Process-based Urban Design, a Solution for Qualitative Improvement of Interventions in Urban Spaces

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ABSTRACT: Complex urban spaces demand particular planning. The issue is especially important in historic spaces which are considered as critical part of public identity. Actually, the existing inefficient intervention plans in urban spaces have brought extensive difficulties on the way of providing and implementing plans. Solutions to these problems include an overview on planning, consolidation of urban management, cooperation of influential and beneficiary parties in city development and essential attention of urban design and planning to qualitative standards of urban life. In this regard, following challenges resulted evidently from last inefficient intervention policies in urban spaces including inflexibility of plans, lack of comprehensiveness, ignoring principal needs and deficiencies and prioritizing them, ignoring intervention facilities and importantly, ignoring executive mechanisms, certain models and methods of intervention in urban spaces have been provided during recent decades which consider intervention, planning and design for city not as result-based any more but as process-based. The aim of these methods is to form urban plans periodically in order to consider different aspects of the issue and additionally, make it feasible to refer to primary steps of plan and enforce changes in its process to achieve better results. Consequently, in addition to investigate manner of dealing with urban spaces and recognize new intervention processes in urban spaces, this paper seeks to provide intervention policies in urban spaces with a process-based approach. The results show that through a process-based urban design, the quality of intervention in urban spaces and consequently its exploiters’ satisfaction will increase and negative results of intervention will be modified.

Keywords: Fuzzy logic, Process, Urban design process, Urban space.

INTRODUCTION

As a cultural symbol of cities and towns, urban spaces are among principal public domains in cities. Ignoring urban spaces with rapid growth of urbanization have created extensive problems for these spaces resulting in a decrease in quality of life environment in them. In this regard, measurement, recognition and finally, formulation of policies for intervention in urban spaces must be carried out based on strategies and models which practice planning and designing with a stress on designing process(Tavassoli, 2005).

In order for this, considering two theories i.e. urban design process and fuzzy logic, in this paper, an appropriate model for intervention in urban spaces is provided, a model which its major principle is its process-based nature and the ability of referring back during its formulation and enforcement. Different steps were taken in this paper to achieve an appropriate model(Trancik,1986). In the first step, applying theoretical studies and experiences of intervention in urban spaces, general principles of intervention in historic-social urban spaces are identified. In second step, with a process-based approach, important theories of intervention are investigated and compared with each other (Yeken, 1997)†

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Third step is allocated to measurement of weak points and strengths of processes considered and answering the questions and testing the hypothesis.

**Process:** is a set of solid specific activities linking aim and solution. In other words, logical and objective sequence of certain activities is called “process” (Bahreini, 2006).

**Urban design process:** is a process of solving urban issue where the most important activities include issue identification, finding solution, measurement and selection (Bahreini, 2006).

**Fuzzy logic:** means ambiguous by which an ambiguous multi-value logic is considered. In urban designing and planning, this logic is a seven-step process (Zabihi, 2011).

**Urban space:** allocates to general activities. It includes two elements i.e. square and street and its general activity is based on motion or motionlessness, it responses general needs of today and future citizens, contains qualitative and quantitative balances and it includes different environmental, cultural, communicative, social and aesthetic aspects (Ghanei & Okhovvat, 2001).

### RESULTS

**Question 1:** What is the process of intervention in urban design? What are its steps?

**Answer:** Considering theoretical principles and research literature performed to investigate urban design process, the answer to this question is that intervention in urban centers can happen in two ways: result-based and process-based. Intervention process in urban design includes well-organized placement of number of defined activities in order to improve urban space quality, where the number and steps of activities in the processes considered are different. But the common points include: high knowledge of the region intervened, determination of objectives, providing solutions, selecting optimal solution, executive mechanism of intervention and above all, feasibility of referring back and making changes in former steps. However, paying attention to feedbacks and effects of interventions and final control and supervision in fuzzy logic is preferred to urban design process (Pamir S. 2010).

**Question 2:** What are some advantages of process-based intervention in urban spaces (urban design, fuzzy logic)?

**Answer:** process-based intervention in urban spaces contain following advantages: paying attention to properties and needs of the complex and its users and providing realistic strategies, flexibility of suggested plans and programs, feasibility of plans and programs, reviewing intervention plan and getting feedbacks, predicting executive mechanism and supervising it in urban design and fuzzy logic.

**Question 3:** What are the inefficiencies of existing processes considering suggested model? What are major points that should be considered in the intervention in urban (historical) spaces?

**Answer:** Although the manner of intervention in fuzzy process is almost perfect and all the issues are considered, according to recent insists on stable development and attentions to social, environmental and economical effects of plans, position of one issue in this process should be strengthened and that is a process named as compensation or modification of damages. In this process, considering studies performed by different socio-environmental groups on every developing measure’s feedbacks, one should suggest strategies to compensate negative effects and improve positive ones. Sometimes, the results of feedback studies may show that social or environmental damages of a plan are no compensable and basic changes must be imposed in its strategies or even objectives and process is repeated. However, in some cases, providing compensating strategies, damages are modifiable. It is worth noting that in fuzzy logic this step is known as investigation of effects and review.

**Experiment of research hypotheses**

**Hypothesis 1:** process-based intervention can increase intervention quality regarding function or administration.

**Proof:** considering the fact that process-based intervention contains different steps including full knowledge of the area intervened, investigation of intervention feedbacks and modification of suggested solutions and also providing executive mechanisms, all these cases have a process-based nature in a way that interventions can have higher quality.

**Hypothesis 2:** when intervening, particularly in historic spaces of a city, a process is definable which has lowest negative effects on the environment and uses potentials.

**Proof:** as is shown finally and by experiences, defining a reciprocal process, recognizing the intervened area, considering intervention feedbacks repeatedly, during designing process and even after that, results and effects of
these interventions on users can be investigated and, imposing minor or even major changes on solutions or providing compensative strategies, negative effects on the environment can be decreased to the lowest point.

**DISCUSSION**

Urban design is a necessity to improve city dwellers’ life quality and city management, a necessity appearing beside all the steps of urban planning. It is not a measure separate from daily demands and related to an uncertain future. Regarding this, two theories when presenting intervention policies and designing in urban spaces named as “urban design process” and “fuzzy logic” are discussed below (Karier.1978):

**Urban design process**

The idea of comprehensive plan which has not departed completely from urban planning yet, is a method rejected in urban planning world from 1960s. In urban planning case projects designed in different countries, a decision-making monopoly is traceable. In an integrated form, in Iran, urban design process was introduced first by Dr. Bahreini(professor in Tehran university). Following a criticism he had on the manner of urban design enforcement and considering the inefficiency of plans and their failure, seeking to solve the problem, he formulated a process for urban design. As he put, major reasons why we should have a new viewpoint on urban projects in Iran are:

Lack of public participation in decision making process of urban planning projects is the main weak point of traditional methodologies of urban design. Experiences show that as main users of space, the more people participate in decision making process, the more welcomed will the urban design product be. There is no specified method or tool for public participation in traditional urban design methods though.

In traditional methods of designing, the product is totally rigid and inflexible. Designer’s ideas and taste dominate the whole project. As a result, an absolutism or is seen in urban planning projects which doesn’t confirm to dynamic nature of city. Besides, long duration of making a plan results in some changes in data of the issue before it is executed, meaning that in many cases the terms change and this is an important reason for the failure of urban planning projects. A realistic urban planning project is expected to have flexibility in order to provide variable solution alternatives proportionate to executive facilities existing there for administrators.

Accordingly, a systematic method in urban planning is essential. “Urban design process”, presented comprehensively by Bahreini(2006), is a response to this need. The following diagram displays the process:

![Figure 1. Bahreini’s steps of urban design process (adapted from Urban Design Process book, 2006).](image)

**Fuzzy planning**

This definition goes back to primary measures taken on fuzzy sets by Lotfizadeh in University of California in Berkeley during 1960s and 1970s. In his article, “Fuzzy Sets”, Lotfizadeh replaced the word “ambiguous” by “Fuzzy” and this word became current (Cited in Zabihi, 2011).

About system complexity and its behavioral analysis, Prof. Lotfizadeh says: “as complexity increases, our ability to make more obvious and accurate explanation for its behavior decreases until we reach a point where obviousness and accuracy are almost exclusive moments of the system… a logical principal result can be exclusively defined as the closer the issues of real world, the fuzzier the solutions” (Cited in Zabihi, 2011).
Therefore, considering relative concepts of space, time and their uncertainty and also the evolution in complex system of cities that is changing like a living organism, finding certain unchangeable solutions as solid constant comprehensive plans for cities is impossible. Having particular logic though, our solutions to urban difficulties should contain close look on dynamism and changes of time and place conditions, perhaps, urban planning solutions, projects and programs need changes themselves (Zabihi, 2011).

As a result, fuzzy logic, as a solution to more executive urban plans and programs and the manner of intervention in cities defines seven steps.

Fuzzy urban planning and design and its processes:

**First process**
- a) Definition of objectives
- b) Identification of basic needs
  1. Financial needs
  2. Managerial needs
  3. Physical needs
- c) High knowledge about resources and facilities
  1. Scientific and economical facilities
  2. Managerial facilities
  3. Internal facilities (including human resources and facilities)
  4. External facilities
  5. Physical facilities

**Second process (analyzing process)**
- 1. Comparison of needs and facilities (considering the objectives)
- 2. Prioritizing needs considering the existing facilities, possibilities and obstacles

**Third process (investigation of potential solutions and relative measures and selecting optimal solution)**

**Forth process (investigation of planning effects)**

**Fifth process (reviewing urban planning (feedback))**

**Sixth process (executive plan (mechanism))**

**Seventh process (supervising and control)**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Urban design process (Dr.Bahreini)</th>
<th>Fuzzy logic (Dr.Zabihi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>High knowledge about the issue studied</td>
<td>High knowledge about the issue studied</td>
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<td></td>
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<td>Recognizing needs and facilities</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>Formulation of objectives</td>
<td>Comparison of needs and facilities</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>Definition of operational rules</td>
<td>Providing solutions and selecting optimal one</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Providing alternatives</td>
<td>Investigation of effects</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Measurement of solutions</td>
<td>Reviewing</td>
</tr>
<tr>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Providing plan</td>
<td>Executive mechanism</td>
</tr>
<tr>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Enforcement expectations</td>
<td>Supervision and control</td>
</tr>
</tbody>
</table>
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