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Name Prof. Michael Burt

**THE MULTI-LAYERED CITY-AN ALTERNATIVE URBAN DESIGN
PARADIGM**

By: Michael Burt and Lior Datz

Introduction

The urban habitat is claiming its place as the principal living environment for most of humanity. Toward the end of the 21-st century more than 90% of the world population will live in cities. We are going to witness larger 'urban fields', stretching to the horizon, and the development of megalopolises, with frequent collapse of infrastructures and rising conflict between the built and the natural environment and subsequently, with a deteriorating environmental quality.

This forecast, propelled by demographic, economic, ecological and social-cultural processes, which are now in motion, contributed also to the emergence of the 'sustainable development' doctrine. It emphasizes the need and produces the pressure to contain our urban sprawl and slow down (significantly) the conquest of new 'green lands', which in its turn will compel us to adopt high density solutions to historically inexperienced levels and induce a way of thinking and perceiving, which could not rest on familiar historical precedents.

The structure of our cities and their organization, with all their conflicting physical manifestations, are destined for far-reaching evolutionary transformation already seeking for a conceptual framework and its new theoretical and applicative definitions.

With the passing last decades it becomes clear that the emerging urban reality finds itself in a rising conflict with some of the most fundamental concepts and presuppositions of the prevailing urban design paradigm.

The prevailing urban design paradigm

After some heart searching it seems to rest on the following, deeply rooted presuppositions and convictions, permeating the urban planning approach and practice, some of which go back to immemorial times, and some of a more recent (last centuries) origin.

1. The belief that in spite of the prevailing anthropocentric conception of man's uncontested supremacy in and over nature, its supervision, management and maintenance is still the responsibility of God, or, in more secular terms - 'nature will take care of itself.'

2. The comprehension that the compelling needs of human socializing, security and interaction are the (still valid) propelling power and the rational being the creation and maintenance of the urban habitat.
3. The conviction that man is not in a position to threaten and endanger nature and ecology and jeopardize long-term environmental quality, and that nature will always embrace and envelope benevolently the urban habitat with an abundant, friendly, life-sustaining blanket.
4. The conviction that the immensity of our planet earth and the seeming abundance of nature's resources preclude the possibility that we will ever be short of means and buildable land resources for our urban expansion.
5. The belief that the urban population growth, its rate and intensity, is a process which could be met and resolved with in the prevailing design and planning traditions and long tested urban design models, with their standing disposition toward land and space utilization, and their historically proven organizing principles and ethical imperatives.
6. The accepted urban design doctrine that a strong and binding relationship exists between urban gross densities and normative levels of servicing infrastructures, to preserve and ensure normative urban welfare standards for the greater majority of its population
7. The conviction that increasing effectiveness of the transportation and communication systems may balance and compensate for the excessive sprawl of a city.
8. The understanding that the principal key to urban development, its timing and effectiveness is in controlling the appropriate land resources.
9. The acceptance of the moral-cultural conception that land is a commercial commodity, to be parceled, manipulated and exploited for (private) profit or power and control gain, to a point of interfering with, and obstructing of the public development interests.
10. The understanding that urban structure carries stark resemblance to an evolving organism, its morphology and hierarchical nature, with physical growth and expansion process which is resolved to least of effort and energy consumption. It imposes a design and evolutionary development mode, adjusted to incremental growth and staged completion.
11. The conviction that we can rely on our accumulated historical heritage of proven urban precedents, to solve any present and future developing malfunctions of urban systems or infrastructures,...
12. ..And if not, 'time is on our side' and we will have enough time to engage the existing 'checks and balances' of the prevailing corrective measures and mechanisms, to restore order and equilibrium, and to correct for our design shortsightedness and miscalculations.

In search for alternative design paradigm

As it turns out, most of the beliefs, convictions and assumptions on which rests the prevailing urban design paradigm have lost their solidity and assurance, under the assault of changing demographic and urban conditions, needs and new technologies, some of a revolutionary character.

The 'sustainable development doctrine' is already making a profound impact on our design policies, with its imperative of containment of the urban sprawl and the consequent insistence on urban densification, and induces us to resolve the conflicting issues of high gross urban density and preservation of appropriable levels of proper performance of urban infrastructures and its ecological environmental quality.

It should be stated categorically that very little of our historical urban heritage and the prevailing design paradigm equips us to deal with this complex multiple task, although the issue and some proposed general or partial solutions were raised by urban design thinkers over the last century, and some pointwise, local solutions may be noticed in the field.

What is urgently required is an alternative urban design approach and comprehensive framework of principles which conform with the sustainable development doctrine and amounts to no less than an alternative urban design paradigm.

The Multi-Layered-City

This new conceptual approach, which the authors suggest to name The multi-Layered City, is in its early evolutionary stages and its framework of principles may run as follows:

- In conformity with the sustainable development doctrine it is imperative to take responsibility over the planet-Earth, its natural resource management and maintenance, with a long term vision and true consideration for the welfare of future generations.
- It is imperative to slow down, dramatically, the conquest of new green lands and the associated nature and landscape resources, by limiting the urban expansion, much as possible, to the existing city bounds.
- It implies a far reaching urban densification process, utilizing the 3-D space, air-and subterranean rights, to the limit, to generate buildable land resources for realization of private and public built volumes and all the servicing and the biotic infrastructures, which are required for a full and proper urban functional performance.

In order to facilitate the aspired density rates and the urban (environmental) quality levels, new code of priorities, for the utilization of the ground level, should be adopted.

- The design morphology of the Multi-Layered-City will be characterized by layered distribution of the urban mass and fabric and spatial

hierarchical structure which leaves most of the ground area for public pedestrian use and biotic and social-educational infrastructures.

This design policy requires a drastic revision of the prevailing land ownership conception

and practice, trying to substitute it with ownership rights of volumes in space, thus leaving

the public in control of the urban development process and its priorities.

- New definitions of the relation between the built and the natural environments should be promoted, giving rise to 'hanging gardens', vertical-spatial parts, roof play grounds and sky promenades, far in excess of the total developed ground area, above (and below) the ground level.
- Social-cultural-economic interaction spaces should be allowed to develop on few layer-levels, as climatically controlled malls, bridge avenues, spatial public squares and spatial pedestrian traffic grids, assisted by advanced mechanical systems, joining the subterranean, the ground level and the hovering public spaces, into a continuous urban whole.
- The resulting compactness of the urban fabric will reduce the dependence on privately owned motorized transportation, make public transportation more profitable, with many more positive by products.
- The core of the required applied morphology and design proficiency is in successful generation of built masses, characterized by high sponge-like permeability to climatic environmental and accessibility parameters, while protecting privacy and resolving all other density induced conflicts.
- The Multi-Layered-City, although encouraging high intensity development and large scale projects, still should be solved for incremental growth and staged completion, mostly for economical reasons especially of the public support systems of bridge avenues and other elevated built facilities.

The Multi-Layered-City concept could be applied to an existing urban situation (with the required design compromises) or to a new urban development.

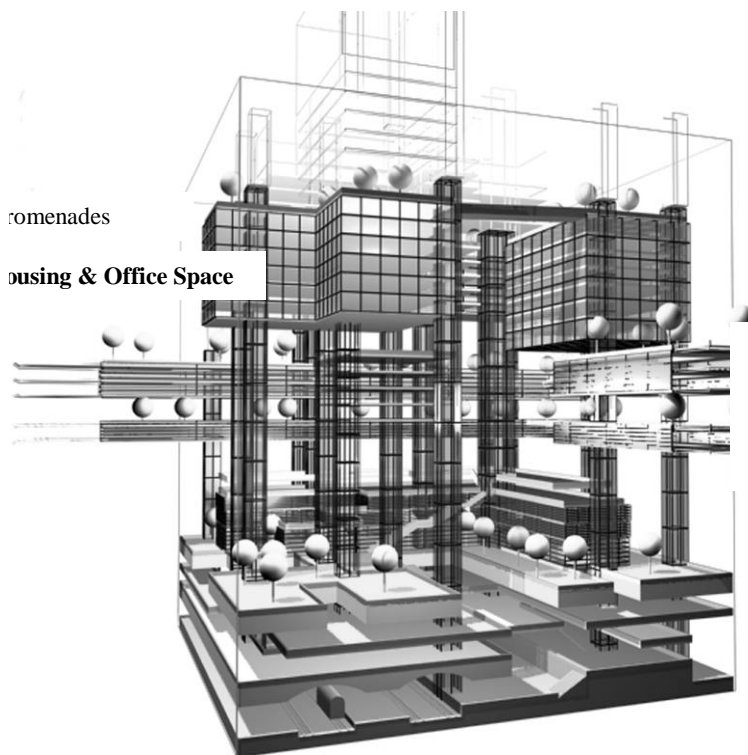
The Multi-Layered City may present a viable alternative for the presently practiced urban development policies, in connection with the following issues:

- Clearance (by demolition) and construction, as part of the urban renewal development strategy.
- Contribution to 'urban continuance,' in problematic, stricken urban situations.
- Usage of space over sizable public functions within the existing urban fabric.
- Urban development in the (topographically) mountainous urban expanses.

- Urban development in the marine (artificial islands) environment.

In reference, few names should be mentioned, which contributed over the (recent) past to the evolution of the ideas and concepts which are at the basis of this presentation, and in particular :

Sanct Elias, Le Corbusier, Jona Friedman, Buckminster Fuller, Paul Rudolph, the Japanese Metabolists, Peter Cook and the Archigramm, The WCED (1987) publication ('Our Common Future'-Oxford Univ.Press), the Rio declaration (1992) and the UIA-Chicago declaration (1993), concerning the sustainable development doctrine and its urban ramifications.



C-20-25% Open Spaces & Recreation

D-15-25% Infrastructures, Commerce, (underground) Transportation

interaction level
is
planting Gardens

The Multi – Layered City

Schematic
Multi –

B-10-15% Public Services, Commerce & Recreation

Layered distribution of built volumes, services and infrastructures in

100m * 100m * 100 m, of a typical urban space module, with gross density amounting

to **F.A.R = 5 ÷ 10**