

Use Principles of New Urbanism Approach in Designing Sustainable Urban Spaces

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Abstract

Fast and rough and tumble process of urban modernization (innovation) and its effects make it necessary to think and reconsider about forming urban sustainable environment. In this way, new approaches in urban designing occupation have been formed with distress of enhancing urban environment quality. It can be mentioned to new urbanism approach. Mentioned approach has been formed to criticized modern urbanism which have machinery, inhuman and scattered pattern and with emphasis on especial position of human in present era urban spaces. Nowadays, this approach is responsible for guiding and leadership of generation of post modern designers and programmers. Primary principles of mentioned approach are based on using past humanistic traditional principles of urbanism in post modernism era. The goal of this paper is introduction of new urbanism approach in the course of creating appropriate urban environment in humanistic scale which is responsible for response to evolutions and urban and developmental modern improvements in framework of urban sustainable developmental goals. Ultimately, present paper try to study the reality and condition of forming new urbanism approach with emphasis on using precious urban indexes before industry era in after industry era in the course of making sustainable urban spaces.

Key words: Sustainability, Urban Spaces, New Urbanism, TND¹, TOD²

1. Introduction

In twentieth century, together with growth and popular use of car in cities, new outlooks had formed in modern urbanization based on usage zoning and their separation according to house, work, shopping and free time. These outlooks almost had been developed during eight decades of twentieth century (Steuteville, 2004). From 1980s increasing number of American urbanists had been represented several theories about wear and tear and decline of urban centers and mounting increase of suburban and local societies in outskirts of cities which are scatter and dispersed and based on traffic and being far from urban centers. In last years of 1980s and the beginning of 1990s, evolution of these theories had been caused to appearance of new urbanism movement based on humanistic urbanism (Lehrer, 2004). New urbanism or traditional designing of neighboring units had been one of the newest programming approaches in urban design and suburbs of American cities which had been formed from 80-90 decades of 20th century. This movement and new outlook of urban planning is one of widespread attempts for solving problem of wear and tear urban centers and unsustainability of suburbs of metropolises and big cities.

¹Traditional Neighborhood Development

²Transit Oriented Development

In middle years of 1990s, United States of America's Ministry of Housing and Development (HUD) have used new urbanism principles in reconstructing its social residual units all over America which had cost billion dollars. New urbanism try to create an appropriate environment in humanistic scale which is responsible for transformations and urban and developmental modern improvements in the course of sustainable development purposes (Custer, 2007). Ideas related to new urbanism designing principles consists of traditional designing principles proportional to humanistic position in cities. At the same time, most of today programming methods especially in third world aren't responsible for human's physical, psychological and mental needs and ignore humanistic position and scale. Therefore, regarding to the fact that most of problems of nowadays cities are due to mechanical outlooks instead of humanistic outlook in cities, change programming point of views and urban designing towards humanistic new urbanism is necessary (Ford, 1999).

2- Historical background of new urbanism movement

In United States of America, from first of 1980s, new urbanism had been made formal in national level in order to develop local societies. New urbanism approach has been used in convivial village of SeaSide located in Florida (www.seasidefl.com). In complication of new urbanization movement, the role of Congress for the New Urbanism is avoidable. This congress had been established by group of interested architects called CNU in 1993. Till that time each member's of this group had been worked to create buildings, quarters and area in which provide high quality of life besides protecting environment. This group is gathered by Peter Katz who selected to be the first executive management of CNU (www.cnu.org). The first neighborhood unit that was designed according to tradition approach appropriate with goals of new urbanism was a project in Madison with mixed and various uses such as residual – retail, administrative and park. In this project, The emphasis was on walking and making livable, functional and having sense of life and dynamic neighborhood units (www.newurbanism.org). After 1993, different congresses have been held in relation to humanistic new urbanization approach with various subjects as following:

Table 1: Congresses which had held in field of new urbanism

Subject of Congress	Year of Observance	Place of Observance	Main Subject
First Congress	1993	Alexandria, Virginia	neighborhood, district, and corridor
Second Congress	1994	Los Angeles, California	buildings, blocks, and streets
Third Congress	1995	San Francisco, California	Nature, Infrastructures and area
Fourth Congress	1996	Charleston, S.C	Approve New Urbanism charter by participators
Fifth Congress	1997	Toronto, Canada	the first Congress outside of the United States, drew representatives from 18 countries
Sixth Congress	1998	Denver, Colorado	focused on environmental and urban infill issues
Seventh Congress	1999	Milwaukee, Wisconsin	explored strategies to strengthen the physical, economic, and social aspects of cities
Eighth Congress	2000	Portland, Oregon	taught participants about the evolving political landscape of the New Urbanist and Smart Growth movements
Ninth Congress	2001	New York City, New York	focused tightly on four tracks: the region, the neighborhood, design, and codes
Tenth Congress	2002	Miami, Fla.	concentrated on the pressing issue of retrofitting post-war suburbia, and attempted to articulate strategies for the hundreds of first ring suburbs seeking walkable, urbane downtowns
Eleventh Congress	2003	Washington, D.C	focus on districts and corridors
Twelfth Congress	2004	Chicago	From desire to reality: city is appearing
Thirteenth Congress	2005	Pasadena, Calif.	The Polycentric City
Fourteenth Congress	2006	Providence, R.I	Developing the New Urbanism
Fifteenth Congress	2007	Philadelphia	New Urbanism and Old cities: Emphasis on connections between City Living and Sustainability
Sixteenth Congress	2008	Austin, Texas	New Urbanism and the Booming Metropolis
Seventeenth Congress	2009	Denver, Colorado	The Convenient Remedy
Eighteenth Congress	2010	Atlanta, GA	making communities more livable, more energy efficient and better positioned for economic success
Nineteenth congress	2011	Madison, WI	Growing local
Twentieth congress	2012	Florida	Rediscover. Rethink. Redefine

Source: <http://www.cnu.org>

3. Concept of New Urbanism and it's basic principles

New urbanization connect natural environment with human made environment in order to environmental sustainability (figure 1). Presented traverse section in new urbanism approach, is a system of zoning significant elements in city design which is used to coordinate domain of comprehensive changes in village to city and organizing a advantageous order in this range (village to city). Traverse section, is a natural ordered system as each urban element easily find a place in this chain, this process is discussed as traverse section when divided to smaller parts intellectually, and classified as systematic basic for public zoning (Lexicon, 2002:11).

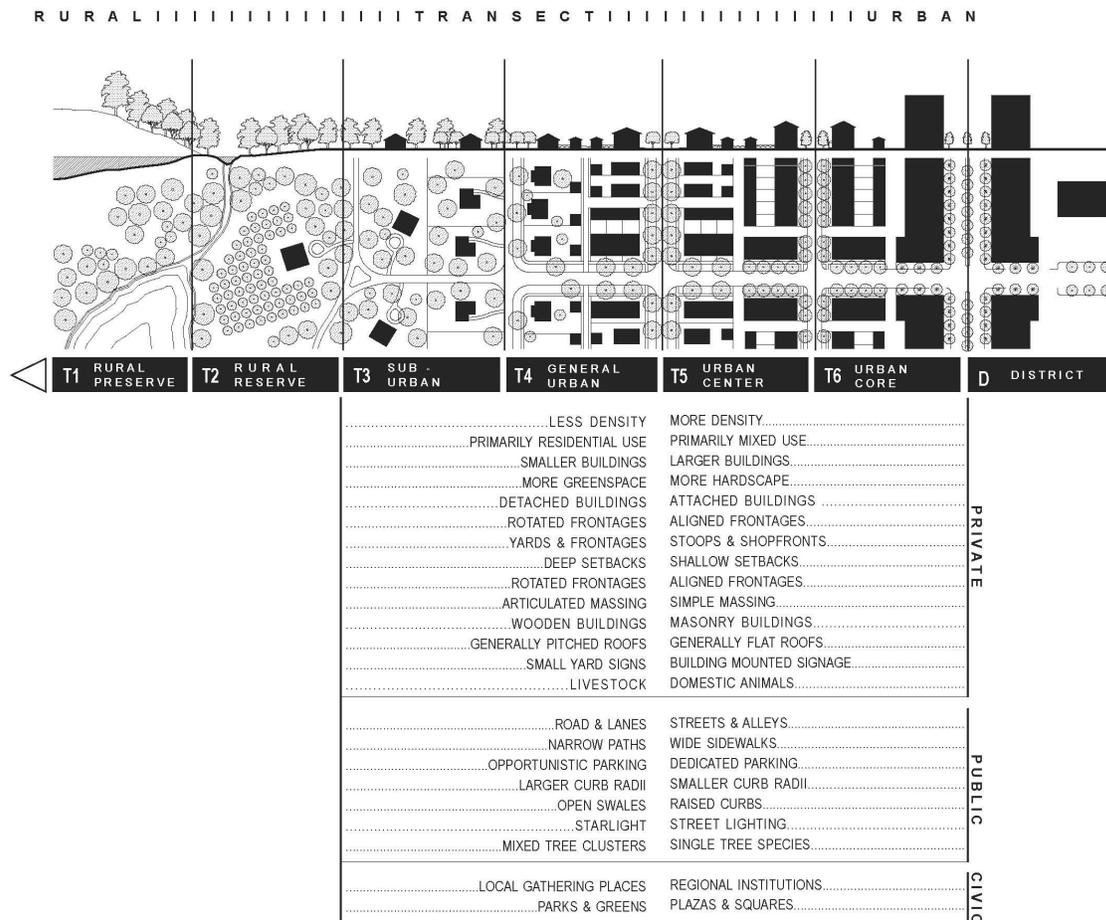


Figure 1. Traverse section of natural environment to human made environment, (Lexicon, 2002:11)

In another definition, new urbanism or neo traditional design of neighboring units provide set of principles for planning that walking ability and livable neighboring units and creating friendly atmosphere for pedestrians are its main points. Of course, removing automobile from daily life isn't the purpose but it attempts to make scene of security and comfort, satisfaction and convenience for pedestrians in spite of cars move along city. The necessity for face to face and close interactions of people with each other is generally considered in new urbanism (Steuteville, 2004).

New urbanism movement is designed in neighboring units; it provides various residual uses from apartment to single houses and villa which can support people with different income classes. Its purposes are to support natural and residual units. In new urbanism viewpoint, connection of neighboring units with surround environment is considered and it also supports urban centers and open spaces for all citizens (Morris, 2008).

In humanitarian new urbanism, neighboring units should design in a scale that access to bicycle and pedestrian for residents is possible by making neighboring units with walking ability (Dutton, 2001).

In the course of introducing new urbanism approach, its main characteristics include as following:

- Criticize modernistic urbanization
- Considering to development in available urban textures against scattered and suburban limitless development
- Attempt to create relatively high congestion, walkable and having mixed use
- Mix subjects such as architecture styles, intelligent growth, disagree with scattered development and sustainable urbanization
- Emphasis and priority on human role in urban design and planning
- Define and use «block, street and building», «neighborhood, district and corridor», «area, metropolitan, city and town», as considerable elements of urbanization in planning design (www.cnu.org/charter)
- Attempt to coordinate with market needs and demands and different needs and views and different income classes
- Emphasis on revitalization and preservation of old textures and cities and recreate internal parts of city
- Slow change from American movement to an international movement (Smith, 2002)
- Attempt to return to art of city construction and traditional planning while being aware of today needs of community (Talen,1999)
- Support security, safety and health of residues
- Having ability to localized principles of new urbanism in defferent communities with emphasis on available practices
- Use today technological findings such as new public transportation systems like subway and urban style transportation systems (Hikichi, 2003)

The main principles of new urbanism are as following:(CNU & HUD,2000)

Walk Ability

Most of uses should locate in distances suitable for walking from house to office.

Street design should done appropriate for pedestrians (buildings adjacent to sidewalks, streets having greenbelt around them, street lots, hidden parking spaces and lots, low speeds of cars and ...)

Making pedestrian streets without presence of automobiles.

Connectivity

Connected street network that distribute traffic and make walking easy.

Hierarchy of narrow streets, bolivars and lanes

Walking network and public realm with high quality which make walking more satisfying

Mixed Use & Diversity

Mix of shops, offices, apartments and houses around design, mix use in quarters

Diversity of people from different ages, classes, cultures and races

Mixed Housing

Different models, sizes and costs of housing units will be closer to each other

Quality Architecture & Urban Design

Emphasis on beauty, aesthetic, human welfare and create location scence, determine place of use and civil places in community in a special way, architecture with humanistic scale and beautiful environment is caused to make human spirit convenient

Traditional Neighborhood Structure

Distinctive and distinguishable edges

Public space in center

Importance of designed public realm and open space quality as civic art

Including variety of uses and congestions in walking distance

Transect Planning

The most and least densities in city center and gradual reduction of densities toward suburbs

Increased Density

Building of residential units, shops and more and closer services that caused to make walking easy, in order to enhance resources and services and to create convenient, desired and satisfied place for living

Smart Transportation

A high quality network of railway systems connect cities, towns and neighborhoods, which encourage to use bicycle and walking.

The design which support pedestrian and emphasis on walking as a way for daily use

Sustainability

Environmental side effects at least for to perform and develop it.

Environment friendly technologies that respect environments and natural systems values.

Energy efficient, less use of fossil fuels.

More walking, less driving.

Quality of life

In reality, by reducing single use and make it more efficient, neighborhood units with ability to walk make better quality of life.

Basic factors that new urbanism movement emphasis on it and create human made environment include:

- A. Neighboring units
- B. Activity fields
- C. Ways of access

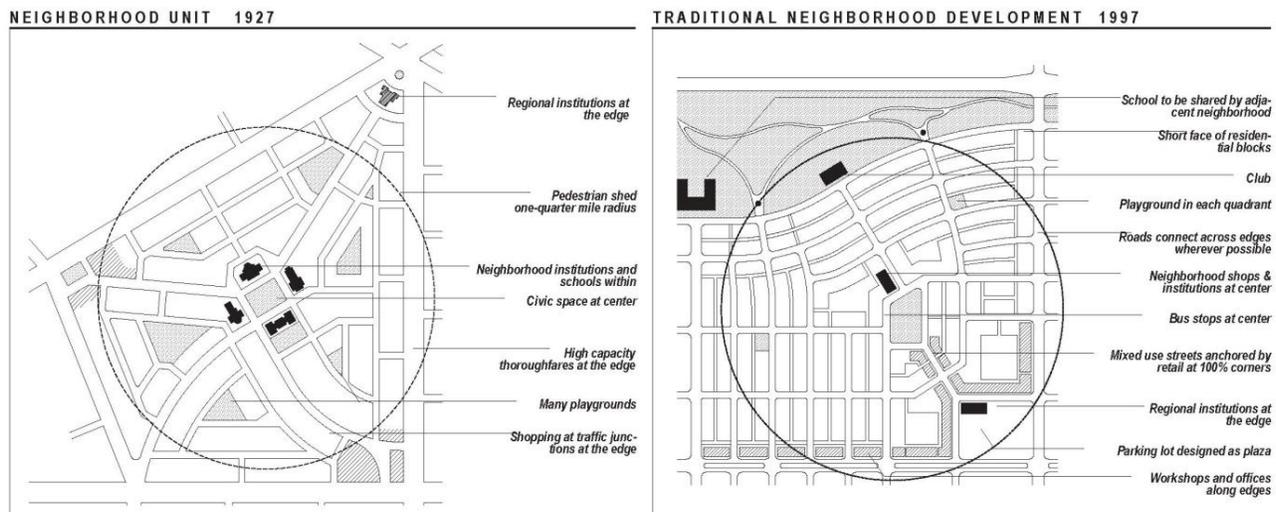
The most important structures which are mentioned for designing basic factors appropriate with new urbanism principles include: streets, blocks, buildings, open spaces

4- Introduce theorists and important patterns in new urbanism approach

Andres Duany and Elizabeth Plater- Zyberk, architects who lives in Florida that their design for Seaside, Florida began in 1980 as the pioneers of this movement. Their approach at first was known as "developing traditional neighborhood units" (TND) which is used in recreation living units, restructuring malls and suburban environments. The main unit of this approach is a neighborhood which its size is 40-200 acres and the structuring of this neighborhood have radius more than 1/4 mile and designed in a way that its houses have a distance at least 3 minutes walking to local parks and 5 minutes walking to square or central mutual space. A meeting hall, child care center, bus station, place for keeping cleaning stuffs and public W.C locate in local Square. In this view, the design of each neighborhood contains various income groups and residual types (Lexicon, 2002:18).

Against modernists who consider four criteria as: 1- free and rapid traffic circumstance, 2- lots of parking spaces, 3- sever separation of uses and 4- relative low density of buildings, these two new urbanists believe in compressed neighborhoods with mix uses and pedestrian priority in designs and areas with appropriate location and characteristics and functional and beautiful corridors which can cohere natural environments and human made quarters in a sustainable and permanent generality. They know fundamental elements of organizing new urbanism as neighborhood unit, district and corridor and then represent design principles for each one of them. According to this fact ideal neighboring unit should include:

- A. A center and an edge.
- B. Optimize size equal to one quarter of mile distance from center.
- C. Balanced combination which include activities, life, shopping, work, going to school, worship and recreation.
- D. A network of connected streets that organize place of buildings and traffic.
- E. Prioritizing to public spaces and appropriate placement of urban buildings.

Figure 2. Comparison of neighboring units 1927 and 1997, (Lexicon, 2002:18)

Peter Caltorpe is another well known characteristic of new urbanism movement who use new urbanism theories in regional scale. Research council for environmental design; introduce him as one of "the most significant innovator", Caltorpe has redefined patterns of urban and suburban growth in America. And define urbanization with "diversity, walking scale, public space and structure of quarters which bordering". The, he said that these principles should used in all scales of a metropolitan area and in all places. Suburban growth and development, new growth and re-creation of central areas of cities or region as a whole, all should reorganize according to urbanization features. Caltorpe requests for general urbanization and portion urbanization. General urbanization related to new system for urban distribution as if city edges and biological complexes of suburbs gain fundamental qualities of real cities such as walking scale, distinguishable center and edge, practical and population coherent diversity and defined public spaces. In general urbanization, principles of design a neighborhood should use for whole of metropolitan. They should have defined edges, access network system should work for on foot movement, public space should be formative and complementary neither extra and remained space (it means that maintain wholesale open space networks), urban and private fields should make a complementary hierarchy (means cultural centers, commercial centers and residual connected neighbors).

This legalization and theorization of Peter Caltorpe leads to a theory well known as "development in the course of public transportation (T.O.D). The pattern resulted from this theory is a dense and completely grid quarter combine all shops, houses and offices as a compressed regional scale and with walkable distances and around a transportation stop. Thus, it makes a direct relation between public transportation pattern and land use. The main idea was that: more start and destination places locate in walk able distances from transportation station and more people use station.

The most important advantage of TOD model is the fact that in spite of high infrastructure costs, railway transportation is the best traffic. This kind of public transportation covers high density of population (at least 14 residual units in each acre). Another advantage of TOD is the fact that institutes and also commercial uses locate adjacent to passing center. This set cover malls by sufficient number of walking and driving passages. Therefore, it attracts more attention to car and passenger traffic. However, regional feature of these passing centers guarantee forming neighborhood local places same as TOD model. The potential problem of this model is spatial decrease which is due to traffic and need to parking lots in passing stations of center. Of course, with traffic reduction by making one way oaths in this space, mentioned problem can be controlled somehow. As other disadvantages of TOD, is that supportive population density for this system may not adopted in central markets. Low pure ratio in regions which located in a 5 minutes walking distance from passing places, criticized condition: considering one quarter as comprehensive matrix of this system devoted to pedestrian paths, contain only 7 percent of impure development areas. A confident study had done that states the advantages of railway transportation causes to increase pedestrians to 10 minutes/ half mile radius. This issue increase district to 40 percent of developed region (Lexicon, 2002:19).

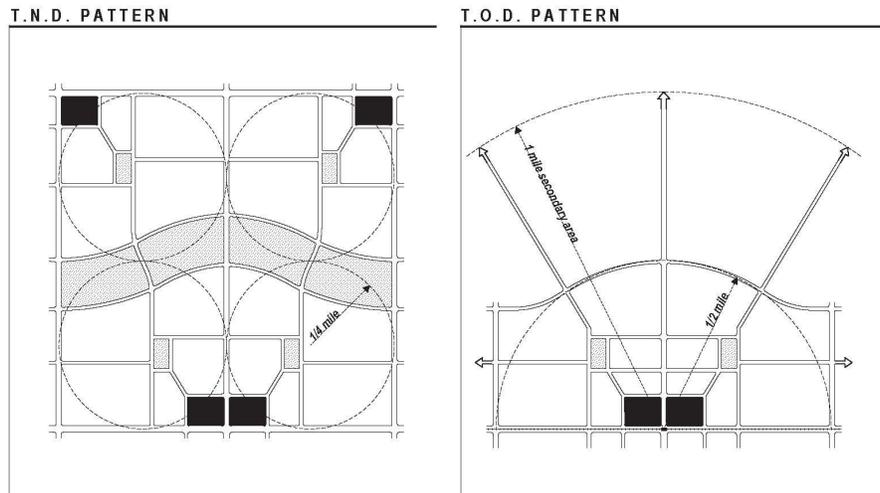


Figure 3: TOD, TND patterns

The Livable Neighborhood Pattern

Livable neighborhood has combined features of TOD and TND. This concept is defined as correction of small unit model.

Australian livable neighborhood contains walking passage places which located in main borders of main passages unfocused. But in fact, neighborhood itself is focused in regional passages. Like TND and against TOD, walk able passages have been conceptual in circles with one quarter radius in Mile.

Like TND, high ration of neighborhood areas is the advantage of this model which is located in region covered by pedestrian. By considering comparable matrix, pedestrian area contains 70% of developed areas. Because considerable percent of residents start to act in paths near to center, transportation system, even with low density. Bus transportation is more direct in comparison with TND.

Australian livable neighborhood have several disadvantages; it's spatial quality as social center reduce because it's center divided to two parts by high capacity passages. The way of minimizing these bad effects, is exact design of passages as boulevard. TND's one way passages strategy is also practical (Lexicon, 2002:19).

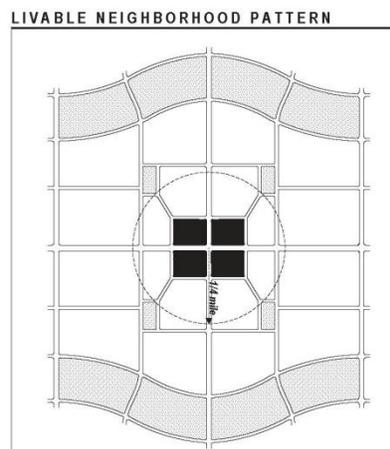


Figure 4: The Livable Neighborhood Pattern

5- State new urbanism findings

Findings of using new urbanism principles in urbanization shows as profits for residents, employees, surveyors and municipalities, these profits in fact caused to provide mutual public gains by performing new urbanism projects (www.newurbanism.org).

5-1 Profits of using new urbanism principles for residents include

Better quality of life, work and play, more value of properties and their sustainability, traffic and less driving, healthy life with more walking and less stress, less distance with main streets which service and retail shops, closer distance to bicycling paths, parks and nature, make local communities that support pedestrians which makes more possibility to know other people in society in quarter and city, more freedom and independency for children, elderly, provide job fortunes for different income classes, recreations and services without need to automobile, financial profits for schools and residents in relation to decrease going and coming of students to school because they can go to school by bicycle or on foot, various, smaller and unique shops and service units that their owners are local people and they themselves are partner in social community, financial savings due to not driving and less ownership of cars, better scene of place and social identity besides unique architecture, more open spaces for use, efficient and reasonable use of taxes with lower cost due to not scattered development of facilities and roads.

5-2 Profits of using new urbanism principles for employees include

More sale because of on foot passing, low expense of car and fuel for people, more profit due to low costs for advertisement and big boards, better way of life by living on upper floor of shops in live- work units that avoid stressful and expensive passing to office, smaller spaces cause complement and growth of smaller local jobs, less hires due to smaller spaces and parking, healthier life style due to more walking, social cooperation because of belonging to society and know residents.

5-3 Profits of using new urbanism principles for surveys include

More potential income from mix use projects and high density and higher value of properties and sale price, faster acceptance of designs in societies follow principles of smart sale leads to decrease financial and time expenses, reduce parking facility expenses in mix use properties because of mutual costs during day and night, reduce amount of destruction to build parking lots, less side effects on roads and traffic which can reduce side costs, lower costs of facilities due to compressed identity of new urbanism design, more acceptance by people, faster sale due to more acceptance by customers who face higher variety of products that this matter caused to gain more share of market.

5-4 Profits of using new urbanism principles for municipalities include

Sustainable tax basics, lower per capita costs for infrastructures and urban facilities in comparison with suburban developments due to compressed identity and high density of projects, increase tax basics due to the fact that more buildings locate in a small area, less traffic density due to walk ability oriented design, less crime and cruelty and less expenses for safety and police security due to peoples presence during day and night, better public picture of society and better spatial sense, less tendency to scattered city development when internal city environment have more attractions, ease of making public transportation system in places where there is this system and its easier enhance if present and finally better and more civil cooperation which caused to better civil governance.

6. Conclusion

Current tendency to urbanism in West in the course of criticize current time that is the result of modernism thoughts after World War II, in order to make coherent, adjoining, humanistic and sustainable. Completion of mentioned approach in scale of new urbanism approach to be responsible for guiding and leading post modern era designers and planners. The primary principles of this approach had been based on using traditional bases of sustainable urbanization in past humanitarian urbanization. This approach have been used in most of new urbanization projects in American and European countries and some cities of developing countries and gained positive results. However in Iran, in spite of having rich urbanization in the past, trivial researches had been done about using traditional principles of urbanization in new urbanism approach and most of cities in our country face with unfavorable results of zoning, inefficient street systems, lack of open space, low quality of architecture, low quality of social life, unbalanced between growth of housing and employment. According to wealth of Iran's traditional urbanization as a suitable bed for using new urbanism approach appropriate with environmental and social condition of different cities of our country, it seems that its use will provide opportunity to solve most of available issues in cities of our country in order to enhance quality of life.

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