

# Approaches of Gentrification Model to Gentrify and Rehabilitate Urban Old Context

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## Abstract

The present paper is a case study on one of the old areas in the city of Ardabil with an approach of gentrification model to gentrify and rehabilitate the old urban context. Besides the library studies, this study includes local observations and questionnaires which deal with the opinions of residents on the problems and shortcomings. It also includes the ways of satisfying the residents to keep on living in the area. In this regard, the reason for main residents' decision to move away is studied through three specifications of old context (size of segments, quality of buildings and availability) in the first part of model based on an external map named real estate desirability in every part of the area, while the residents' tendency to move away is studied and analyzed through specified scales which have been given weights for each part. At the end, the state of area is observed in terms of gentrification and real estate desirability for the residents in order to specify the results by combining two output maps of each part of model (estate desirability map and the map of main residents' tendency to move away) in GIS and analyzing them with the application, then the results are acquired and some approaches are presented.

**Keywords:** Gentrification, Cooperation, Rehabilitation of Old context

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## 1. Introduction

The role of people is getting more and more significant in social and urban affairs, and it is now publicly accepted that people have the right to determine their own destiny as the human rights state. Urbanism is one of the important aspects of life in nowadays societies. Since almost four decades ago the role of people has been seriously pointed out in urbanism. It has also been accepted in many countries, especially the developed ones (Alavitar, 2001; 14).

In our country, public cooperation has not been taken much seriously since urban development came into view, and urban plans were made without public cooperation; But with the emergence of civil society and in the current circumstances of our society in which public cooperation is discussed in social, cultural, economic, and political fields, it is undeniably necessary to analyze public cooperation in urbanism and to study main residents' tendency to continue living in the area. Therefore, it is essential to recognize social, cultural, economic, and environmental factors influencing the extent, type and level of public cooperation and also main residents' tendency to stay by applying public cooperation in urban affairs. As a result, it is specified that what trends a society which is supposed to take part in the urban planning has toward participation in urbanism and how its evaluation of cooperation should be in order to impose gentrification on the old context to prevent this invaluable legacy of the past turn into devastated context and to finally avoid its destruction.

In this regard, various theories have been tried out in different countries. Some of the main instances are economic planning theory (the relationship between the quality and availability of land and its applicability), real estate lifecycle theory and rent gap theory (analysis of investment and lack of investment in real estate) (Lidia Diappi and Paola Bolchi, 2008), residential localization theory (analysis of urban re-localization with family activities system), theories by Lewis Mumford, Kevin Lynch, and the theory of gentrification of old urban context (Habibi, Maghsoodi, 2002; 68).

## 2. Gentrification Theory

The main theory hypothesis is on the basis that the more capital is driven toward the suburbs, the lesser opportunities are provided for investment in urban areas; therefore, building maintenance expenses goes up, so the buildings will finally be deserted (Rahnama, 2009; 86). Apart from housing improvement and residential environment facilitation, gentrification refers to changes in the formation of neighborhood units and displacement of low-income groups with high-income ones. It means the re-localization of middle class in older urban neighborhood units. This action is called "restating neighborhood" which is contrary to migration patterns from urban neighborhood to the suburbs (Rahnama, 2009; 183).

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Gentrification theory argues that western cities' neighborhood units near Central Business District (CBD) are populated with the working class, low-income groups, especially immigrants, and indigenous sedentary seniors due to dense population, exhaustion, unfavorable environment, redlining, private sector's unwillingness for investment, pollution, and so forth (Rahnama, 2009; 95).

### 2.1 A Perspective Consistent with Renovation and Gentrification

Cities that were built by people brick by brick over centuries have and undoubted civic and cultural values. They cannot be demolished by order while people are mere spectators.

1. The ultimate objective of renovation plans is to satisfy people, and these plans are basically designed for their welfare. Therefore, their participation should be drawn with some strategies. Although people consider participation as their presence and intervention in determining their economic, social, political, and cultural destiny, different definitions could be presented in relation with the type of participation. If it means that people help the affairs which the government decides and does all alone, a certain definition of participation is thought of. But if it means that people are convinced to do the affairs, which are accepted, by both the government and people, the purpose of participation is different. If it means that people dismiss their ownership and give it to the government (so that it does whatever it desires), another definition can be considered. So it is clear that people are expected in certain ways in each city or district, and participation means their cooperation with local projects of interest ([www.udro.org.ir](http://www.udro.org.ir)).

### 2. Gentrification Model

Social sciences studies are challenged by a dichotomy between the individual and people. They should be well recognized in order to overcome environmental problems, case study challenges, and also difficulties in top-down or bottom-up adjustment.

The tool existing in the model can be useful to overcome some difficulties. Automation (model) has been successfully used to model a wide range of complex urban phenomena. Urban development, changes in land use, pedestrian dynamics, residential mobility, social and spatial segregation, traffic, and other problems are discussed by using the formulas presented in this model. In this research, the model is useful in bottom-up mode due to adaptability of complex adaptive systems.

Given the objectives, a model is made to gentrify downtown in accordance with the basic theory, and it studies the supply and demand of residents.

The structure of model is made up of types of entities, attributes and nesting.

Three major characteristics are considered for locational and behavioral analysis.

1. Market, Properties, and Assets
2. Capability, Assets, and Properties
3. Fixed Lands (Access Path and Access Point)

Two types of fixed lands are considered: roads and access points, which are used to introduce influence and access to sites in residents' behaviors. Four access points have been considered: downtown, highway (input/output), mall, and grocery store.

At any point in time, some simulation processes are important. Some of them are the decisions made by current residents to move away or stay in site; influx of new residents to the area; housing selection and updating variables of state (area).

1. Decision to move away: According to this event, the current urban residents and the probability that they move away is studied. This event is the motivation for future movement dynamics.
2. Influx of New Residents: This process introduces new residents to urban context as the consumers of properties. They were previously stationed at the time of moving in and should be currently searching the market for housing (They should resolve the problem after moving in.). This search is successful if it is added to the current population to probably move current residents.
3. The search for private housing begins when the current resident who is willing to move away or the newcomer family that is a beneficiary of the market decides to search for real estate (Paul, Atsushi, 2007).

### 2.2 Real Estate Behavior

Real estate doesn't show any common type of behavior. Real estate owners do not put themselves in the market to move about. People propose to them for sale or transfer. Real estate dynamics is a minor result of population growth, consumption, evaluation and its values. Each behavior toward real estate is a reflection of human activity, and real estate is an agent for this activity.

The activity within and around real estate is indicated in the model by considering the relationship between families and real estate in desirability mode. In summary, the exhaustion value of real estate is considered as a packet of its characteristics. For example, real estate accessibility can be a factor for location selection. The characteristics values determine the tendency toward desirability. Price or value pertaining to housing is determined by families in real life situation (Paul, Atsushi, 2007).

### 2.3 Model Formulation

#### 2.3.1 Desirability Evaluation

A value is attributed to each unit in this stage, and it is used in a model named desirability evaluation. In this

stage, which is calculated through the following formula, three indices are considered for exhausted context. Each segment is valued by these three indices in order to see if the segments of this stage have high values or how much value they have in terms of exhaustion or non-exhaustion. Variable states range from 0 to 1. Through the following formula, they turn into something between 0 and 1 from real value.

$$\frac{V_i - V_{\min}}{V_{\max} - V_{\min}}$$

$V_i$  is the state value for state  $i$ .

$V_{\min}$  is the minimum real value.

$V_{\max}$  is the maximum real value.

These three indices are the size of segments, segments access, and the quality or age of buildings. There is one attribute for each index, and there is one value, which is special for that attribute and segment. The value of each attribute is calculated through the above-mentioned formula.

Finally, the score of each attribute is multiplied by its value, and the sum of scores for these indices of each estate is its final score and value.

$$P_j = C + \sum_{k=1}^n V_k Q_k \quad (ii)$$

### 2.3.2 The Tendency to Move

The tendency to move is a main behavioral part of the model. Its probability is based on endogenous factors (dynamically based on cycle transmission) and exogenous ones in the model. They follow Clark's model in basic theory and Mac Fowden's model in characteristics method.

The tendency to move and the probability that families move away are studied in this stage of model. The probability that a family leaves its residence is calculated through the following formula.

$$P_{Lij} = 1 - P_{Cij} \quad (iii)$$

### 2.3.3 Nesting Space Selection

The space selection is formulated as follows:

$$P_{Cij} = \sum (b_{HE} \cdot H_E) + \sum (b_{NE} \cdot N_E) \quad (iv)$$

$P_{Cij}$  is the probability that the family  $i$  selects estate  $j$ .

$b_{HE}$  is the estate weight.

$b_{NE}$  is the market weight.

$HE$  is a set of estate characteristics.

$NE$  is a set of market characteristics.

$$\sum (b_{HE} \cdot H_E) = b_1(1 - |P_{ij} - E_{Si}|) + b_2(H_{TSj} \cdot R_{PTSi} + H_{TCj} \cdot R_{PTCi}) + b_3(1 - |P_{Sj} - R_{PSi}|) + b_4 \sum (A_j \cdot R_{PAi}) \quad (v)$$

$$\sum_1^6 b_m = 1.$$

The weights are explained in this way:

Coefficients for estate value proportion ( $b_1$ ), supremacy of estate type ( $b_2$ ), supremacy of estate size ( $b_3$ ), access priority ( $b_4$ ), area's economy in comparison with markets ( $b_5$ ), and are areas' ethnics ( $b_6$ ).

$$\sum (b_{NE} \cdot N_E) = b_5(1 - |E_{SMj} - E_{Si}|) + b_6 \cdot E_{Ri} \quad (vii)$$

$P_{vi}$  includes estate economy and characteristics.  $E_{si}$  includes the economic characteristics of family.  $H_{tsj}$  is an artificial variable for the house.  $H_{tcj}$  is an artificial variable for the house.  $R_{ptsi}$  is the preferences of house size.  $R_{ptci}$  is an artificial variable for the extent of participation and joint ownership.  $P_{sj}$  is the size of estates.  $R_{psi}$  is the preferences of house size.

In the next case in which area accessibility is investigated, the access to four points is targeted: access to downtown, access to the mall, access to the highway, and access to grocery stores.

The accessibility formula which is of coefficient ( $b_4$ ), is defined as follow:

$$\sum (A_j \cdot R_{PAi}) = (A_{DTj} \cdot R_{PADTj} + A_{HWj} \cdot R_{PAHWj} + A_{Mj} \cdot R_{PAMj} + A_{Gj} \cdot R_{PAGj}), \quad (vi)$$

where  $\sum R_{PAi} = 1$

$ADTj$  considers the access to downtown.  $AHWj$  considers the nearest input/output to the highway.  $AMj$  indicates the nearest mall.  $AGj$  considers the nearest grocery store (Paul, Atsushi; 2007, Elsvier).

### 2.3.4 Map for Tendency to Move (Calculation of Values)

## 3. Case Study

The area of Ooch-Dokan is one of the six oldest areas in Ardebil. Some important and famous historical buildings including many old and historical houses of Ardebil are located in this area. The area of Ooch-Dokan has always been significant due to being near the Friday Market and the mosque and having influential individuals and social figures both in the past and now. It might be noteworthy to say that there were six main areas in Ardebil, and other

areas were considered to be their environs. This classification is still accepted and applicable in doyen urban management system, and the area of Ooch-Dokan was one of the six main areas in Ardebil (Safari, 1994; 85).

#### - Area Accesses

Due to possession an old and traditional context, the area of Ooch-Dokan has winding access tracks and passages, which are extended from four sides and connected to main and significant parts of the city like passages of Sartip-Abad Alley, *Kabood* Mosque, and so forth. Being extended from 2 meters or more, the width of these passages is not the same in different areas.

Given the applied model, people's tendency to move away has been specified. It fluctuates between 20% and 65%. This range has been divided into 4 equal segments with a distance of 10 in between, and it is observed that the biggest number of people who left the area was between 35% and 45%. Only 4 segments had the willingness of 55% to 65% to move away. 3 segments out of them are deserted buildings, and the respective questionnaires were provided somewhere else. The sons who are now the owners would be asked to fill out the questionnaire, in case the main owners were dead. The desirability evaluation has also been specified in this model. The combination of these two maps in GIS has shown us that most people who have more than 40% of tendency to leave are evaluated with a desirability evaluation of 35% to 45%. Since the indices we have chosen for evaluation are the same as the indices of context exhaustion, it can be concluded that families who live in the houses which are not in a very bad condition or both their accessibility and their segmentation along with quality are problematic, are not very willing to move away. The only number of tendencies to move away which are over 40% can be found between 35% and 45% of desirability, which is considered to be a moderate state, and their problems should be resolved so soon in order to prevent them from moving away in the future. The number of them is higher than of other tendencies because improving their economic states, a fact that causes them to move away, decreases the desirability of their current units.

#### 4. Conclusion

As it was mentioned in the beginning, this paper aims to introduce a model by which some approaches are presented for gentrification and rehabilitation of the old context. The results indicate that the requirements of people should be discussed with their participation. The problems should be resolved by using their suggestions so that the necessary circumstances are sorted out for them to continue their stay. Also, combining the desirability map with the map of tendency to move in GIS and analyzing the questionnaire, we have acquired some results showing that most residents of the area are deciding to move away; as a matter of fact, that people with high tendency have

already left their residence. Other results are as follows.

- Estates are mostly placed in mediocre desirability rankings.
- Most segments are highly intended to move away.
- Most residents are not satisfied with public transportation accessibility.
- The most important cause of people's dissatisfaction, which hinders building, is height restriction in construction.

Using the historical buildings of this area for applications which people want to transform there (like library, artistic creations foundation, traditional restaurant).

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