



Asian Conference on Environment-Behaviour Studies, AcE-Bs2015, 20-22 February 2015,  
Tehran, Iran

## Design principles in Sustainable Local Community with Security and Socialization Approach (Case study: Chizar)

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### Abstract

Sustainable development covers different environmental, social and economic dimensions. In this paper, we discuss social aspects of sustainability and human oriented design both emphasize that a local community center should include security and sociability concepts. Therefore, the objective of the paper is finding suitable design principles that could increase these two concepts. The methodology of the article is survey and case study. The selected site is CHIZAR local community in Tehran. The paper will conclude that some human-oriented design principles such as diversity in function, visibility, Attractive Street frontages and stay increase security and sociability concepts.

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Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers) and cE-Bs (Centre for Environment-Behaviour Studies, Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia).

*Keywords:* Local community; design principles; security; socialization

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### 1. Introduction

From the modern era and on, the public spaces have born a lot of sudden and profound changes in the process of their evolution. The people's quality of life and social interaction started decreasing, and the sense of local community began leaving the people's social life day to day. For solving these problems, first the quantitative needs and then the qualitative needs of society members were put on the spot, upon outputs of which the sustainable approach to the social life appeared. The approach also constituted the Community-based planning and local community policy. Justice, social control, cooperation, and sociability realize the sustainable social principles in the

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local community are submitting that the local community is to bear public security and sociability concepts. This paper focuses on solving this problem such as decreasing social interaction and local community sense in the chosen site via architectural design principles. The gap is which design principles are more useful in increasing security and sociability. In other words, the objective of the paper is finding and ranking those design principles that could have more significant role in enhancing sociability and security, especially in Chizar community center. Therefore, it could be increased the social interaction and local community sense.

## **2. Literature review**

### *2.1. Sustainable development and local community center*

Sustainable development is a contemporary goal of many urban development policies in various countries. The philosophy of sustainability emphasizes the achieving of sustainability that integrates the economic, environmental, and social into performance. In a holistic approach, every aspect of the sustainability parameters must be assessed to ensure a more pragmatic effort (Abu Bakar, Cheen, 2013, 484). This approach promotes and finally focuses on human needs based on the sense of the local community. This theory causes to appear community-based planning that emphasizes on a local scale. The community-based program is not a short term program. It could be last for more than seven years (Laurens, Joyce Marcella, 2012, 373). On other hand, the physical place such as public squares can perform many activities and events in the city (Zakariya. Kh. Et al, 2014, 678). A real local community center causes a local community become sustainable.

### *2.2. Security and socialization approach*

Besides the sustainable social principles included Security and socialization approach; they are chosen between five perceptual concepts including territory, security, sociability, legibility, and memorabilia. Another paper that focused on these five selected perceptual concepts in Chizar local community center concluded that each of these five perceptual concepts could promote social interactions. Although security and socialization have the higher mean score in this site (Sahragard M. Et al, 2014, 10). Therefore, it is better to focus on these two concepts.

#### *2.2.1. Security concept*

In recent times, researchers are increasingly making the case for variables of perception of safety as indicators of residents' quality of life (Okunola, et al. 2013, 48). The aspect of security is second most important after basic needs based on Maslow's hierarchy of requirements (Sakip et al., 2013, 384). Safety is categorized into physical and mental aspects (Zhang, H., 2012, 24). Once residents lose their sense of community, the neighborhood is vulnerable to crime that could then lead to decreased security (Okunola, et al. 2013, 50). Therefore, security is a factor that becomes a local community sustainable.

#### *2.2.2. Sociability concept*

Sociability in public space means that people can carry out their activities in relative comfort and safety while interacting, engaging in spectacles and ceremonies, or just simply sitting or waiting. It does not necessarily mean that strangers will always socialize with other strangers. It implies that people are comfortable to sit, 'hangout', or eat at the square in the public realm. (Zakariya. Kh. Et al., 2014, 678-679). In the context of the neighborhood environment, sociability is a measure of the opportunity for people to gather, which implies opportunities for children to engage in social interaction (Zhang, H., 2012, 25). In this study, sociability is defined as the ability of the public to become attracted to a space that allows them to conduct social and leisure activities, whether individually or as a group.

#### *2.2.3. Related design principles to security and socialization*

The design principles that could increase security and socialization are categorized into two parts. The first part is design principles that effect on both socialization and security. The first part includes:

- **Mixed use:** Mixed use causes safe and mobile environment in individual building scale and community scale. This principle does not only increase mobility of environment, but also facilitates social control in public spaces (Tibalds, 2001, 54). Different uses such as shops, offices, residential units are available in the local community and different building named mixed use. It could ensure the livability of urban streets and squares in a whole of the day (Gehl, 2002, 88). The modern prescription that divides four primary functions such as residential, work, recreation and commute causes a profound gap in emotional life.
- **Diversity in the seating area:** good public space provides various types of places for sitting (such as bench, chair, stair, and platform). The young people often prefer stairs for seating and chatting, although old people prefer seats, and kids prefer statues. The utility of seating area is provided by placing seating areas in proper view places, with shelter from the wind or the sun, and near water or statue (Gehl, 2002, 82).
- **Form:** Form is an active essential factor on the level of privacy, and then it could increase the sense of convenience and safety (Bahraini et al., 1999, 22). On the other side, form effects on encouraging people to gather. The forms that have centers especially if an element such as fountain, artwork or platforms emphasize on their centers could invite people to gathering (Lenard, 1998, 86). On the opposite side, some forms inspire people just to pass space not to stay.
- **Diversity in function:** It means that a suitable combination of the different function is necessary. A real local center include various functions such as bus stop, residential units, park, mall, shops for daily need, post office, cafe, bank, library, clinic, playground and sport centre (Frey, 1999, 56-61). If the local community center includes various uses with multifunctional potential; therefore we hope our spaces include sustainable function.
- **Visibility:** It means that you could see the spaces in the local center easily from any point. It is provided by permeability and transparency of the areas (crow, 2000). If the area is visible, it is more public and safe. So some people and the length of time spent increases (Wekerle and Whitman, 1995).
- **Gathering Center:** People naturally like gathering in places that others attend. An area or center around a fountain, artwork or historic buildings is essential for creating memorable gathering center (Lenard, 1998, 86). The local community centers are themselves social gathering centers that have the potential for gathering people and spending leisure time.

The second part relates to those design principles that are affected just by Socialization, as following:

- **Diversity in Access:** It means access in the local community is not just commute, but also includes a multifunctional space such as mall and recreation center (Barton et al., 2003, 117).
- **Attractive Street frontages:** The frontages are often the favorite places for socializing, sitting or watching public life. A livable frontage is created by carved pillar, stairs, and shelves. Therefore, it encourages people to stay or rest and creates life and experience in the streets consequently. The attractive street frontages should provide a favorite view by numerous entrances and transparent façades that link outdoor and indoor spaces to create livable urban space (Gehl, 2002, 36).
- **Stay:** Local center has rest area for resting in the middle of the noisy street network like any other points (lynch, 1960). The Stay makes it possible to communicate with others and pay more attention to architectural details. Stay does not mean the complete elimination of movement; however, it decreases the dominance of through traffic (Pakzad, 2010, 118).
- **Spatial Diversity:** It presents different spaces for people with different characteristics in different circumstances to select a suitable, relaxing space for themselves. Therefore, it socializes space. It could be provided by considering various areas for seating, chatting, resting and eating.

### **3. Research methodology**

The research method includes two sections. The first is to gather the related design principles to security and socialization with a descriptive analytic method by reviewing bibliographical resources and studies as a research tool. The second section that aims to categorize and rate the design principles in Chizar local center will profit by logical argumentation and descriptive statistics. The methodology of this part is survey and case study research, and the data instrument is a questionnaire. The survey includes four rating Likert scale with considering the Iranians' characteristics. Some questions are negative, due to the rule of preparing a questionnaire. They are re-coded by SPSS for data analyzing and calculating. Another considerable point is writing a question in a simple way for better

understanding by people. In this regard, ten people read the questionnaire and tell authors the meaning of the issues to revise it. After editing, the final survey is presented. In this way, the validity of the questionnaire is approved. The limitation of the methodology is that 60 questionnaires are filled due to the shortage of time. More questionnaires could improve it. Another limitation is that it is in the step of descriptive statistics and could be developed by more complicated statistics methodology such as factor analysis.

3.1. Chizar community as selected site

Chizar local community locates in the northern districts of Tehran. The reasons for selecting this site are categorized into four sections. The first reason is that it is an old local community. The second is its high religious privilege that acts as a factor for remaining sense of community. The third and fourth are its two famous shrines and marked local center. “Shrine Ali Akbar” as one of its shrines has a significant role in forming a sociable local center (Fig. 1).



Fig. 1. The shrine as an important factor in forming a Chizar local community center.

4. Results and discussions

The design principles categorize in two sections. The first part related to those design principles that effect on both security and sociability. The second part related to those that effect just on sociability (table 1). It is necessary to mention that the security and sociability have a relationship together, but they are categorized in this paper. This categorization considers the literature review that emphasizes directly on the relation between some design principles and those concepts, not base on logical argumentation. The other reason for this categorization is based on Cronbach's Alpha in the questionnaire. Some questions are deleted because of the reliability of the questionnaire.

Table 1. The relation between design principles as objects and security and socialization as contents.

Object \ Content	Mixed uses	Diversity in seating area	Form	Diversity in function	Diversity in Access	Visibility	Attractive Street frontages	Stays	Gathering center	Spatial Diversity
Security	x	x	x	x		x			x	
Socialization	x	x	x	x	x	x	x	x	x	x

4.1. Related design principles affected by both security and socialization

The design principles are affected by both Security and Socialization are six items in the questionnaire and means of them calculated. They are shown in Table 2.

- Mixed use: The relation between this principle and socialization and security is asked in the survey by two sentences. “shops, houses and recreational centers are all together; so many different people are here in Chizar local community center”. “...; so I feel security in the Chizar local community center”. As indicated in Table 2,

the means for these two questions are 3.0667. It means that the opinions of most people are between agreement and total agreement. Most people rate mixed uses at the proper level in their local centers, and so people like to gather there; also people feel secure, Fig. 2(a).



Fig. 2. (a) Mixed uses in Chizar local community center; (b) Suitable places for seating area around the square in front of Imamzadeh; (c) Seats in the courtyard of Imamzadeh could be developed by better types.

- Diversity in the seating area: Diversity in the seating area could increase the length of time spent in public spaces; then it facilitates the social relations and increases security. The questionnaire includes this variable by two sentences. The first sentence is “There are suitable and various spaces for sitting such as bench, stair, chair and platform with an excellent view in the Chizar local community center; so people encourage to stay”. The second is similar to previous, but the second clause of sentences emphasizes in relation to this design principle with security. The means of the two variables are 1.7667. It means that most people agree on the weakness of diversity in the seating area in their local center. Therefore, the design strategy is to planning various seating area and finding suitable spaces for placing them. One of the appropriate areas for the seating area is around the square in front of Imamzadeh, Fig. 2(b). The seats in the courtyard of Imamzadeh could be developed by better materials and types, Fig. 2(c).
- Form: Form is a principle that effect on both security and socialization, and it assign two questions to measure them. The first question is about the relation of form and security as follow. “There are some lonely corner spaces with less view in Chizar local community center, so it causes to decrease the sense of security”. The mean of this variable is 2.5333, so it is just near the middle. It is recommended that corner spaces could be revised. The second question is about the relation between form and socialization. It is “Some places in Chizar local community center like the square in front of Imamzadeh have the form that inspires me to pass it and not to stay”. The mean of this variable is 2.23, so it shows that the shape of some places is not suitable for gathering people. As it is mentioned before in the literature review, it is necessary to design forms especially with central elements in the middle of it. The square behind Imamzadeh is one of the places that could be developed, fig 3(a).
- Diversity in function: three questions consider this variable. The first sentence is “Some suitable services such as shopping center, recreation center, clinic, restaurants and fast foods, library and playground aren’t enough, so it doesn’t encourage people to stay more in Chizar local community center”. The mean of this variable is 2.1 below of the middle. It shows that some suitable functions are necessary. People name the desirable functions as a recreational center, playground and library in interviews.
- The second and third questions are similar to each other, but a little difference in the second clause that is about the relation between this principle and security or the socialization concept. These are following: “There are some various activities like shopping, eating, recreating and kids playing in the streets of Chizar local community center, so it causes gathering people here/ or the increasing number of pedestrians, and therefore I feel secure”. The means of these two questions are respectively 2.5 and 2.66. It means that this variable needs to be developed. Moreover, the first question also confirms it. It is also should be considered people believe that the lack of various function has a more adverse effect on socialization than security, fig 3(b) and (c).
- Visibility: The three questions are planned to measure the relation between visibility and security or socialization. The first and second questions are ”The Chizar local community center could be seen from many different spaces like houses, shops or streets, so the sense of security increases/ or it invites people to stay more”. These two questions relate to the concept that we name it “Eshraf” in Persian culture. The means of these two

questions are respectively 3.16 and 3.1. It means that this variable is useful. Besides, it shows that the effect of visibility on socialization and security is similar.

- The third is about the permeability of space as follows: “Each point of Chizar local community center could be seen from a long distance (200 meters), so I feel secure.” The mean of this question is 2.76. It demonstrates that people rate the permeability good, so they perceive security. All of these three questions together measures the visibility of the site in a good score.
- Gathering Center: The two related questions to this principle are “There are not enough spaces that have suitable form for gathering people in it (like a square with a fountain in center and benches around) in Chizar local community center, so people don’t encourage staying there”. “There are few suitable formal and functional spaces for gathering people in Chizar local community center, so it decreases the sense of security.” The means of these two questions are respectively 1.66 and 1.83, between opposing and totally opposing. So a score of gathering center is weak. Besides, people believe that the weakness of gathering center has a more adverse effect on socialization than security. The square in front of the shrine is a place that has the potential to become the real gathering center.



Fig. 3. (a) The square behind shrine could be developed by central elements; (b) Bank as available function; (c) Taxi station as available function in Chizar local center.

Table 2. Measuring six design principles effect on both Security and Socialization in Chizar local center.

Variables		Statistic
1.Mixed use	Mixed use and socialization	Mean 3.066
	Mixed use and security	Mean 3.066
2.Diversity in the seating area	Diversity in the seating area and socialization	Mean 1.766
	Diversity in the seating area and security	Mean 1.766
3.Form	Form and security	Mean 2.5333
	Form and socialization	Mean 2.2333
6.Gathering Center	Gathering Center and socialization	Mean 1.6667
	Gathering center and security	Mean 1.8333
4.Diversity in function	Diversity in function and socialization	Mean 2.100
	Diversity in function And socialization	Mean 2.500
	Diversity in function and security	Mean 2.666
5. Visibility	Visibility (Eshraf) and security	Mean 3.166
	Visibility (Eshraf) And socialization	Mean 3.1000
	Permeability and security	Mean 2.7667

#### 4.2. Related design principles affected just by socialization

There are four design principles that are affected just by Socialization (Table 3).

- **Diversity in Access:** The related question is: “people use the streets of Chizar local community center for recreation and shopping in addition of commute, so the number of people increases and persons encourages staying more.” The mean of this variable is 3.1667, so it shows that this principle is good in the site.
- **Attractive Street frontages:** This variable is presented by this sentence: “when I walk in the streets of Chizar local community center, interesting details like shelf, platform, seating area and windows attract my attention and I like to gather here with others”. The mean of this variable is 2.033, so it shows that this variable is weak. The design strategy is to develop building facades by details that mention before.
- **Stay:** The question of this principle is: “There are not spaces for waiting and resting for a moment, so gathering people decreases. The mean of this variable is 2.7667, better than the average. The reason if this is the presence of stay area in the court of the shrine. Although, it is not as good as it could be. The recommended suggestion is to design a stay area with various potential in the square in front and behind of shrine, Fig. 4(a).
- **Spatial Diversity:** The question about relation of this principle and socialization is: “There are not various suitable spaces for seating, chatting, eating, resting or standing; so it decrease the sense of security.” The mean of this variable is 1.8333, below the average, so it shows that the situation of this variable is not acceptable from the people’s point of view. The middle of the street is a good place to put various seats for seating and chatting, Fig. 4(b). It is necessary to mention that this question is negative, so it is re-coded by SPSS and authors consider it for drawing a conclusion. This variable is not acceptable from the people’s point of view.



Fig.4. (a) The square has potential to become stay area; (b) The middle of the street as a possible place to have spatial diversity.

Table 3. Measuring four design principles effect just on Socialization in Chizar local center.

Variables		Statistic	
1. Diversity in access	Relation between diversity in access and socialization	Mean	3.1667
		Minimum	2.00
		Maximum	4.00
2. Attractive Street frontages	Relation between Attractive Street frontages and socialization	Mean	2.0333
		Minimum	1.00
		Maximum	3.00
3. Stay	Relation between stay and socialization	Mean	2.7667
		Minimum	1.00
		Maximum	4.00
4. Spatial diversity	Relation between Spatial diversity and socialization	Mean	1.8333
		Minimum	1.00
		Maximum	3.00

## 5. Conclusion

Sustainable development emphasizes on human qualitative and quantitative needs, particularly in the local community level. If security and socialization take place in public spaces of the local community, we could hope local community center become sustainable. This study derives the design principles that could increase security and socialization. Then it categorizes them into two parts. The first part is those design principles that are affected by both socialization and security including mixed use, diversity of the seating area, form, diversity in function, visibility, and gathering center. The second part relates to those design principles that is affected just by Socialization such as diversity in access, attractive Street frontages, stay, Spatial Diversity (table 4). Then, they are measured in the Chizar local community center by questionnaires. In first categorization, Visibility has the best score and people rate it between “agreement” and “total agreement”. The second score belongs to mixed use. It demonstrates that people are satisfied with a combination of residential, official and recreational units in their local center. The third grade belongs to diversity in function. This variable is under the average, so it is weak. They name the desirable function as a recreational center, playground and library in interviews. The form has the fourth grade, near the average. The suggestion of this principle is to revise corner spaces and to design forms especially with central elements in the middle of it like the square behind Imamzadeh. The diversity in the seating area and gathering center both are weak and below the opposing toward totally opposite. The variety in the seating area has the same adverse effect on security and socialization, but gathering center has more negative impact on socialization than security. The design strategy for diversity in the seating area is planning various seating area and finding a suitable place for setting them. The suggestion for gathering center is square in front of a shrine that has the potential to be a real gathering center.

In second categorization, the variables are respectively Diversity in access, stay, Attractive Street frontages, Spatial diversity with score 3.16, 2.76, 2.03, 1.83. The diversity in access and stay are good because they are over the average (2.5) and attractive street frontages, and spatial diversity are weak. The design strategy for attractive street frontages is to develop building facades by details such as carved pillar, stairs, platforms, shelves and transparent facades. The suggestion for spatial diversity is to find potential places to put various spaces for seating and chatting in it. Further studies could be to classifying these variables by factor analysis method. Another could be modeling it with finding the meaningful relation with their score.

Table 4: Categorization and ranking related design principles to security and socialization.

1.Related design principles affected by both Security and Socialization		2.Related design principles affected just by Socialization	
Design principle	Mean in the site	Design principle	Mean in the site
Visibility	Excellent	Diversity in access	Excellent
Mixed use	Good	Stay	Good
Diversity in function	On the average	Attractive Street frontages	Weak
Form	Weak	Spatial diversity	Weak
Diversity in seating area	So weak		
Gathering center	So weak		

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