

Famagusta Movement Pattern and Land Use

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Abstract

Nowadays, the city shapes have entirely changed. They have become mere vehicular channels without any spatial definition, vitality and public usage. They are not safe especially for children and citizens have lost the sense of belonging to their neighborhood. Therefore, cities have gradually changed to unsustainable ones. Considering this fact, the main objective of this study is to put much concentration on the movement pattern and land use as a source of sustainability. Thereby, from this perspective, Famagusta's different neighborhoods in Northern Cyprus have been selected to better understand the specific influences of patterns of movement and land use in the sustainable development of the city. Generally, this research is based on a theoretical framework with regard for the mentioned factors. Moreover, a questionnaire survey has been taken to measure the amount of citizens' satisfaction about the current situation and to determine the criteria for the assessment of access to and utilization of public spaces. Based on the survey results, recommendations and design proposal for future development and organization of the city have been suggested in order to make Famagusta more livable. In this case, pedestrianization, cycling, reforming livable neighborhoods and combining the nature to the city can be considered. Another answer to this problem can be increasing density and mix use activity in the current context of the city.

Keywords

Movement Pattern; Land Use; Famagusta; Sustainable Development

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Gazimağusa Hareket Deseni Ve Arazi Kullanimi

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Özet

Günümüzde şehir dokuları tamamen deęiřti. Mekansal bir tanım, canlılık ve kamusal kullanım olmadan sadece araç kanalları haline geldiler. Özellikle çocuklar için güvenli olmayan yerlerde, kent sakinleri semtlerine ait olma duygusunu kaybetti. Dolayısıyla, şehirler kademeli olarak sürdürülemez bir yapıya büründü. Bu gerçeęi göz önünde bulundurarak, bu çalışmanın temel amacı, hareketlilik deseni ve arazi kullanımına sürdürülebilirlik kaynakları olarak yoğunlaşmaktır. Bu bağlamda, Kuzey Kıbrıs'ta bulunan Gazimağusa kentinin farklı mahalleleri, kentin sürdürülebilir kalkınmasında hareket ve arazi kullanım modellerinin belirli etkilerini daha iyi anlamak için incelenmiştir. Genel olarak, bu araştırma söz konusu faktörlerle ilgili teorik bir çerçeveye dayanmaktadır. Çalışma kapsamında ayrıca, kent sakinlerinin mevcut durumla ilgili memnuniyet miktarını ölçmek ve kamusal alanlara erişim ve kullanım ölçütlerini belirlemek için bir anket çalışması yapılmıştır. Anket sonuçlarına dayanarak, Gazimağusa kentini daha yaşanılabilir hale getirmek için, kentin gelecekteki gelişimi, organizasyonu ve tasarımı için öneriler sunulmuştur. Bunlar arasında yayalařtırma, bisiklete binme, yaşanabilir mahallelerin yenilenmesi ve doğanın şehre birleřtirilmesi yer almaktadır. Kentin bu sorununa çözüm sağlayabilecek dięer bir etken ise, kentin mevcut bağlamda yoğunluęunu artırmak ve kullanım faaliyetlerini çeřitlendirmektir.

Anahtar kelimeler

Hareket Deseni; Arazi Kullanimi; Gazimağusa; Sürdürülebilir Kalkınma

Introduction

In today's world urban design, after a blind imitation of the modern western planners, (so-called universal design), citizens complain that these contemporary design patterns are really fragmented from their traditional dynamic lives. In order to change the city size from human scales to automobile scales, cities have gradually changed to unsustainable ones, which no longer respond to human needs, nor are well integrated with the environment and deny a sense of place (Madsen, 1992; Neill, 1993; Oktay, 2006). Accordingly, the residents of the neighborhood cannot develop a sense of belonging and streets have also become mere vehicular channels without any spatial definition and public usage (Steuteville, 2004).

With regard to these negative results, it seems that we need to build our environment more compact or de-fragmented with a mix of uses to support the idea, which maximize the exchange among people whilst minimizing the travel necessity to take advantage of land use (Beaumont, 1994). Unfortunately, despite this growing awareness, we are still largely shaping our environment to accommodate the car. By integrating narrow streets with more walkable spaces, we can encourage walking. During this process people can see their friends and neighbors and this leads to more dynamic neighborhood. Meanwhile, dedicating less land to automobiles means that more is available for people, parks, green and open spaces. So, these should be integrated into the sustainable development.

From this point onwards, it is of great importance to know more about the common issues in the fields of movement patterns and land use mainly by referring to the environmental characteristics and sustainable development. To achieve this goal, we have to consciously shape and manage our environment and focus on the requirements of sustainable development, which is the main purpose of this study. Thereby, under this scope, Famagusta is selected as a case study to better understand the influence of movement patterns and land use in city sustainable development.

Famagusta's development during the time and some of its urban fabrics issues have been discussed in previous literature (Hoşkara, Dağlı & Doratlı, 1999; Doratlı, Hoşkara & Faslı, 2004; Doratlı, Hoşkara, Oktay, & Faslı, 2007; Oktay & Conteh, 2007; Boğaç, 2009; Oktay & Rustemli, 2011). However, this study tries to concentrate on the city sustainability progresses by focusing on the movement pattern and land use in different city neighborhoods. It should be mentioned that in this study a significant area or neighborhood has not been selected, this is in case of covering different depletions of the city. This can open discussion about the city development problems and give some brief initial solutions to the issue by creating pedestrian and bicycle paths, reforming neighborhoods, protecting the nature in the city, increasing density and mix use activity in the current context of the city.

Methodology

This study is based on a theoretical approach supported mainly by the outcomes of a literature review and case study analysis. On the other hand, it involves fieldwork and more specifically deskwork studying as a kind of qualitative methods of data collection. Therefore, the research methodology of this paper consists of a

combination of observation of the site questionnaires and in-depth interviews with citizens and documents survey, which is sustained by the achievement of former approaches.

Apart from the literature review, the observations took place during two workdays and two weekends at different times of the day in May 2018. This attempt was done in order to analyze the level of residents' problems in different neighborhoods. Thus, 150 men and women filled out the questionnaire forms and were interviewed orally according to the variables of age groups in order to achieve a deeper understanding of the residents' associative and cultural life. Also, this method authorizes to collect various opinions, experiences and reflects the effects of urban design on the daily life of the concerned citizens, as well as on their use and perception of urban public spaces and neighborhoods.

Sustainable Development

Although gaining sustainable development has become a crucial matter after 1970s (Satterthwaite, 2010), describing it is very difficult. There are several definitions and suggestions for it, but a generally accepted one is from the Brundtland Report, which claims that; "sustainable development is the development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (WCED, 1987; Lotfabadi, Alibaba, & Arfaei, 2016).

Therefore, it is implied from the above viewpoint that development in city scale can be obtained without destroying our environment and depleting natural resources, such as; land, energy, water, air and so on, which leads to good quality of life (Oktay, 2004). Also, this can illustrate the importance of socio-cultural aspect of city lives instead of technological ones. So, as Cranz emphasized, social factors are at the forefront of sustainable development (Cranz, 1994; Lotfabadi, 2013).

Eventually, in this case, one of the most successful examples that can be used as a pattern for future urban development is looking at the past and vernacular architectures. This kind of architecture and urbanization depended on a human scale, which relies on human needs and human beings. It was based on balancing urban development with the protection of environmental resources (Lotfabadi & Hançer, 2019).

Movement Patterns

The urban space capability to attract movement is determined through its accessibility. On this criterion, the space syntax ideas mentioned by Hillier and Hanson comprehending urban structure leads to social dynamic spaces (Hillier & Hanson, 1984). Hillier et al. (1993) recommended the idea of natural movement, which is explained as "the proportion of urban pedestrian movement determined by the configuration of the grid itself" (Hiller, 1993). He then mentioned that the living cities, which include areas with more or less movement, are determined by the space-to-function process that influences land use distribution, allowing certain functions like retail in the areas with the most natural movement and so on (Hillier, 1996).

Therefore, space syntax works relate to the movement pattern and land use by revealing structures in the urban spatial network (Hillier & Hanson, 1984). Thus, the street-level urban activity dynamic, which relates to the movement pattern, and the street-level culture and economy that are a spin-off of this, are structured by scale within well-functioning urban environments (Hillier, 1996; Illustrated Urban Design Principle, 2015).

Unfortunately, in the last decade of the twentieth century, the environmental impacts of automobiles are widely recognized. They have some direct and indirect impacts on societies. For instance; occupied streets divide neighborhoods and isolate people in their vehicles without any communications chance. So, the quality of neighborhood interaction is at stake (Oktay D. , 2001). The importance of face to face communication is obviously discussed in Boden and Molotch (1995). They argued that the meanings of co-present interactions depend on the way particulars which may seem insignificant on their own, when arrayed together in context, inform or index each other creating a rich communicative pattern (Boden & Molotch, 1995).

These heavy traffic streets are one of the most important hindlers for children's safety. Also, the lack of pavements or properly marked crossing zones is another factor, which intensify the dangers for children safety (Jalaladdini & Oktay, 2012). Then, by considering the negative effects of vehicular traffic, such distribution leads to the process of centrality, which introduces new changes in the land use patterns in order to reduce movement patterns in the neighborhoods (Hillier, 2001). As it was mentioned, to reduce automobile dependency, more focus on design alternatives that provide opportunities for bicycling and walking is absolutely needed.

Walkable Spaces, Pedestrianization and Bicycling

By developing some theories, in 1990's, a response to the above problems, which was based on humanistic urbanism, was the appearance of new urbanism movement. In other words, this idea, tries to gain sustainable development purposes and solve wear and tear urban centers problem by creating an appropriate environment that is responsible for transformations of urban spaces and developmental modern improvements (Oktay, 2012).

This idea is related to the traditional design principles that considered the humanistic position in cities. Therefore, in this case, public spaces and neighborhood units should be designed in such a scale that access to bicycle and pedestrian for residents be achievable by creating neighboring units with walking (Dutton, 2001). In other words, urban spaces should be designed in a case to be friendly with the presence of people living, visiting, shopping, enjoying or spending time in public spaces (Walkability Scoping Paper, 2005). It has so many benefits, which can be determined from various perspectives such as economic, health, environmental and so on. Therefore, it is an essential factor to achieve the purpose of sustainability in urban design (Grignaffini et al., 2008).

Cities can be more walkable by adding some features into the urban public spaces and landscape, which makes walking a pleasant experience for everyone, and by bringing a range of interesting destinations within walking distance from homes and workplaces. So, getting to healthier, safer and more convivial

neighborhoods are some benefits of encouraging people to walk. Through the studies done on walking from the fields of transportation, urban design and public health, it has been suggested that neighborhoods with higher residential and densities, more connected street patterns, and a variety of destinations show higher rate of walking (Gehl, 1996; Hiller, 1993).

Making pedestrian streets without the presence of automobiles is another probable solution. These kinds of societies are expected to put urban space sustainability back on a scale in both levels of natural and economical. Meanwhile, they can lead to more physical fitness, diminishing crimes and other social problems and their most important benefit is that they can improve social interaction between residents. At the same time, pedestrian oriented communities are more livable, and lead to whole, happy, healthy lives for the people who live in them (Oktay D. , 2001). On the other hand, it has a lot of economic benefits for both individuals and public such as increased livability, increased land use efficiency, improved public health, and economic development among citizens (Walkability Scoping Paper, 2005; Ramirez, et al., 2006). It can reduce the fuel consumption, noise and air pollution and CO₂ emission as well, declining traffic congestion, decrease the parking lot demands, and can also reduce citizens' financial costs and taxes at large (negligible damage to roads, less road area required) (Komanoff, 2004; The Hidden Benefits of Biking, 2015).

By increasing city population in today's world, promoting sustainable urban mobility modes take a paramount importance. Cycling is a very good example to gain this purpose, which can be used in two ways; one is persuading citizens use their own bikes. Another option is; shared bicycle schemes (Shaheen, Guzman, & Zhang, 2010). In other words, the government provides public access to bicycles from a fixed number of stations that are distributed around the city. Travelers may pick up bicycles from any station they select and get to any of the station's free parking. But what is more important in both situations is designing and maintaining proper bicycle paths in the city in order to obtain such profits as; access to quick, healthy and convenient modes of transportations, and increase of sustainable mobility choices of low cost and so on.

Public Transportation

Although the previous solutions are very good, they are not applied in all cases, for example, for long distances or disabled and old people. Here the solution is public transportation, which is a fundamental way to reduce car traffic in cities that have grown too large for walking or cycling for most journeys. In this case, public transportation can be defined as a shared passenger transport service, which is available for use by the general public (Wortman, 2008). Considering so many advantages of public transportation, it seems to be a solution for many of today's cities' problems, mentioned before. For instance: in comparison with cars, it provides shorter travel time, it has less environmental hazards, it can decrease energy consumption and so on (Van Vugt et al., 1996).

Therefore, in this case it is better to mention TND (traditional neighborhood development) and TOD (transit-oriented development). They are similar to each other in limited walking radius and having central open spaces, in order to obtain

one's daily needs. However, TOD considers a major transit - such as railway or bus system - connection at the heart of the society. The solution based on this theory is a dense and fully grid quarter, combining all necessary functions such as houses, stores, and offices as a compressed regional scale and with walkable distances and around transportation stops. Furthermore, in spite of high infrastructure costs, this kind of public transportation covers high density of population (Fig. 1) (Hassani et al. 2012).

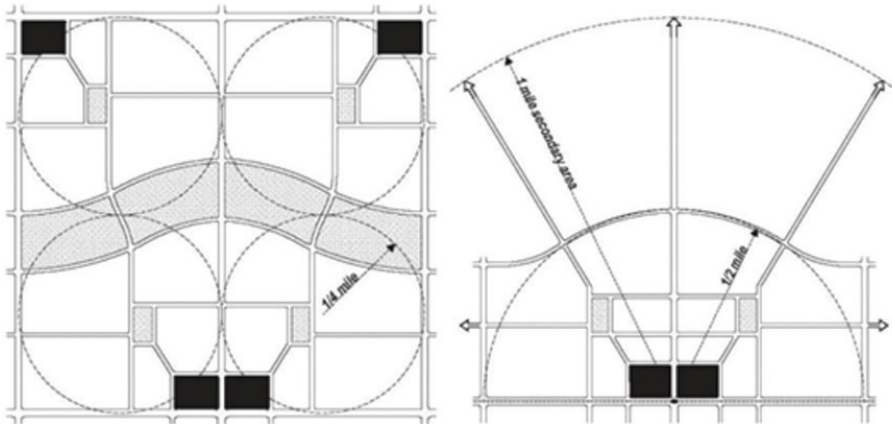


Figure 1: TND and TOD Patterns (Source: Hassani et al. 2012)

Public Spaces and Child Friendly Cities

One of the main reasons for establishing cities is developing exchange and communication among people, and public space is a key element through which these processes occur (Goodey, 1993). Therefore, urban public space is a space accessible to all residents and their activities take place there. As Madanipour discussed; these places are “controlled by a public agency, and are provided and managed in the public interest” (Madanipour, 1994). In other words, it is the space, shared with strangers, people who are not relatives, friends, or colleagues (Garcia-Ramon, Ortiz, & Prats, 2004). Moreover, it is believed that these spaces have an undeniable role in the integration and social cohesion of the urban spaces. Therefore, public spaces have an undeniable role in urban planning and community socialization (Madanipour, 1992).

Public spaces can be a good index to evaluate the city's richness, in order to reflect its social life, civic culture and everyday discourse. So, according to Jan Gehl's ideas; public open space is an essential factor in urban design (Gehl, 1996). A well-designed public space encourages citizens to stop, sit down, and enjoy the environment such as; trees, birds, and also the presence of other people. It should make people feel comfortable with each other, and somehow, encourage spontaneous conversation (Oktay, 2004).

These kinds of safe and attractive public spaces, which might have access to some public services like; library, playground and etc, not only make cities good places for children, but also make them good for every resident. A social and

physical environment that encourages human development, allows both children and adults in general, to reach their potential, and to enrich their community. Moreover, this issue leads to much welcoming and friendly atmosphere in a society, where local community bonds between residents make it a safe place for living.

Land Use

Land for future urban use can be largely characterized into residential, commercial and industrial uses. Other land use categories contain land allocated to the public areas, green spaces, schools, facilities, community centers and roads (Payn, 2007). Due to environmental constraints, some land set aside for future urban use, will be unusable for other purposes. Land use planning is a public policy exercise that designates and regulates the use of land in order to recover a community's physical, economy, and social efficiency and well-being. By considering socio-economic trends as well as geographical and physical features such as; ecology and topography, planning helps in identifying the preferred land uses, which will support local development aims (Ashihara, 1992). Therefore, this issue can be divided into two groups:

Formal land use: "Use representations are concerned with qualitative attributes of space such as its form, pattern and aspect and are descriptive in nature" (Ashihara, 1992).

Functional land use: "Representations are concerned with the economic nature of activities such as production, consumption, residence, and transport, and are mainly a socio-economic description of space" (Ashihara, 1992).

Combining Urbanism and Nature

In today's contemporary development, it seems that one of the biggest challenges in urban scale is the quantity, nature and location of green spaces within the environments. In this case, a city green space as the major contribution of human activities, climate improvement and ecological diversity are necessary for interaction between people and community development. On the other hand, it impedes from separating and isolating people from each other in the society, and it also leads to a better understanding of nature quality in each place, expressing it in the community designs, integrating it within our town plans, and respecting its balance are essential ingredients of ecological site design, hence, it is essential for true sustainability (Van Nes, 2009).

Moreover, a perfect example of integration of architecture and the natural landscape is the traditional Turkish city, the most popular one, Mardin in Turkey. For instance, the pre-existing topographic character of the site is apparent at the urban scale even in intense built-up areas (Turner, 2004). Gardens perforate an otherwise dense urban fabric, providing relief to the streets and to public and private structures.

Vitality in Streets

Nowadays, cities have been remodeled, to make more and more space for cars. Residential and commercial constructions with massive car parks, have overpowered businesses in cities. Although, streets should be made more attractive for their residents, in order to improve the environment, they have become noisy,

polluted and unpleasant (Turner, 2004). This is in the case that streets are the most virgin sort of public open spaces (Krier, 1979; Carmona et al., 2003). Apart from the point that street is one of the key elements of an urban fabric, it has a sufficient role to present the urban features as well (Shamsuddin, 2011). It can provide opportunities for socio-economic activities in cities and in general it can define the structure of the urban fabrics (Lynch K. , 1960; Jacobs A. , 1993). So, as Jacobs believed; street is the most important part of the public open spaces in urban design (Jacobs J. , 1961). Therefore, the most efficient method for supporting this matter is identifying vitality as one of the performance dimensions of urban planning and describing it as the degree in which the form of places supports the functions, human capabilities and biological supplies in cities (Graeme, 2010).

Vitality deals with the degree in which an urban space is socially successful. As Montgomery discussed, it refers to the number of people in and around the street (pedestrian flows) across different times of the day and night, the uptake of facilities, the number of cultural events and celebrations over the year, the presence of an active street life, and generally the extent to which a place feels alive or lively (Montgomery, 1998; Graeme, 2010).

Vitality is an essential quality in the urban spaces, in order to reduce crime, makes commercial interests more viable, increases passive enjoyment with the aid of people watching, encourages social interaction and provides opportunities for cultural exchange. Consequently, vitality in the urban space is regarded as a vital measure of its health in the society (Lynch K. , 1981). But how can we approach to vital cities? There might be two solutions;

- Increasing mix of uses;
- Increasing densities.

Mixed Use

The mixing of urban uses of working, moving and living is possible and, increasingly, required. This new concept takes as its model the traditional life of the city, multiple uses, stressing density, social and cultural diversity. The general term 'mixed use' covers an extremely wide variety of development types, from the neighborhood. However, there are three criteria that all well mixed-use:

1. They include a combination of related issues in one place, such as residential, office, retail, entertainment, civic space, and even government uses (Graeme, 2010).
2. They provide a significant proportion of every uses within the 'mix'.
3. They provide convention and safe pedestrian and bicycle connections, both within the development and to places outside the development.

The main purpose of mixed use spaces is that it brings people closer to the things that they need during a day. It also provides more choices for both residents and workers. Moreover, mixed use can make public structures much efficient. Thus, the correct mixed of uses can be led to an extremely effective use of resources such as; roadways and parkings (Hill, 2011).

Density

A high density and compact form is the ideal pattern for the city sustainability living (Lotfabadi, 2015). High density fundamentally signifies a focus on people and their activities in urban spaces. Meanwhile, a higher density neighborhood

creates a better variety of leisure, work, and travel options. "The wide cross section of people and their activities also makes an appropriate condition for approaching a rich culture" (Payn, 2007).

In cities, high density is known to be proficient for more sustainable public transportation. A compact city has population densities, which are well enough to operate and maintain public transport. Hence, as compact cities fundamentally mean high density and mixed use, people can live near to their workplaces and leisure facilities in the city. Thus, the need for long travels is less and citizens can walk and cycle without trouble (Payn, 2007).

Thereby, by decreasing sprawl spaces, compact cities are known as land conservers, which are characterized by incessantly growing urban spaces, which help preserving countryside lands and forests. In addition, in the study on urban planning, the idea that a city with high density is more sustainable and more environmental friendly than a spread city is proved (Payn, 2007; Lotfabadi, 2014).

Neighborhoods

Although the term neighborhood has been used in urban design terminology since a long time ago, there are so many various definitions for it. According to one of the most approvable neighborhood definitions, Pacione argued that neighborhood is "an urban district in a strict sense defined as one, in which there is an identifiable subculture to which the majority of residents conform" (Pacione, 2005).

Farr believed that the neighborhood definition should be revised; Farr also claimed that those separate building blocks or shopping centers and so on are not referred to as neighborhood (Farr, 2008). Besides, LEED for Neighborhood Developments (LEED-ND) Rating System points some features of an ideal neighborhood as follow: To have a legible urban center and edge, these features are listed: limiting the neighborhood size, where residents can have approximately walkable access of five minutes average from the center to each edge, having an integrated network of walkable streets, public spaces and civic buildings, having mixed land uses, which is allowing basic daily needs in the neighborhood, containing a variety of household types and so on (Engel-Yan, J., et al, 2005).

Neighborhood design can be defined as the physical character of neighborhoods and communities within the city (Turner, 2004). Well-designed neighborhoods are compact, pedestrian friendly, and contain most of day-to-day activities and mainly destinations public transport links within comfortable walking distance in urban scale. They generally incorporate a mix of housing and affordability, a mix of civic, institutional, commercial facilities and a mix of public spaces in the city (Payn, 2007).

In this case, 'Mahalle' can be considered as a suitable case study. It combines the spatial proximity of the residents with their specialties, kinship and etc. within a clearly bounded geography. From an urban and social point of view, the main feature of the traditional city is its compartmentalization by 'mahalles' (quarters), as an outcome of ethnic particularities and religious differences. Meanwhile, the 'mahalle' is a geographical entity as well as a homogeneous community that was closely knit, forming the basic unit of society (Fig. 2) (Oktay, 2004).



Figure 2: Mahalle (Oktay, 2004)

Livability and Livable Neighborhoods

Livability is a term that describes community life quality and is comprehended by the people who live, work, and recreate there. This term identifies that strong communities rely on the interplay among key development areas containing; transportation, general health, housing and cultural resources (Hill, 2011). It can provide safe passages for all street network users. However, this matter involves particular concentration to the most vulnerable users in the community such as; pedestrians, bicyclists, children, and the elderly people, and also taming traffic while maintaining overall mobility. Furthermore, these livable neighborhoods focus on neighborhood centers that provide services, leisure activities, the opportunity to communicate, socializing and so on (Graeme, 2010).

Discussion

In this study, Famagusta, which is the second largest city in North Cyprus, is considered as a case study (Fig. 3). Very rich cultural, diverse, local and natural characteristics can obviously be seen in this type of Mediterranean city. Especially, the local traditions and local taste that is one of the most significant dynamics of a sustainable city have been very rich and valuable within the recent history of the city. It was a great harbor in ancient time, but through times, things have changed. Unfortunately, after 1970's crisis, the city faced an unsustainable and rapid urban growth, which significantly, declined all the mentioned environmental, local and cultural values of the urban fabrics. Nowadays, it is slowly trying to gain its previous positions back, but this time it does not follow its traditional patterns. Therefore, there are so many negative as well as positive points in its developments.

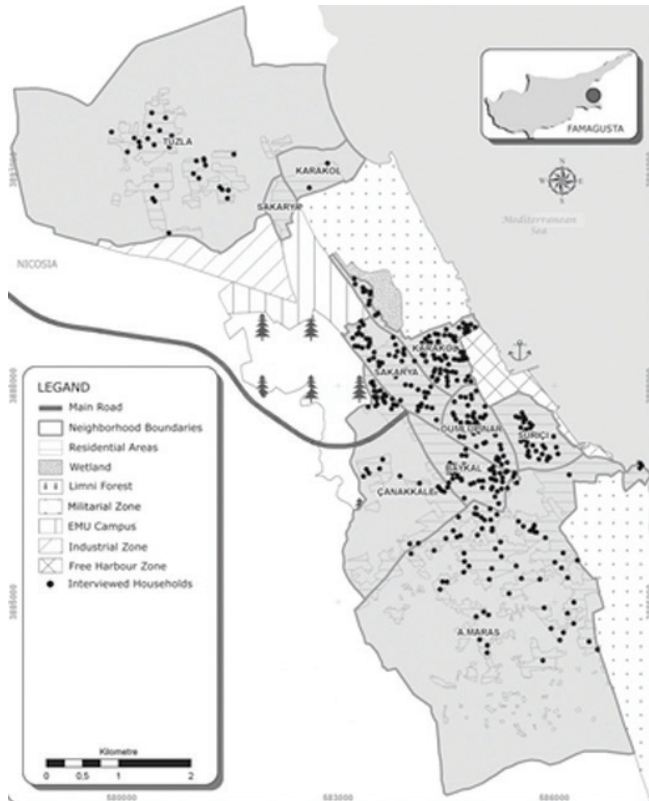


Figure 3: Map of Famagusta showing the distribution of households and neighborhoods (Oktay & Marans, 2012)

Movement Patterns in Famagusta

In general, in terms of urban growth Famagusta had two main turning points: The first was a housing development after 1974, and the second was the development after 1986. Therefore, this rapid and unsustainable urban growth and development led to the dictation of a new form of living for city dwellers, which was unfamiliar with their traditional lives. Neither the institutions and policies nor the urban form and layout are adequate to develop the environment and put forward environmental behavior and attitudes. In this case, it seems necessary to implement strategies in order to revitalize the city neighborhoods as livable and sustainable public urban spaces, where urban dwellers' social interactions take place.

Famagusta has the potential of being attractive for all city dwellers, if its streets are well-equipped. In this case, to have livable and sustainable public open spaces, besides to automobile traffic, streets might create a friendly and comfortable environment for the pedestrians. The city displays urban development characteristics and public open spaces conditions in the evolving economies. In this case, in order to better understand the satisfactions of dwellers from city infrastructures, an in-depth questionnaire and interview have been done to

evaluate the level of their satisfaction. In this survey 150 men and women filled out the questionnaire and were interviewed orally according to the variables of age groups in different neighborhood. The results can be seen in the table below (Table 1).

Table 1. Famagusta neighborhoods' physical problems from citizens' point of view

Problems	Percentage of people suffering from this problem	Number of people suffering from this problem	Level of the problem
Inefficient sidewalks	95.3	143	High
Lack of bicycle path	76	114	High
Lack of streets vitality	78.7	118	High
Lack of public transportation facilities	71.3	107	Medium- High
Lack of parking lots	46	69	Medium
Lack of street lighting	54.6	82	Medium
Lack of open public spaces	47.3	71	Medium
Lack of livability in neighborhoods	58	87	Medium

The results of this survey illustrated that in Famagusta different neighborhoods, suffer from having unsustainable movement patterns because of the following reasons;

- Lack of standard and proper sidewalks;
- Unsafety and improper pedestrians;
- Inequitable dispersed of land use;
- No alternate routes for pedestrians;
- Inappropriate physical structure for pedestrians;
- Lack of living areas;
- Inadequate lighting;
- Lack of public transportation system.

Furthermore, it is understood from the results that variables such as dispersed location, proximity, travel time and characteristics of the transport environment influence accessibility. The questionnaire shows (table 1) that the mentioned variables influence accessibility and as Famagusta doesn't have the variables, its public spaces have a low level of accessibility, and as well-organized public spaces are located away from the living areas in Famagusta cars have an essential role in getting access to public spaces in the city.

Land Uses in Famagusta

The walled city of Famagusta was a good example of high density; however, by growing the city outside the walls it lost this characteristic. This unsustainable development increases vacant lands in the texture (Fig. 4). On the other hand, public services spread out in the city, so, they are not easily accessible by walking or cycling and the city scale fit the car scale. This shows the importance of public transportation, but many of citizens complain about the lack of this service.



Figure 4: Famagusta vacant spaces (Sakarya neighborhood)

As Famagusta is an ancient coastal city, it has many opportunities for pedestrianization and a bicycle path. Although the shortage of these spaces is obvious, there are some successful pedestrianized and mixed-use streets in the walled city, which create a livable urban space, and one of them is demonstrated in the figure below (Fig. 5). In this area, mixed land use leads to develop economy on a local scale, decrease dependency on automobiles, create more local jobs, decline fragmentation in landscape, support mixed societies, encourage walkability, provide closer public services and so on.



Figure 5: Urban mixed-use (walled city of Famagusta)

As it is obvious in the previous photos (Fig. 5), applying mixed land use in the city can change the face of the city to a livable and sustainable one. As this neighborhood has a historical heritage value, applying this principle to it can help to attract more tourists. Therefore, apart from the effects of mixed land use on the

neighborhood dwellers itself, increasing the number of tourists leads to create more dynamic area from economic, social and environmental point of view. Merely it should be considered that the issue of different land uses compatibility mainly depends on the pollution and land levels. So, a careful study should be done on land use compatibility to maintain the health of the society and neighborhood livability.

Neighborhood Livability in Famagusta

Another fundamental problem in Famagusta is the lack of public spaces. Except Namik Kemal square, which is located in the historical center and is used for gatherings and this is what the city is famous for. However, for some special events and festivals municipality or other NGOs use historical monuments for their organizations to gather peoples (Fig. 6). There is no other example of this kind and there are not any playgrounds or child friendly spaces either.



Figure 6: Public spaces in walled city of Famagusta

Increasing population in the city brought more people and vehicles to the street without any infrastructure such as traffic control elements, enjoyable walking possibility, parking area, public transportation, and so on. Here, the main problem is that most of the streets were formed according to the townscape design and were designed as a neighborhood scale distributor instead of city-scale street. So, the entire city has not been built upon a master plan. As time passed, the city developed partially around the historic walled city. Therefore, it is obvious that the street has faced the serious problem as a livable and sustainable urban space (Fig. 7).



Figure 7: Walled city of Famagusta traditional scale neighborhood streets

However, another problem with the new development texture is that these new streets do not have trees or other elements to prepare shadowy areas. In other words, although trees and green spaces are very essential in Famagusta strict climate, one of the biggest challenges in this city is the poor combination of nature with urbanism. On the other hand, lack of quantity, nature and location of green spaces is clearly felt in the city contemporary developments and this problem can also impede the sense of human scale in the urban spaces. In street design some principles took place and formed a design such as: shaded walking paths, which are combined with greenery and some seating places, bicycling line, safe drop off for bus, parking opportunity, soft and safe vertical separation by green plants, advertising place, lighting and so on. Figure 8 displays a simplified alternative for the city main street design (Fig. 8).

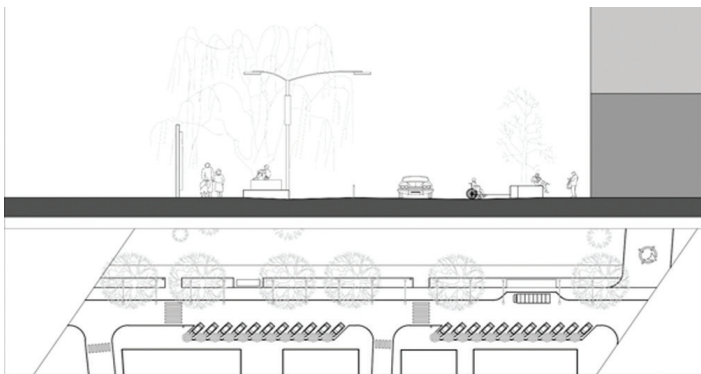


Figure 8: An alternative design for the city main street

Another issue affected on this part, is that Famagusta as a Mediterranean coastal city, does not pay sufficient attention to the sea and it is completely fragmented from it. Therefore, the city easily refuses an opportunity of creating livable spaces. Unfortunately, the lack of livability increased with the city

unsustainable development, which causes making unpleasant and unsafe places for children.

Finally, it seems that all these problems are created due to the city's gradually unsustainable development and through denying its vernacular architecture and civilization. Meanwhile, another fundamental issue, which causes this problem, is the lack of a master plan for urban development, growth and physical development in this city.

Conclusion

This study concentrates on movement pattern and land use as one of the most important segments of sustainable development. In this order, the successful urban space is the one, which is well designed and well managed to bring successful urban life by enhancing their quality of life in the public domain for its resistance. Moreover, by adding sustainable movement patterns and encouraging citizens toward prioritizing such principals as public transportation, pedestrianization and cycling instead of personal motorists, the urban public spaces will be much dynamic and livable. In other words, these places will be much safer for their users, especially children.

On the other hand, a city sustainable development requires an integrated and multi-disciplinary approach, and preparing well designed land use plan is as important as movement pattern. Thus, in addition to the above considerations, to provide livable communities, preserving traditional textures and values such as; neighborhood concept is consequential. In this part, another factor, which can be considered to gain community development purpose is mixed use spaces. This item can be improved in the context by adding some simple characteristics, for instance combining nature with urbanism, vitality in streets, increasing density and so on.

In this study, Famagusta, which is considered as a case study, is not an exception. It is a historic coastal city and is full of opportunities for sustainable development. But as it was discussed and also highlighted by the questionnaire results, there are lots of problems, for instance, the lack of public transportation, enough public spaces, natural resources are obvious and also it is full of vacant spaces. Famagusta has neither been a developed city nor a partially planned settlement area. It has had both a great potential for development and a great deal of dynamism for growth since its foundation, which are essential for any type of planning. If a flexible course of action is not determined, the city's sustainability and development would be endangered in numerous mentioned favorable dimensions.

Eventually, through utilizing the concepts of sustainable urban design and strategically integrating a sufficient amount of vital open spaces in the built environment, communities should be able to improve the social interactions, walkability, cycling and benefiting from public transportation system, in order to create a sustainable urban fabric. Moreover, this research will be a base for further study after changes to see the level of success and illustrate the needs of changes, which might prepare the knowledge for city planners and regulators to take care of the needed important factors in the city scale.

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