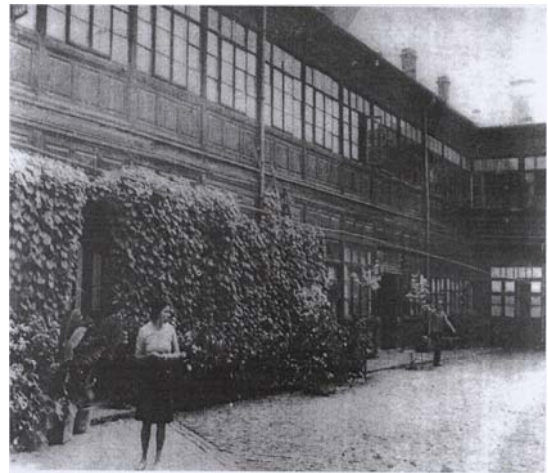
Revealing the dual character of existence in nature, Blaga shows that to the extent in which knowledge implies ordination, the known environment is our creation. In this



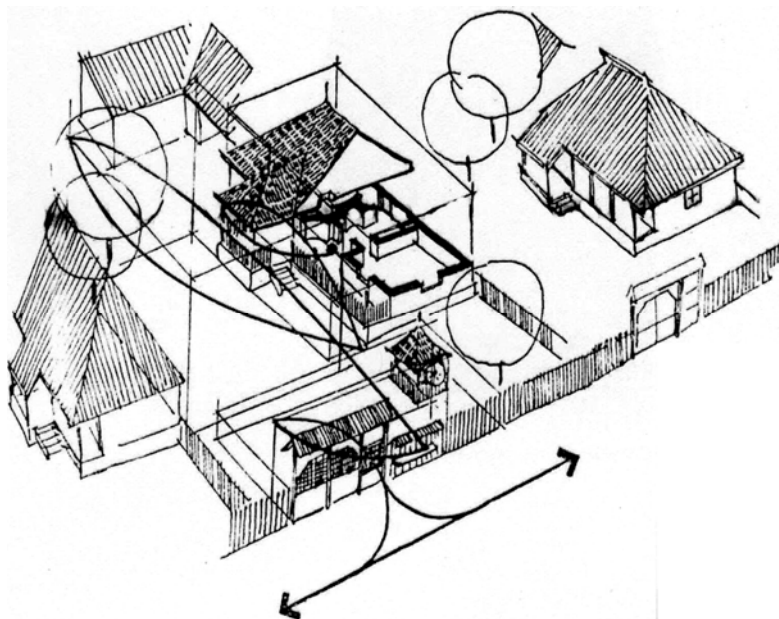
context, getting to know the nature by contemplating it means re-creating it perpetually: people of different ethnical origins model space in a different way, some of them incorporating it as a friend, others rejecting it as a virtual enemy.

### ***b. Bipolarity / Adaptability***

The Romanian stylistic field – appertaining to the Carpathians-Danube geographic area – is a bipolar field situated at the limit of the active and dynamic Occidental world and of the Oriental world of “passive resignation” and acquires an intermediary and conciliating value, that is adaptability. Revealing the sinusoidal character of the Romanian topos, character which is also present in the existing architecture of the antagonistic horizontal-vertical duality on a system level (that is at the level of the village) is also present at the level of the object, that is of the house and of the porch. The conciliation of the antagonistic duality indoors-outdoors, shade-light, horizontal-vertical in the intermediary area, the transparency, the mobility of the Romanian space, the essentializing purity, they all start from the deep apprehension of the measure of things, of the behavior of materials, incorporating a serene cosmogonical vision of being in harmony with the world.



**Fig.11.** Present situation of the Romanian Architectural adition (Joja C-tin., 1999d)

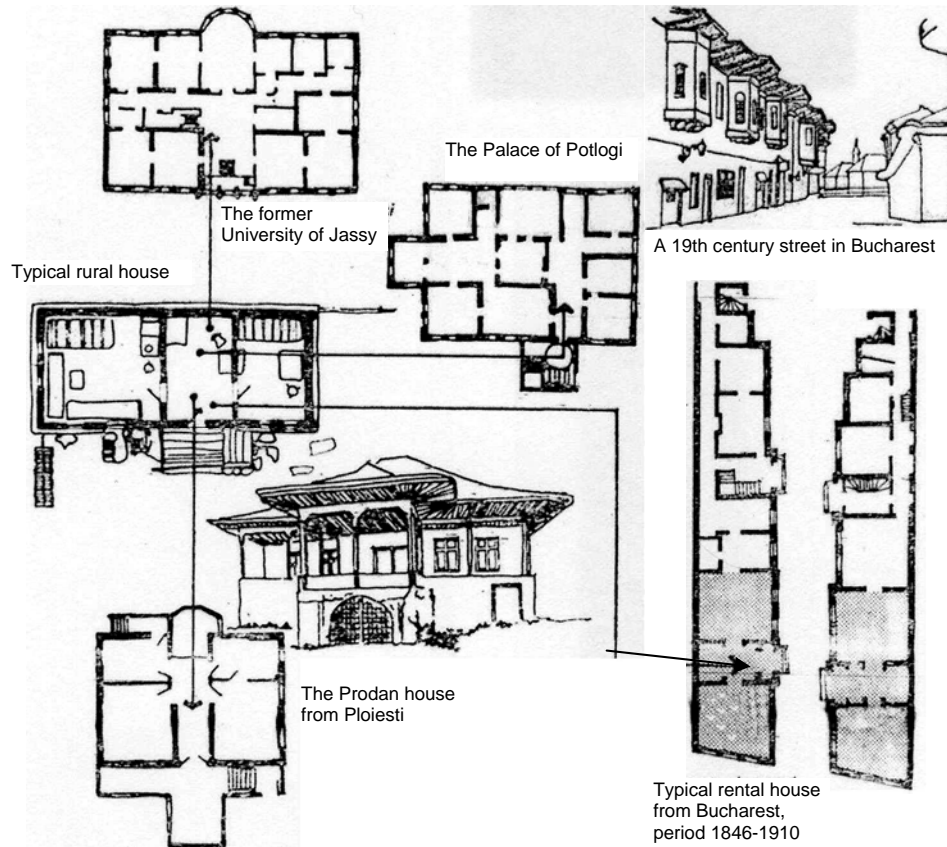


**Fig. 13.** The schematic representation of the Romanian traditional intermediary space (Caffe M., 1987a)



**Fig.12.** Church from Maramures, Village Museum, Bucharest

The feeling of durability over the ephemeral by sacrifice has with the Romanians a remote mythical root. Starting from the ancient Indo-European archetype of the cosmic pillar, according to which at the very basement of the house a soul is laid, the legend of Manole the Craftsman is illustrating, advocating the idea of sacrifice as a condition of durable construction.



**Fig. 14.** Transfer of traditional Romanian folk house plan into the plan of aristocratic city houses and of palaces. (Caffe M., 1987b)

### **The safety-bearing habitat**

Safe habitat with patrimonial identity = safety-bearing habitat.

### ***Safe habitat***

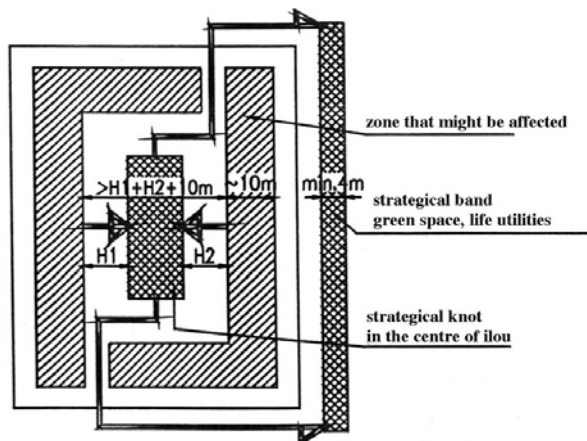
The development of the safe habitat concept must involve the entire society, authorities, legal entities and individuals for the implementation of a multilevel safety plan involving: the object submitted to the process; the neighborhood – the complex of buildings; the settlement (village, town, city).

The safety-bearing building imposes: more efficient technical norms of protection against different hazards, appliance of new technologies and diminution of the object's specific vulnerability. The safety-bearing complex of buildings is based on the different behavior of the individual constructions of the ensemble, the components of which can interact, which requires that the behavior of an heterogeneous building ensemble be calculated in relationship with the entire

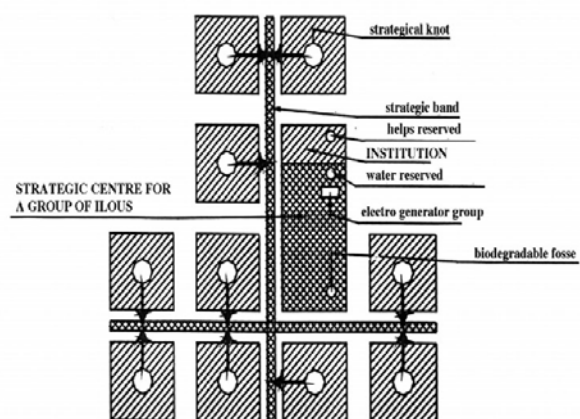
ensemble's hazard. The safety-bearing place (village, town, city) must become a secure polycentric network; the safety-bearing territory is a secure area of globality.

### **Multilevel safety system**

A safety-system regarding the organization of the city areas towards which the affected population of a zone can be evacuated creates a local safety system and determines the area of evacuation to these centers. Formation of the— green areas network with facilities and possible flexible connections for ensuring the necessary supplies, which can become zones of linear evacuation, emergency transportation lines or lines of fire stoppage in case of fire. The green knots are green areas, parks, squares able to receive the population evacuated from the neighborhood or areas associated to certain public functions, supplementary dimensioned and calculated for risk situations (schools, hospitals), able to accommodate the evacuated persons.



**Fig. 15.** Evacuation chart of a strategic ilou – strategic knot (Gociman, 2006d)



**Fig. 16.** Chart for creating a strategic center– evacuation of more ilous (Gociman, 2006e)

These strategic knots will be equipped with water reserves or tanks with a double supply system, both from the municipal network and from a well. They can be equipped with electric generators (if possible), with toilets connected to a biodegradable septic tank and will have the possibility to be connected to a communication system.

**Reconstruction of the destroyed areas** must be based on a systemic analysis. Criteria of approach such as:

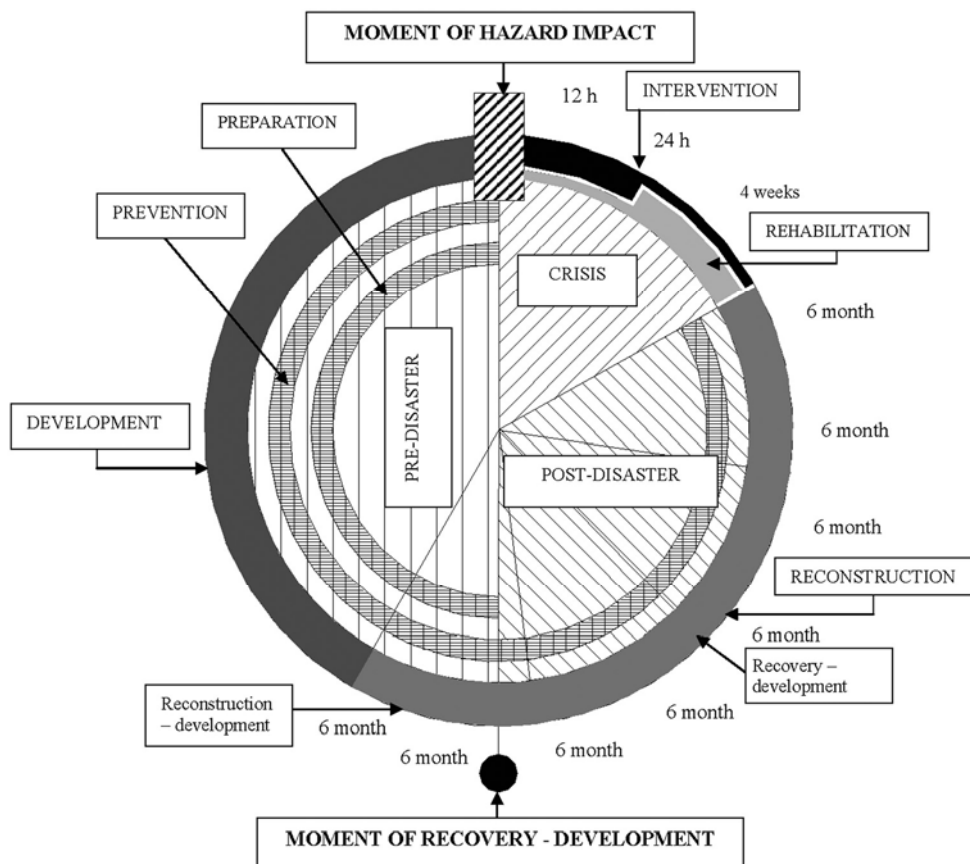
- priority necessities of the population dislocated both from the dwelling space and from the productive space regarding the reconstruction of the destroyed facilities.
- the development premises created by the need of reconstruction – named premises of urban restructuring, which can be different from the provisions of the projects of urbanism approved initially.
- functional remodeling of certain buildings – architectural monuments and social-functional re-conversion modeling.

These criteria can generate a new general or zonal plan, which will orient differently the development of the area estimated before the occurrence of the disaster. In accordance with the international expertise, there are three different ways to produce

the habitat, which also generates a certain classification: the planned habitat, the administered habitat and the sub-integrated habitat.

**The planned habitat** – is the simplest and fastest solution to solve the requirements of a mass crisis and represents a coherent performance of project-execution for residential and service ensembles. The planned habitat is the object of a big investment supported from the budget or by big investors in order to satisfy: a rapid demand of dwellings and services with a concentration of responsibilities and components. It offers the possibility of a correct investment management and of easy administration. It is obvious that the system has disadvantages in terms of homogeneity that imposes monotony; a low degree of flexibility that does not allow the special-functional evolution might generate social-urban pathologies.

At the same time, it requires large-surface empty plots of land, which are not always available but only by urban extension or by eradication of some de-structured areas.



**Fig.17.**  
Formulation of a  
new pattern of  
global approach  
(Gociman, 1999c)

**The administered habitat** – is a moderate solution of intervention in the territory, the initiative appertaining to the investor, the administration specifying only the construction possibilities or interdictions resulting from the urbanism regulations – R.L.O. (rate of land occupation); L.U.C (land utilization coefficient), alignments, height standards. This type of habitat represents a permanent juxtaposition of the individual initiative and the control/guidance of the administration, creating problems in the relationship between private and public both from a managerial and financial point of view and with respect to the property. Historical places and cities are an eloquent example of this organic growth of such habitat.

**The subintegrated habitat** – appears under extraordinary demographic pressures as a product of a construction made by one's own means and built of different materials by people of poor means. This type of habitat is not within the legal boundaries, formally administered and cannot be submitted to any therapy. Eradication of this proliferation is a problem of urban prophylaxis, but first of all it is a social-economic problem.

All these three types of habitat coexist, the planned habitat being prevalent in the periods of centralized planned economy (the plots of cheap-apartment blocks of flats of a "social" type, the large dormitory areas of "modern" cities), the administered habitat in the periods of liberal economic orientation and the sub-integrated is recorded most often in developing countries or in the periods of post-disaster relocation.

**By the estimated duration of use**, we have two types of habitat: permanent or temporary.

**The permanent habitat** – is the one described hereinbefore as a modality of permanent residency.

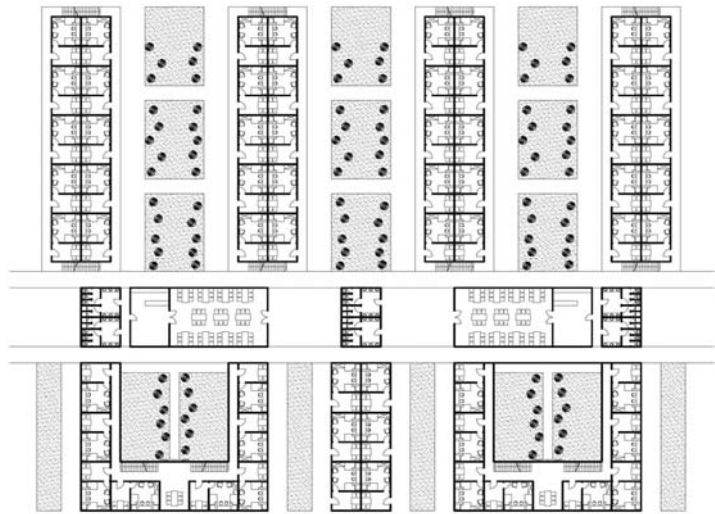
**The temporary habitat** – consists of residential units preserved in case of disasters or minimum services able to take over for a period of a few months the accommodation of the victims of the calamity and which can be then deactivated or maintained in accordance with the existing demands. The temporary habitat is currently used in "drawer"-type operations of substituting the sub-integrated habitat (the "slum" population is transferred to a temporary lodging campus while the de-structured area is rebuilt). Considering the degree of vulnerability of the habitat, we can have a safety-bearing urban habitat or a habitat exposed to risk.

## **CONCLUSIONS**

### **Urban strategies for risk reduction**

1. Definition – formation and implementation of the concept of safe habitat at all the levels of spatial organization: object, neighborhood, residential area, town/city, territory.
2. Identification of the specific components of the patrimonial habitat – reference points, routes, architectural, cultural, religious and affective sequences which can be reconstituted and which can create the mental map of the community.
3. Zoning of the territory of the settlement by criteria of protection against disasters, into strategic areas, dimensioning the area by considering the risk class and especially the possible number of affected population which is likely to be evacuated towards a given location, named security cluster and independent from an energetic point of view and having medical, food and equipment reserves.
4. Formation of a poly-nuclear system of secure zones able to protect and relocate the affected population and to generate emergency habitat – support for post-disaster reconstruction.
5. The management of rehabilitation as well as of that of reconstruction must be based on the involvement of all those affected, individuals, collectivities, institutions.

Ascertainment, interpretation and mythifying are stages of a non-implicated archaic wisdom that we must now abandon, adopting an attitude of implication. By aggressing, we become aggressed ourselves and the contemplation becomes an obsolete attitude, which changes exactly by implication. Our “cohabitation” with the hazard modifies the reference points of stability, compelling us to a receptive and anticipative permanent dynamic action, represented by the new type of risk managerial approach, a risk which aggresses the architectural ecosystem – a symbolic expression of the existential space potentiated towards a permanent reconstruction.



**Fig. 18.** Arrangement proposal for temporary habitat (Gociman, 2006e)

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