

REVITALIZATION OF CULTURAL VALUES IN URBAN LANDSCAPE THROUGH STREET TREES DESIGN

Rahman TAFAHOMI*

Received: 25.04.2021; Final Text: 09.05.2022

Keywords: Landscape design; deciduous fruit trees; revitalization; cultural values; sustainability.

INTRODUCTION

Trees are one of the significant elements in urban areas that engage different professions in the planning, planting, and maintenance processes (Nadel et al., 1977). Despite a range of benefits of street trees (Cihanger, 2013), they could be anchored with two important aspects of value in urban areas; firstly, the urban ecological system such as atmosphere, temperature, and humidity (Horte and Eisenman, 2020), and secondly, the users' perception of meanings of the place based on lived experience such as beauty, shading, and sense of place (Moughtin and Shirley, 2006; Evans, 2007). However, it is a common observation that municipalities prefer to select wood trees because of low-cost maintenance such as the cost of the cleaning, pruning, and decorating of plants in urban areas (GreenBlue, 2020) grounded on some general guidelines of arboriculture (Nadel et al., 1977). This process is resulted in replacing old trees with a set of woods sapling to adapt the green spaces to be fit for the size of the streets and the height of buildings and electricity power lines (Harris and Dines, 1998; Chatzidimitriou and Yannas, 2017).

Relph (1976) argued that a few number of urban planning documents encompassed effective techniques to represent the quality of the place on the maps by reason of the 2D presentation style. Perhaps, for this reason, while a major part of urban design and landscape plans has emphasized planting and green spaces (Llewelyn-Davies, 2000; Evans, 2007), the absence of such approach and guidelines are still seen in a considerable proportion of urban development and master plan documents (Baker, et al., 2002; Miller R. W., 2007). The lack of essential requirements and guidance might make municipalities apply the recommendations of experts, advisors, or contactors to plant trees and manage the green spaces (McPherson et al., 2016). Specifically, the area of study lacked a master plan for green spaces, seemingly, the budget and affordability of the planting structure had been so important for the decision making through ad hoc

* Department of Architecture, School of Architecture and Built Environment, College of Science and Technology, the University of Rwanda, Kigali, RWANDA

activities. For this reason, Castello (2010) criticized that the gap between the inhabitants' points of view and municipality activity could result in the creation of unauthentic and artificial places in the urban areas.

It is a common observation that the green spaces in cities are managed, changed, and developed by the municipality although this process does not include consistency (Sjöman et al., 2012). In other words, despite the responsibility of municipalities for public roads, historically, the inhabitants managed the planting, maintenance, and ownership of trees in adjacent paths and areas of houses in the Iranian heritage cities (Tafahomi, 2010; Tafahomi and Nadi, 2020; Tafahomi and Nadi, 2016). However, this process of intervention of the municipality has led to changing the position of the inhabitants from active participants to passive observers. Madanipour (1996) advocated that space comes into reality through a long relationship between events and people over time and location. Nonetheless, one of the common problems of cities in developing countries seems to be the instability of the streetscape, especially the green landscape (Tafahomi and Nadi, 2020) based on the uncertain policies, the contradictory effects on the built environment (Llewelyn-Davies, 2000; Moughtin and Shirley, 2006) and few relationships between socio-cultural aspects and built environment (Gustafson, 2001).

Gonabad city as the context of the study includes historic and architectural elements with a rich background in horticultural activities in the northeast part of Iran (Tafahomi and Nadi, 2020). The city has been developed with rich gardens, more importantly, fruit trees such as Mulberry, Pomegranate, Jujube, Almond, Walnut, Plums as the most common species in the region. There are some wood trees seen as part of the region such as Cypress and Platanus, and some Populus in the alleys although fruit trees have been widely used to apply in the industry based on availability. Nonetheless, the municipality started to plant some wood trees alongside the streets with less maintenance and a high level of adaptation to the region such as the Pine, Robina, and Melia azedarach (Tafahomi and Nadi, 2016). This tendency to apply just one species in the street planting is called monoculture by Alvey (2006) and Frank et al (2006), particularly with exotic trees (Hough, 2004; Moore, 2003). The study revealed that gentrification and influences of unwise decisions during a period of time would result in swift actions on street planting (Donovan et al., 2021).

The Daloei area as a stellate of Gonabad city is located in the context filled with gardens whereas the current process of redevelopment has changed the structure of the green spaces (Tafahomi and Nadi, 2020). The area has paths passing through gardens with both physical and functional specifications such as integration of the walls and branches of trees as shelters on the alley, especially trees with round crown forms such as Berry, Walnut, Pomegranate, and Jujube. According to the last development plan, the main street in the site was detrimental to old trees. Therefore, the original form of the alley and the street no longer appears in the visual sense of the users. Consequently, the MCTH (Ministry of Culture, Tourism, and Handicraft) asked to provide urban design and landscape guidelines to redefine public green spaces in the area. In fact, it was a conservation plan for Daloei (MCTH, 2016) with respect to the historic background and vitalization of the context for the lifestyle of inhabitants and touristic activities. It was a great opportunity to bring some cultural concepts to design the project (Tafahomi and Nadi, 2020).

The key question of the research is how to revitalize the streets of the site study through the consolidation of green spaces in favor of the cultural background (Velarde and Tveit, 2007) while considering environmental and sustainability criteria? To discover the solution, it was important to know the lifestyle of the inhabitants through knowing the characteristics of places in the areas (Relph, 1976; Gustafson, 2001) the cultural beliefs and reason for planting trees, and the specification of the trees to adapt to the arid climate. To answer the research questions, the objective of the research is to find out the cultural values through behavioral patterns of inhabitants in the planting of trees in the green spaces particularly public spaces and streets.

THE ROLE OF STREETS TREES IN PUBLIC SPACE AS CULTURAL ELEMENTS

Barker (Barker, 2005, 87) claimed that “definitions of the culture are all contestable”, but the general argument pointed to the meaning of culture in terms of “mapping of meanings”. However, the nature-culture relationship is contradictory due to the interrelation of definitions (Jin, 2021). The study highlighted culture in terms of the “values, beliefs, perceptions” of people that are represented in the patterns of behavior and analyzed through interpretation (Haviland, 1997, 35). Perhaps, for this reason, Back et al (2012) proposed a new definition of culture more than classical art, literature, and music. In fact, it is connected with inhabitants’ everyday lives based on a dynamic process of creation. Oswell revealed that there is reciprocal interactions between culture, power, and ideology (Oswell, 2006) leading people to either select or present certain aspects of culture. Therefore, cultural knowledge interacts with contextual issues, including but not limited to social, political, and economic aspects (Cetina, 2005).

The values of the trees are so important in different locations and cultures. Some studies highlighted that the symbolic and meaningful aspect of trees in many societies is rooted in their inhabitants’ lived experience that appears in the mythology, beliefs, and customs (Alexander, 1977; Spirn, 1998; Tafahomi and Lamit, 2011; Cihanger, 2013). Spirn (1998) advocated that the landscape is connected to the contextual and cultural aspects of location through manmade activities because of the pattern of life and the environmental conditions. An example is olive trees seen as one of the symbols in Greece (Kabassi et al., 2021). A number of studies showed that trees could play a significant role in the durability and life expectancy to give meaning to the place through planting, gardening, and maintenance (Alexander, 1977; Tafahomi, 2021). Blicharska and Mikusinski (2014, 2) classified the benefit of trees into “tangible and intangible” aspects. While tangible features focus on “goods”, the intangible aspects reflect “aesthetic, symbol, religion”, and belief in terms of cultural values. The cultural expression of trees in urban streets tends to be connected with legacy, symbolism, or tradition in the studies (Roman, et al., 2018; Smart et al., 2020; Tafahomi and Nadi, 2020). The meaningfulness of green elements in the whole history of human landscape design has created ethnobotany courses in landscape programs to interpret the relationship between culture and the landscape.

The cultural values and meanings of trees are related to the cultural background of inhabitants in a specific location to build landscape forms, functions and meanings to represent the cultural attributes (Jones and Cloke, 2002). In fact, the adaptation of dwellers to the arid environment

has constructed economic systems, social relationships, and behavioral patterns to form cultural values such as habits and beliefs (Butzer, 1994). For instance, a study highlighted that trees portray a location and context, as well as a celebrated person as a symbol or remembrance (Dwyer et al., 1991). In addition, an arid climate drives the residents to apply a wide range of adaptation, water harvesting, irrigation, and logical selection of species for planting (Wescoat, 1996). It is argued that a close relationship between socio-cultural and contextual aspects has formed a system of economic maintenance for green spaces in the arid area based on a shortage of water recourses (Diba, 1996). Consequently, most species were well adapted to arid climates such as low levels of water consumption, water harvesting, and Qanat technology to bring the water from mountain hills through underground channels into the flat areas for the horticulture gardening activities (Tafahomi and Nadi, 2020). This co-existing between the inhabitants and the environment for a long time formed the cultural beliefs and values, myth and legend, symbols, and motifs in the location based on life experiences (Spirn, 1998; Tafahomi and Lamit, 2011; Tafahomi and Nadi, 2021). It might be the reason behind planting specific trees in water channels, paths, and courtyards of mosques based on spiritual beliefs and ritual habits (Tafahomi, 2010; Tafahomi, 2021).

The importance of trees is not confined to gardens, courtyards, and public roads in terms of the urban green structure, but they are also regarded as a decorative and artistic expression in palaces, mosques, and temples, particularly in historical cities (Ettinghausen et al., 2001; McPherson et al., 2016). The history of landscape design has demonstrated a variety of the application of trees, gardens, and green spaces to represent either specific meanings or beliefs, such as healing gardens, therapeutic landscapes, thematic gardens, agroforestry (Boults and Sullivan, 2010; Tafahomi and Nadi, 2020; Smart et al., 2020), spiritual, and ritual value (Tafahomi, 2021) that may mean to inhabitants differently in different locations (Munyaneza et al., 2009). Although there are documents highlighted the human culture in the modification of trees in terms of "CMT (culturally modified trees)" (Resources Inventory Committee, 2001) meaning replacements and modification of aboriginal species, many of which have been reflected in painting, poetry, architecture, sculpture, and literature with a strong symbolic meaning (Hillenbrand, 1999). This could be the reason why some research recommended the incorporation of people's preferences and values in the planting of trees in streets to meet successful criteria in urban planning (Barron, et al., 2021).

From another perspective, the trees in streets are a vital part of urban green infrastructure to create the microclimate and the view of green in relation to well-being (King and Davis, 2007). The remarkable advantages of street trees, the namely mitigating temperature in terms of the passive cooling system via controlling the evaporation and transpiration (Kundu et al., 2017), stabilizing humidity and breezing through urban corridors and absorbing the sunlight, and controlling albedo in urban areas (Bajsanski et al., 2016). Trees are effective elements to absorb the sunlight and create a comfort zone for human life (Li et al., 2017). Importantly, both cluster and linear trees have a positive impact on the reduction of the sun heat in a specific area in comparison with isolated trees (Coutts et al., 2013). Particularly, the orientation and position of trees influence the insolation of buildings and the reflection of light on the street (Chatzidimitriou and Yannas, 2017) and the users in the public spaces (Andreou and Axarli, 2012). Moreover, Massengale and Dover (2014) stated that trees have a

significant role in the public realm to positively influence traffic, sunlight, visual appropriateness, and streetscape through green spaces.

A study (Sjöman et al., 2012) highlighted the benefits of trees in streets to create a green network with positive effects on transport policies, street network, and movement patterns (Horte and Eisenman, 2020). The quality of the green network enhances the inhabitants' perception of the urban environment and the visual quality of the living areas (Harris and Dines, 1998). The urban design and landscape documents placed an emphasis on the important function of trees to shape public spaces for users through typology, microclimate, urban forestry (Llewelyn-Davies, 2000; Evans, 2007) and environmental patterns such as morphology, landscape, and visual patterns (Tafahomi and Lamit, 2011).

The structure of trees is dependent on the climate, environment, and cultural background (LaGro Jr, 2008). The trees are likely to be planted because of arboriculture backgrounds and values based on the long socio-ecological interaction (Goffman, 2014). Despite various arrangements of trees, three types could be frequently observed in urban areas, namely a single tree with a monumental expression, linear trees for both connection and separation of the different parts, and a cluster of trees such as small forests and gardens (Tafahomi and Nadi, 2021; Tafahomi, 2021; Cihanger, 2013). The linear structure is viewed as a common pattern and encompasses a wide range of forms based on size, type, and distance. Such diversity creates certain compositions, patterns, and rhythms in the streets (Evans, 2007; Gehl and Rogers, 2013). However, some researchers revealed that narrow streets could support the life expectancy of trees with more difficulty than wider ones (Nagendra and Gopal, 2010; Shams et al., 2020).

Environmental specifications such as climate and water resources should be taken into consideration when choosing street trees (Horte and Eisenman, 2020). In many cities, for example, fruit trees are an essential element of green spaces owing to their compatibility with the context although they have a lower ULE (Useful Life Expectancy) ratio than wood trees (McBride and Douhovnikoff, 2012; Sjöman et al., 2012). Furthermore, the crown form of some fruit trees supports the urban public sidewalks and visual quality. The round, spreading, and vase trees help to protect the users from the direct sunlight radiation by shading (Massengale and Dover, 2014). The deciduous trees not only do provide shade for users in the summertime but they also create opportunities in wintertime for the penetration of the light into the sidewalk to heat the surface of the pedestrians.

Moreover, well-shaded trees in the urban green canopy were mentioned in terms of an ecological achievement in urban public space that controls the urban heat and ecosystem (King and Davis, 2007; McPherson et al., 2016). The green canopy is formed by the arrangement of linear trees on the sides of streets to provide shade, enclosure, and privacy. The overshadowing of the trees encompasses the open spaces, particularly on the walkways to provide a comfort zone for the pedestrians. For example, the study emphasized that the comfortability of users in public spaces influences urban livability (Llewelyn-Davies, 2000; Evans, 2007). The value of trees constantly increases as they grow older. The report of GreenBlue (2020) underlined that the benefit of trees would be increasing by the age of 200 reaching the ultimate level. The benefits are not limited to climate and temperature but include positive effects on the legibility of the area (Ward Thompson et al., 2008) and alleviating stress (Ward Thompson et al., 2016).

Nonetheless, the study criticized that urban planners have paid less attention to street trees' specifications in urban development plans (Baker, et al., 2002). For example, the study highlighted that urban planning, urban design, and landscape design have not taken arboriculture into account adequately (Bradley, 1995) although streets have great potential to transform into an effective green boulevard (Jacobs, 1993; Jacobs et al., 2002). Miller (2007) mentioned that this gap has been rooted in the late evolvement of arboriculture science as a profession in urban forestry. However, the municipality has been engaged in designing, planting, and maintaining trees based on the law and authority (Hauer and Petersen, 2016).

In summary, the evidence demonstrated that the forms and structure of planting trees could significantly affect the urban climate, temperature, and scenery such as a sense of place and belonging. The specification of trees influences life expectancy, maintenance, and fauna. The sustainability of trees depends on soil, land, and water source, the interaction between trees and the context, and the cultural reflection of the community in the area. The composition of trees can be related to the organization and arrangement having an influence on the character of an area. **Table 1** represents the important aspects of the application of trees in urban streets according to the form, function, and meaning.

METHODS AND MATERIALS

The methods and materials are comprised of the research methodology, the research process, data specification, time and location, and the context of the study.

Research methodology: The qualitative methods (Groat and Wang, 2002; Miller et al., 2004; Neuman, 2006) were applied as a valid tool to analyze the urban areas (Moughtin, et al., 1999; Niezabitowska, 2018), and an appropriate approach to studying the issues the context (Neuman, 2006; Silverman, 2010). The studies underlined some qualitative techniques to apply to landscape studies such as structured observation (Bonnes and Bonaiuto, 2002; Tafahomi and Nadi, 2016; Tafahomi and Nadi, 2020), photography (Georgoula, et al., 2013; Tafahomi and Nadi, 2016; Tafahomi

Table 1. Important criteria of the urban street trees

No	Components	Subcomponents	Specification	Application
1	Form	Structure	Round, vase, spreading, columnar, visual appropriateness	Iconic form, character, Shading, sheltering, territory
		Configuration	single, linear, grouped	Direction, attention, openness, enclosure
		Composition	Integration, rhythm, size	Beautification, decoration, meaning
2	Function	Arboriculture and specification of trees	Fruit, wood, deciduous, evergreen, overshadowing	Community, fauna, public spaces
		Climate and Sustainability	Microclimate, Locality, adaptability, durability	Ecosystem, Comfortability, Blended in the nature,
		Income and Benefits	Fruitfulness, harvesting, incomes	Fauna and community
3	Meaning	Cultural and Contextual Values	Ethno-botany, habituation, cultural values	Vitalization and reconstruction of the heritage aspects of the context
		Perception	Cognition, landmarks, relation to the site, relation to the context	Aesthetic, Sense of place, Sense of belonging,

and Nadi, 2020), sketching (Laseau, 2000; Regis, 2003; Tafahomi, 2009; White, 1975; Tafahomi, 2021), site analysis (White, 1983; Tafahomi and Nadi, 2020) and graphical techniques (Tafahomi, 2021). The structured observation was used in terms of visual tree assessment (VTA) (Mattheck and Breloer, 2005; Schägnera et al., 2016) to detect and estimate the health quality of the trees. Photography has been widely applied for documentation of the urban fabric, landscape, and behavioral pattern of users in urban areas. This research used photography to document the specification of green spaces in both public and private areas (Tafahomi and Nadi, 2016; Tafahomi and Nadi, 2020; Tafahomi, 2021). Sketching was another technique to redraw the urban qualities through graphical features and analysis (Regis, 2003; Sperlregen, 2003; Tafahomi and Nadi, 2021). Therefore, the selected methods applied to this research consist of photography, sketching, survey and site analysis through structured observation, and graphical analysis. The applied method was consolidated from three main techniques. In the first place, the photographs were used to demonstrate the typology, location, and application of trees in the area. Secondly, sketches showed the structure and arrangement of trees in the area. Thirdly, the specific elements in the site survey such as the relationship between buildings and green spaces in the public spaces were identified by notetaking. Finally, graphical techniques were employed to illustrate the current conditions of the area and proposed design solutions.

Research process: the research began with several site visits to find out the process of implementation of the new development plan and the reaction of the client, contractor, and inhabitants to the construction process. The green-alleys, the linear trees, and the monumental trees were taken into consideration to discover the specific relationship between the typology of trees in the site and surrounding areas. The site visit involved the participation of the research team, client, stakeholders, and the inhabitants to highlight the critical issues with the green spaces in the area.

Data specification: the data on green spaces in the urban area were combined from garden-alleys composition, linear trees structure, and the monumental trees as the reference point in the public spaces and outside of private areas such as gardens, courtyards, or houses. These three clusters of the data were located in public spaces in the inner part of the area although farms and gardens were arranged by the inhabitants in the surrounding areas.

The time and location: the research took around one year. The data were collected in both winter and spring to observe the trees with and without the crown. The area was located in the northeast of Iran having a dry climate that made the condition so close to the arid landscape. The area has been developed on underground water channels with the compact urban fabric. The predominant spatial pattern is semi-geometric with short roads to connect different areas across the city. The central part of the area is occupied by residential buildings while the surrounding areas are allocated to the gardens and farms.

The context of the study: Daloei is a suburb part of Gonabad city in northeast Iran. Gonabad is geographically located at 58°, 41'01'E longitude and 34°, 21'10'N latitude with a total area of close to 105800 square kilometers, and roughly 1105 meters above sea level. It has an arid climate and a number of mountains and hills in the surrounding areas. The total population of the city is almost 40,000 according to the official census in 2016. The historical background of the city refers to the Parthian and

Sassanid Kingdoms (248 B.C to 650 A.D) according to the mythology and historic books (Tabandeh, 1969; Tafahomi, 2010). However, the historic part of the city was destroyed three times by severe earthquakes, and the old Qanat in the area is seen as a distinctive characteristic of the city. The backbone of the city is comprised of main elements that refer to after 1100AD, such as mosques, schools, and water storage (Tafahomi, 2010; Tafahomi and Nadi, 2020). All mentioned elements are located in the historic core of the city (Tafahomi, 2021).

Daloei is located in the north part of Gonabad with a population of approximately 1800 and with agricultural activities in the suburban areas. Although the area was attracting new dwellers by 1995, it experienced a noticeable decline in population as young adults migrated to bigger cities in search of work and better quality of life. The area is affected by the central desert climate, having an average temperature of 22 °C. In fact, the area is situated in a dry climate with a low level of rain between 75-100 mm per year without any permanent river, but it has underground water channels irrigating the green spaces. The majority of inhabitants have been involved in agriculture, horticulture, and livestock. Currently, the cultivation of saffron has increased owing to a long period of dry seasons, a shortage of rain, and water sources, and more importantly the high level of resistance of saffron flowers to the dry climate.

Public activities, especially religious rituals and ceremonies are organized along the main street. These occur between the main mosque (which is called "Jami Masjid") and the shrine as two reference points for residents and even visitors (Table 2). Despite the high level of privacy and indoor activities in the area, some of the inhabitants benefited from trees and shelter at the frontage of houses to rest or socialize.

The main street as the backbone of the city provides intra-connections and access to essential public facilities and services. So, it is quite crowded with different groups such as students, workers, and farmers on during the weekdays and weekends (Table 2). Some old-growth trees have been cut down to extend roads, whereas most paths enjoyed trees on both sides before redevelopment. In the following measures, it was the private green spaces and courtyards that were sacrificed for new development in some cases.

RESULTS

The well-adapted species to the arid climate were a major part of green spaces and trees at the site of study. The type of trees in the gardens, paths, and public areas was selected by the inhabitants based on long-lived experiences and cultural knowledge passed on to generations. In fact, the effects of hot summer and cold winter resulted in applying deciduous trees for sunlight protection in summer and penetration in winter. The typology of the applied trees in the area revealed that residents preferred the use of round and vase-shaped trees, providing shade in the summertime, and penetration of light in winter, rather than wood trees introduced to the area such as Pines with evergreen and pyramid shapes.

The green spaces in the areas included three forms of landscape, namely the private gardens, overshadows, and linear trees planted on the public roads and spaces. The private gardens spread over the areas, particularly in the surrounding part of houses to encompass the living areas in a green buffer. Although the private gardens were not accessible by the general

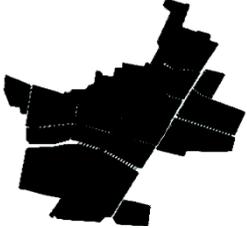
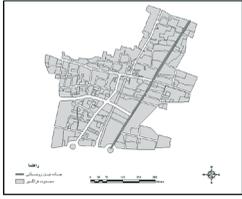
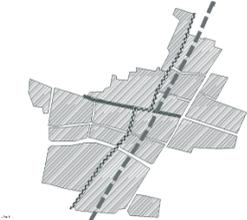
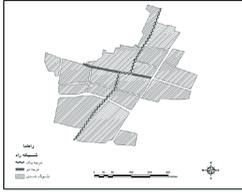
No	Name	Map	Critical Aspect	Explanation
1	The location			Dalooei is located in the periphery area of Gonabad city in northeast Iran.
2	Location of the area			The area is so congested to protect the buildings from the hot sunlight radiation in the summertime in a desert climate with dry summer and cold winter.
4	The area of the study			Dalooei was constructed in a semi and non-geometric form based on the specific style of construction in the area with the support of the underground water supply system.
5	The public spaces in the area for design solution			The main road of the area is adapted to the mainstream of underground water that the linear trees were enjoyed the channel.

Table 2. The location details

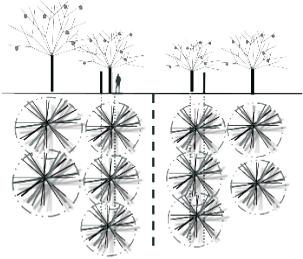
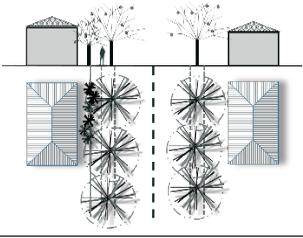
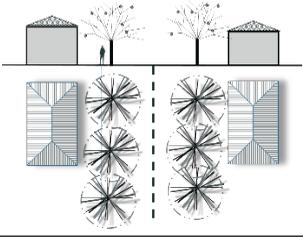
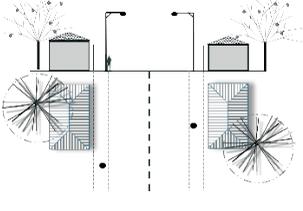
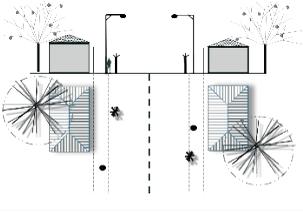
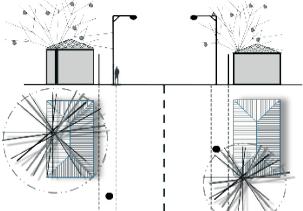
public, they were rather conspicuous from public roads due to the short walls of the gardens and the height of trees (**Row 1 and 2 Table 3**). This means the gardens were in a prominent position in the spatial structure of the area although they were physically separated from the users in public spaces. Moreover, these gardens helped to balance the temperature, humidity, and soil stability. Nonetheless, the redevelopment of the main road had negative effects on walls, and some of the old-growth trees, in particular the linear forms of trees.

While the area was primarily covered with linear trees in the streets and alleys (**Row 3 Table 3**), the extension of the main road resulted in cutting most of the old trees located along the new road (**Row 4 Table 3**). The linear trees were a combination of Mulberry (*Morus Alba*) with a round shape, Pomegranate, Walnut, and Jujube planted by the inhabitants, farmers, and gardeners. This structure presented the area with a variety of views and landscapes. Additionally, some wood trees such as Pine, Robinia, Ailanthus, Ulmus, and Platanus, Albizia were planted by the residents, and municipality due to being low-maintenance, durable and profitable.

The monumental trees were mainly situated in the central road, courtyards, and gardens. The collected data through photography, structured observation, and survey demonstrated that the size of the trunk of trees was between 1 and 1.5 meters radials based on the DBH (Diameter of

Breast Height). They are estimated to be aged between 157 and 235 according to the circumference of trees and growth factor average (**Row 5 Table 3**). Despite the great shape of the trees, their functional aspects of them led the inhabitants to plant fruitful trees and deciduous species such as Mulberry, Almond, Walnut, and Jujube.

Table 3. Green spaces specification

No	Name	Exemplify	Landscape Structure	Explanation
1	Green Alley in the gardens of the area			The area was integrated with both private and public green spaces that present a unique landscape with a human scale in the area with fruitful deciduous trees.
2	Green Shelter			The private green spaces were integrated with the public spaces to control the sunlight and temperature in the area with both visual and perceptual senses.
3	Linear Structure of Fruit Trees			The linear structure of the old trees created a functional landscape with fruitful trees in adaptation to the climate and sustainable environment.
4	Pruning and cutting the old and monumental trees			Pruning the trees made the areas so vulnerable in all seasons with less sustainability of the environment.
5	An old tree with pruning grown in the area			Both pruning of the crown and cutting of the trees were resulted in removing the last memory of the old trees in the area.
6	Monumental and Ornamental trees in the area			Some ornamental trees are located in the private part of the gardens and courtyards protected by owners as a pattern for planting.

THE RESEARCH FINDINGS AND DESIGN SOLUTIONS

The key findings of the analysis reveal that the trees have been integrated with the life experiences of the inhabitants in terms of source of income, social knowledge, and cultural values based on the behavioral patterns of the activities. Some of the gardens and trees were inherited from generations with the same species and arrangement. Apparently, trees are a part of the traditional way of life based on the collective knowledge of the inhabitants and practical applications in food, construction, furniture, and fuel in daily life in the area.

The results identify that there are three specifications in the trees that could be classified in terms of typology, built environment, and cultural aspects (**Table 4**). First, the inhabitants plant the adapted trees to an arid environment, dry climate, and shortage of water. The area enjoys the linear structure of the trees to highlight paths, boundaries of lands, territories of roads, and water channels. Second, the deciduous trees decrease the temperature in the roads, courtyards, and adjacent buildings in the area with round, vases, and spreading crown shapes. The deciduous trees work as a natural curtain to control the sunlight radiation in the summertime and to penetrate the light into paths in wintertime, buildings and courtyards. This specification supports the sustainability in the area through natural sunlight energy and the shadow of the trees also encourages people to rest and socialize. Third, some of the deciduous trees are a part of the cultural values based on fruitfulness, functionality, and application for a long time to represent generosity by sharing free fruit with the public, be it locals or visitors. Many fruit trees are also useful for certain functions in the area. For example, trunks of Mulberry, Jujube, and Walnut are used to build masques doors, ornaments, and furniture respectively. This specification of trees encourages the inhabitants to apply more fruit trees in the area than simply wood trees. Apparently, the cultural style of the application of the trees in the area is intertwined with the sustainability concept in terms of arid conditions.

To apply the findings to the design project, some local trees were selected to be essential elements of the landscape design of the public spaces. Arranging the trees in a canopy form creates a promenade for public activities and social interaction, but more importantly provides opportunities for the inhabitants of the area. Among the long list of fruit trees in the area, two of them, namely Mulberry and Jujube were well-adapted to the climate with less maintenance (**Table 4**).

DISCUSSION

The cultural values of the inhabitants are rooted in their long lived experiences in an arid environment (Spirn, 1998; Tafahomi, 2021; Tafahomi and Nadi, 2020). The interaction between the lifestyles and the geographical specifications has shaped forms, functions, and meanings for inhabitants in relation to the location and elements in the environment (Roman, et al., 2018; Smart et al., 2020). The arid circumstances have influenced economic structure, social interaction, and cultural values (Butzer, 1994), and trees have been one of the vital elements in the context for the production of wealth and value (Wescoat, 1996). The dwellers' dependency on specific types of fruit trees that were adapted to the arid climate led to some cultural values and beliefs (Cetina, 2005; Schägnera et al., 2016). For this reason, they planted trees along the path, allays, and underground

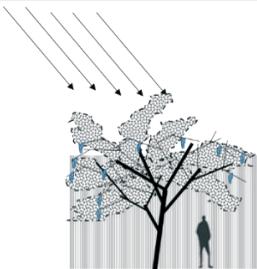
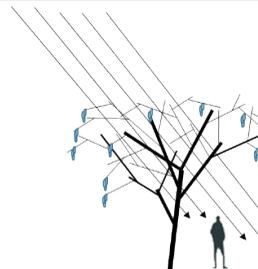
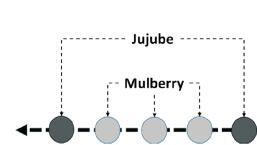
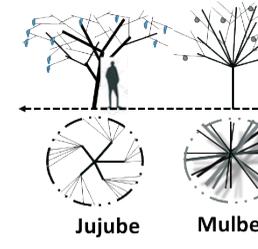
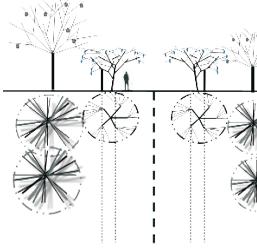
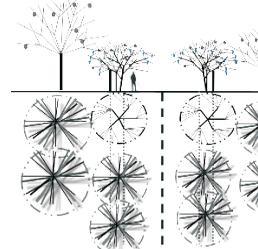
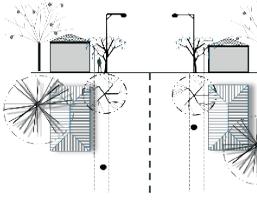
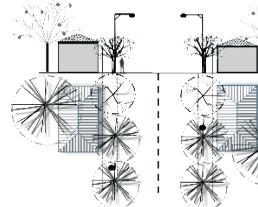
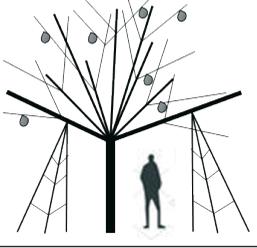
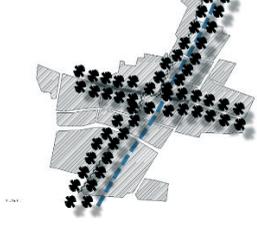
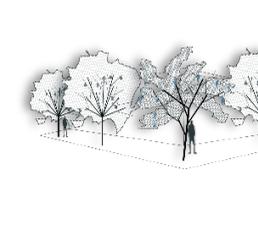
No	Topic	Design Strategy	Design Tactic	Landscape Structure Illustrations	
1	Typology	Application of Round and Deciduous Trees	The linear structure of deciduous trees in the paths for the shadow in summer and light in winter times		
		Structure of Trees arrangement	Integration of the fruit trees in the public spaces specifically Mulberry and Jujube to create rhythms		
2	Built Environment	Vitalization original garden-alleys	Integration of the new fruit trees with the original structure of the gardens and the alleys		
		Vitalization the public spaces with linear structure	Integration of the new fruit trees with the original structure of the buildings in the area to increase comfortability for the inhabitants in the area.		
3	Cultural values in Public Spaces	Maintenance the fruit landmark trees as part of inhabitants memories and free fruit sharing	To fix the problem of the stability of the branches through stands and trusses To control the form through graduate pruning		
		Free shadowing and gathering areas for community as a public promenade	Shading of the main social and cultural path in the area with the adaptive, deciduous, and fruit trees		

Table 4. Design solutions for the area

channels to help the climate comfort, as well as share fruits with the whole community. The fruit trees, therefore, have supported the food chain in the community (Chatzidimitriou and Yannas, 2017; Tafahomi, 2021).

The proposed plan reflected the cultural values of the inhabitants through the application of both visual and perceptual images of the area in the concept of design aligned with studies such (Alexander, 1977; Spirm, 1998; Tafahomi and Lamit, 2011). The trees' specification, structure, and compassion inspired the design team to apply traditional values in the design process (Smart et al., 2020). The design solutions were focused on sustaining the cultural values of the inhabitants in the area (Spirm, 1998; McPherson et al., 2016; Tafahomi and Nadi, 2020). The integration of Mulberry and Jujube supported the suitability and the cultural values in the area as earlier mentioned in the literature (Alexander, 1977; Spirm, 1998; Llewelyn-Davies, 2000; Cihanger, 2013). The proposed plan incorporated cultural values into the design structure based on the contextual evidence (Hauer and Petersen, 2016) and geographical specifications (Miller R. W., 2007; Plant and Kendal, 2019), which were adapted to the arid environment, soil quality, desert condition, and raining scarcity (Harris and Dines, 1998; Kundu et al., 2017).

The application of the round and speared trees increased the protected surface from the direct sunlight radiation in hot summer times in the area. This specification reduced the level of heating on the sidewalks and water consumption for the irrigation, which created a microclimate as some studies suggested such as (King and Davis, 2007; Kundu et al., 2017). This pattern of planting was adapted to absorb more sunlight (Bajsanski et al., 2016) and penetration the sunlight on the ground and buildings in the winter times based on the deciduous trees. This adaptation to the climate and human lifestyle was discussed widely by the studies (Tafahomi and Lamit, 2011; Tafahomi and Nadi, 2020). Although such specifications of trees were known in the area for a long time, revitalization of the concept in the public spaces through selected trees enhanced the integration of hardscape with softscape in the area (Moughtin and Shirley, 2006; Evans, 2007; Tafahomi and Nadi, 2021).

The linear structure of trees provided a promenade for social interaction in public spaces. This arrangement created strong scenery for the users in public spaces to enhance the visual appropriateness, and quality of the landscape in the area discussed by (Harris & Dines, 1998; Moughtin and Shirley, 2006; Tafahomi and Lamit, 2011; Smart et al., 2020). The linear structure of the trees also connected different parts of the area through a green network that approved the theory of the environmental pattern for design introduced by Tafahomi and Lamit (2011). The forms of both Mulberry and Jujube were adapted to the built environment to establish a green network in the hardscape part using the composition of trees, which was recommended by (Evans, 2007; Gehl and Rogers, 2013) as the key factor in street green spaces design.

CONCLUSION

The fruit trees, specifically Mulberry and Jujube have a strong connection to the horticultural and arboricultural background of the inhabitants in the site study. Although the process of industrialization and modernization has resulted in the loss of cultural values and character in many areas, there is an opportunity to revitalize useful cultural ways of life respectfully through landscape design projects. The fruit trees can be regarded as a part of the cultural values and symbolic elements to share free fruit in public spaces like paths for the consumption of the passers-by, visitors, and inhabitants. Finding out the cultural values to incorporate into the

landscape design process would support the integration of the design project with the beliefs of the residents.

The fruit trees not only do bring economic benefits but also reflect symbolic meanings to connect the dwellers with the past. In fact, planting fruit trees on public paths has been one of the great traditional values to share the public benefits through common assets. The existence of trees in public spaces could sustain the momentum of symbolic meanings, in the areas as part of cultural values. The urban green landscape would play a significant role in the creation of a unique character, such as a corridor canopy, social interaction, and a promenade to walk for pleasure. The linear structure of street trees can also support the adjacent built environment and protect users against hot summer and cold winter days. For instance, the green canopy with deciduous trees would contribute to providing comfortable and flexible public spaces.

The climate specification, geographical context, and cultural values are the key factor to select, recommend, and implement specific fruit trees in public places. Although the current condition of the world faces uncertainty in many aspects, paying attention to the environmental factors could be a crucial factor to mitigate the risk of manmade intervention in the urban environment. The form, function, and meaning of trees are unique factors to characterize and create a sense of place for users. The application of trees using locals' ideas and contextual knowledge could support the sustainability of implementation, utilization, and maintenance in the arid environment and dry climate. More exactly, the use of trees that are well-adapted to their environment would bring much more benefits and have a positive impact on the feasibility of landscape design projects. In fact, planting or removing specific trees affects the urban microclimate, lifestyle of users due to the visual and perceptual issues, and suitability of the city in future.

Achieving sustainable design solutions require an integrated approach to link the landscape design with the inhabitants' lifestyle. Importantly, the level of awareness of the inhabitants and users could support the successfulness of the landscape plans. For this reason, the participation of users and inhabitants in the landscape plans insists on more sufficient processes. Apparently, selecting trees for the urban environment requires scientific methods and data that are collected through studies, interviews, questionnaires and participatory design to increase the possibilities of attaining the outputs of landscape plans in public spaces.

ACKNOWLEDGMENT

This project was given financial support by ICHHTO (Iran Cultural Heritage, Handicrafts and Tourism Organization), Khorasan Razavi province, under the supervision of Arch. Marjan Akbari Sarshori, the Directorate of Cultural Heritage Department of ICHHTO, in Khorasan Razavi province.

REFERENCES

- ALEXANDER, C. (1977) *A Pattern Language*. New York: Oxford University Press.
- ALVEY, A. A. (2006) Promoting and Preserving Biodiversity in the Urban Forest, *Urban Forestology and Urban Greening* 5(4) 195-201.
- ANDREOU, E., AXARLI, K. (2012) Investigation of Urban Canyon Microclimate in Traditional and on Temporary Environment,

Renewable Energy, Experimental Investigation and Parametric Analysis, 43, 354-63.

- BACK, L., BENNETT, A., EDLES, L. D., GIBSON, M., INGLIS, D., JACOBS, R., WOODWARD, I. (2012) *Cultural Sociology: An introduction*, Oxford: Wiley-Blackwell.
- BAJSANSKI, I., STOJAKOVIC, V., JOVANOVIC, M. (2016) Effect of Tree Location on Mitigating Parking Lot Insolation, *Computers, Environment and Urban Systems*, 56 59-67.
- BAKER, L. A., BRAZEL, A. J., SELOVER, N., MARTIN, C., MCINTYRE, N., STEINER, F. R., MUSACCHIO, L. (2002) Urbanization and Warming of Phoenix (Arizona, USA): Impacts, Feedbacks and Mitigation, *Urban Ecosystems* 6(3) 183-203.
- BARKER, C. (2005) *Cultural studies: Theory and practice*, New Dehli: Sage.
- BARRON, S., SHEPPARD, S., KOZAK, R., DUNSTER, K., DAVE, K., SUN, D., & RAYNER, J. (2021) What do They Like About Trees? Adding Local Voices to Urban Forest Design and Planning, *Trees, Forests and People* 5.
- BLICHARSKA, M., MIKUSINSKI G. (2014) Incorporating Social and Cultural Significance of Large Old Trees in Conservation Policy, *Society for Conservation Biology* 28(6) 1558-67.
- BONNES, M., BONAIUTO, M. (2002) Environmental Psychology: From Spatial-physical Environment to Sustainable Development, *Handbook of Environmental Psychology*, eds. R. B. Bechtel, A. Churchman, New York: John Wiley & Sons, Inc; 28-54
- BOULTS, E., SULLIVAN, C. (2010) *Illustrated History of Landscape Design*, New Jersey: John Wiley & Sons, Inc.
- BRADLEY, G. A. (1995) *Urban Forest Landscapes: Integrating Multidisciplinary Perspectives*. Seattle: University of Washington Press.
- BUTZER, K. (1994) The Islamic Traditions of Agroecology: Cross Cultural Experience, Ideas, and Innovations. *ECUMENE: Journal of Environment, Culture Meaning*, 1, 1-50.
- CASTELLO, L. (2010) *Rethinking the Meaning of Place: Conceiving Place in Architecture and Urbanism*. London: Ashgate Publishing Limited.
- CETINA, K. K. (2005) Culture in Global Knowledge Societies: Knowledge Cultures and Epistemic Cultures, *The Blackwell Companion to the Sociology of Culture*, eds. M. D. Jacobs, N. W. Hanrahan, Malden, MA: Blackwell Publishing Ltd; 65-80
- CHATZIDIMITRIOU, A., YANNAS, S. (2017) Street Canyon Design and Improvement Potential for Urban Open Spaces; the Influence of Canyon Aspect Ratio and Orientation on Microclimate and Outdoor Comfort, *Sustainable Cities and Society*, 33, 85-101.
- CIHANGER, D. (2013). Trees in the Urban Context: A Study on the Relationship between Meaning and Design, Unpublished Master Thesis in Urban Design. [<http://etd.lib.metu.edu.tr/upload/12615467/index.pdf>]
- COUTTS, A. M., DALY, E., BERINGER, J., TAPPER, N. J. (2013) Assessing Practical Measures to Reduce Urban Heat: Green and Cool Roofs. *Building and Environment*, 70, 266-76.

- DIBA, K. (1996). Aspects of a University Project and a New Town., *Sustainable landscape design in an arid climate*, ed. W. O'REILLY, LAUSANNE, Switzerland: The Aga Khan Trust for Culture; 35-7
- DONOVAN, G. H., PRESTEMON, J. P., BUTRY, D. T., KAMINSKI, A. R., MONLEON, V. J. (2021) The Politics of Urban Trees: Tree Planting is Associated with Gentrification in Portland, Oregon, *Forest Policy and Economics*, 124.
- DWYER, J. F., SCHROEDER, H. W., GOBSTER, P. H. (1991) The Significance of Urban Trees and Forests: Toward a Deeper Understanding of Values. *Journal of Arboriculture* 17(10) 276-85.
- ETTINGHAUSEN, R., GRABAR, O., & JENKINS-MADINA, M. (2001) *Islamic Art and Architecture 650-1250*. Hong Kong: Yale University Press.
- EVANS, R. (2007) *Urban Design Compendium II*. London: English Partnerships.
- FRANK, S., WATERS, G., BEER, R., MAY, P. (2006) An Analysis of the Street Tree Population of Greater Melbourne at the Beginning of the 21st Century. *Arboriculture & Urban Forestry* 32(4) 155-163.
- GEHL, J., & ROGERS, L. R. (2013) *Cities for People*, Island Press.
- GEORGOULA, O., STAMNAS, A., PATIAS, P., GEORGIADIS, C., FRAGKOULIDOU, V. (2013) Historical Coastal Urban Landscapes Digital Documentation and Temporal Study with 2D/3D Modeling Functionality: The Case of Thessaloniki, Greece. *Journal of Cultural Heritage* 14(5) 396-402.
- GREENBLUE, U. (2020) *Street Tree Cost Benefits Analysis*. East Sussex: GreenBlue Urban Ltd.
- GROAT, L., WANG, D. (2002) *Architectural Research Methods*, New York: John Wiley & Sons INC.
- GUSTAFSON, P. (2001) Meanings Of Place: Everyday Experience and Theoretical Explanations,. *Journal of Environmental Psychology*, 21, 5-16.
- HARRIS, C. W., DINES, N. T. (1998) *Time-Saver Standards for Landscape Architecture: Design and Construction Data* (2 ed.) New York: McGraw-Hill Publishing Company.
- HAUER, R., PETERSEN, W. (2016) *Municipal Tree Care and Management in the United States: A 2014 urban & community forestry census of tree activities*, University of Wisconsin – Stevens Point. Stevens Point: Municipal of Stevens Point, WI.
- HAVILAND, W. A. (1997) *Cultural Anthropology* (9 ed.). New York: Harcourt Brace College Publishers.
- HILLENBRAND, R. (1999) *Islamic Art and Architecture*, London: Thames and Hudson .
- HORTE, O. S., EISENMAN, T. S. (2020) Urban Greenways: A Systematic Review and Typology. *LAND*, 9.
- HOUGH, M. (2004) *Cities and Natural Process: A Basis for Sustainability*. New York: Routledge.
- JACOBS, A. B. (1993) *Great Streets*. New York: MIT.

- JACOBS, A. B., MACDONELD, E., ROFE, Y. (2002) *The Boulevard Book: History, Evolution, Design of Multiway Boulevards*. Cambridge: MIT.
- JIN, H. (2021) Deconstructive Hermeneutics of Nature and Culture: Thinking After Derrida. *Space and Culture* 24(4) 679-96.
- JONES, O., CLOKE, P. (2002) *The Place of Trees and Trees in Their Place*, Oxford, UK: Berg.
- KABASSI, K., MARTINIS, A., MINOTOU, C. (2021) Estimating the Value of Monumental Olive Trees: Designing a Tool Using Multi-Criteria Decision Making, *Trees, Forests and People* 6.
- KING, V. J., DAVIS, C. (2007) A Case Study of Urban Heat Islands in the Carolinas. *Environmental Hazards*, 7(4) 353-9.
- KUNDU, S., KHARE, D., MONDAL, A. (2017) Individual and Combined Impacts of Future Climate and Land Use Changes on the Water Balance. *Ecological Engineering*, 105, 42–57.
- LAGRO JR, J. A. (2008) *Site Analysis: A Contextual Approach to Sustainable Land Planning and Site Design*, New Jersey: John Wiley & Sons, Inc.
- LASEAU, P. (2000) *Graphic Thinking for Architects and Designers* (3 ed.). New York: Wiley.
- LI, W., CAO, Q., LANG, K., WU, J. (2017) Linking Potential Heat Source and sink to urban heat island: Heterogeneous effects of landscape pattern on land surface temperature. *Science of the Total Environment* 586 457-65.
- LLEWELYN-DAVIES. (2000) *Urban Design Compendium*. London: English Partnerships.
- MADANIPOUR, A. (1996) *Design of Urban Space: An Inquiry into a Socio-Spatial Processes*. London: Willy.
- MASSENGALE, J., DOVER, V. (2014) *Street Design: The Secret to Great Cities and Towns*. Hoboken, NJ: John Wiley & Sons.
- MATTHECK, C., BRELOER, H. (2005) *The Body Language of Trees: A Handbook for Failure Analysis*, Norwick, GN: TSO.
- MCBRIDE, J. R., DOUHOVNIKOFF, V. (2012) Characteristics of the Urban Forests in Arctic and Near-Arctic Cities. *Urban Forestry & Urban Greening*, 11(2) 113-9.
- MCPHERSON, G. E., DOORN, N., GOEDE, J. (2016) Structure, Function and Value of Street Trees in California, USA. *Urban Forestry & Urban Greening* 17(1) 104-15.
- MCTH. (2016) *Annual Report of Conservation*. Tehran: Ministry of Cultural Heritage, Tourism and Handicraft.
- MILLER, G., DINGWALL, R., MORPHY, E. (2004) Using Qualitative Data and Analysis, *Qualitative Research: Theory, Method, and Practice*, ed. . In D. SILVERMAN, London: Sage Publications; 325-41.
- MILLER, R. W. (2007) *Urban Forestry: Planning and Managing Urban Green Spaces*, Long Grove, ILL: Waveland Press.
- MOORE, G. M. (2003) Native Trees: The Value of Selection, *Treenet Proceedings of the 4th National Street Tree Symposium: 4th and 5th September 2003*, Melbourne: University of Melbourne; 1-9

- MOUGHTIN, C., SHIRLEY, P. (2006) *Urban Design: Green Dimensions* (2 edition-Kindle Edition ed.) Oxford: Architectural Press.
- MOUGHTIN, C., CUESTA, R., SARRIS, C., SIGNORETTA, P. (1999) *Urban Design: Methods and Techniques*, Oxford: Architectural Press.
- MUNYANEZA, E., BIZURO, E., NSHUTIYAYESU, S., BIGENDAKO, M. J., MINANI, V. (2009) The Role of Cultural Practices in the Conservation of Biodiversity in Rwanda. In E. Kalipeni, I. Kakoma, Y. Sanogo, K. Fawcett, & R. Warner (Eds.), *Turning Science into Action: Biodiversity Conservation and Natural Resources Management In Africa* (pp. 417-430). Kigali, Rwanda: Africa World Press Inc.
- NADEL, I. B., OBERLANDER, C. H., BOHM, L. R. (1977). *Trees in the City* . New York: Pergamon Press Inc.
- NAGENDRA, H., GOPAL, D. (2010). Street Trees in Bangalore: Density, Diversity, Composition and Distribution. *Urban For. Urban Green*, 9, 129–137. doi:10.1016/j.ufug.2009.12.005
- NEUMAN, L. W. (2006). *Social Research Methods: Qualitative and Quantitative Approaches*. New York: Pearson Education.
- NIEZABITOWSKA, E. D. (2018). *Research Methods and Techniques in Architecture*. New York: Routledge.
- OSWELL, D. (2006). *Culture and Society: An Introduction to Cultural Studies*. London: SAGE Publications Ltd.
- PLANT, L., KENDAL, D. (2019). Toward Urban Forest Diversity: Resident Tolerance for Mixture of Tree Species in Streets. *Arboriculture and Urban Forestry*, 45(2), 41-53.
- REGIS, R. (2003) Sketchbook: Piazza di Spagna, Rome. In D. WATSON, A. PLATTUS, & R. SHIBLEY, *Time Saver Standards for Urban Design* (441-448). New York: Mc Grow Hill.
- RELPH, E. (1976). *Place and Placelessness*. London: Pion Ink.
- RESOURCES INVENTORY COMMITTEE (2001) *Culturally Modified Trees of British Columbia*. British Columbia: Resources Inventory Committee.
- ROMAN, L. A., PEARSALL, H., EISENMAN, T. S., CONWAY, T. M., FAHEY, R. T., LANDRY, S. (2018) Human and Biophysical Legacies Shape Contemporary Urban Forests: A Literature Synthesis. *Urban For. Urban Green*, 31, 157–168.
- SCHÄGNERA, J. P., BRANDER, L., MAES, J., PARACCHINI, M. L. (2016). Mapping Recreational Visits and Values of European National Parks by Combining Statistical Modelling and Unit Value Transfer. *Journal for Nature Conservation*, 31, 71–84.
- SHAMS, Z. I., SHAHID, M., NADEEM, Z., NAZ, S., RAHEEL, D., AFTAB, D. (2020). Town Socio-Economic Status and Road Width Determine Street Tree Density and Diversity in Karachi, Pakistan. *Urban Forestry & Urban Greening*, 47, 126473.
- SILVERMAN, D. (2010). *Doing Qualitative Research*. New York: SAGE Publisher.
- SJÖMAN, H., OSTBERG, J., BÜHLER, O. (2012). Diversity and Distribution of the Urban Tree Population in Ten Major Nordic Cities. *Urban Forestry & Urban Greening*, 11(1), 31-39.

- SMART, N., EISENMAN, T. S., KARVONEN, A. (2020). Street Tree Density and Distribution: An International Analysis of Five Capital. *Frontiers in Ecology and Evolution*, 8:562646.
- SPERLREGEN, P. D. (2003). Making a Visual Survey. In D. WATSON, A. PLATTUS, & R. SHIBLEY, *Time Saver Standards for Urban Design* (pp. 431-440). New York: Mc Grow Hill.
- SPIRN, A. W. (1998). *The Language of Landscape*. New Haven: Yale University Press.
- TABANDEH, H. (1969). *History of Gonabad*. Gonabad: Sepehr .
- TAFAHOMI, R. (2009). Application the Visual and Graphical Techniques of Urban Design in Urban Vision Document. *Journal of Shar Negar (City Writer)*, 52, 36-42.
- TAFAHOMI, R. (2010). *Documentary of Historical Parts of Gonabad City*. Mashhad: Cultural Heritage Organization, Mashhad, Iran.
- TAFAHOMI, R. (2021). Application of Physical and Nonphysical Elements in the Conservation of Historic Core of City. *South African Journal of Geomatics*, 10(1), 75-86.
- Tafahomi, R. (2021). Transition Process of Landscape through Changing Tropical Gardens from Productive Function into Recreational Purposes. *Turkish Journal of Landscape Research*, 4(1), 45-63.
- TAFAHOMI, R., LAMIT, H. B. (2011). Environment as a Pattern for Design: Case of tudy Shandize Valley in Mashhad, Iran. *International Journal of Architecture and Urban Development*, 1(1), 11-16.
- TAFAHOMI, R., NADI, R. (2016) Dehistoricisation the Urban Landscape through Transition of the Enclosure Ratio in Urban Fabric of Gonabad City in Iran. *Journal of Architecture Engineering Technology*, 5(2).
- TAFAHOMI, R., NADI, R. (2020) Derivation of a Design Solution for the Conservation of a Historical Payab in the Redevelopment of Doloeei, Gonabad, *International Journal of Built Environment and Sustainability* 7(1) 1-9.
- TAFAHOMI, R., NADI, R. (2020) Insight into the Missing Aspects of Therapeutic Landscape in Psychological Centers in Kigali, Rwanda, *Cities & Health*.
- TAFAHOMI, R., NADI, R. (2021) Protection of Natural Wetlands through Landscape Design in Kigali city. *Rwanda Journal of Engineering, Science, Technology and Environment* 4(1) 1-16.
- TAFAHOMI, R., NADI, R. (2021) The Transformative Characteristics of Public Spaces in Unplanned Settlements. *A | Z ITU Journal of the Faculty of Architecture* 18(2) 285-300.
- VELARDE, M. D., TVEIT, M. (2007) Health Effects of Viewing Landscape-Landscape Types in Environmental Psychology. *Urban Forestry and Urban Greening* 6(4) 199-212.
- WARD THOMPSON, ASPINALL, P., ROE, J., ROBERTSON, L., MILLER, D. (2016) Mitigating Stress and Supporting Health in Deprived Urban Communities: The Importance of Green Space and the Social Environment, *International journal of Environmental Research and Public Health* 13(440) 1-24.

- WARD THOMPSON, C., ASPINALL, P., MONTARZINO, A. (2008) The Childhood Factor Adult Visits to Green Places and the Significance of Childhood Experience. *Environment and Behavior*, 40(1) 111-143.
- WESCOAT, J. L. (1996) A Geographical Perspective on Landscape Design in Arid Environments. In W. O'Reilly, *Sustainable Landscape Design in Arid Climate*, Lausanne, Switzerland: the Aga Khan Trust for Culture; 11-23
- WHITE, E. T. (1975) *Concept Sourcebook: A Vocabulary Architectural Forms*, Tucson: Architectural Media Ltd.
- WHITE, E. T. (1983) *Site analysis: Diagramming Information for Architectural Design*, Tallahassee, Florida: Architectural Media Ltd.

Alındı: 25.04.2021; Son Metin: 09.05.2022

Anahtar Sözcükler: Peyzaj tasarımı; yaprak dökken meyve ağaçları; yeniden canlandırma; kültürel değerler; sürdürülebilirlik.

SOKAK AĞAÇLARI TASARIMI İLE KENTSEL PEYZAJDA KÜLTÜREL DEĞERLERİN YENİDEN CANLANDIRILMASI

Bu araştırma, kuzeydoğu İran'da kurak bir iklime sahip tarihi bir mekanın peyzaj tasarımıyla kültürel değerlerini canlandırmayı amaçlamaktadır. Çalışma alanı fiziksel bir dönüşüme uğramıştır, özellikle ana caddenin yeniden inşası, orta yol boyunca yaşlı ağaçlara zarar vermiş, bu da alanın peyzaj ve karakterinin değişmesine neden olmuştur. Araştırma metodolojisi yapılandırılmış gözlem, fotoğraf, eskiz ve grafik analizden oluşan nitel tekniklere dayanmaktadır. Bulgular, yerel meyve ağaçlarının bazılarının bölge sakinleri için daha önemli değere sahip olduğunu ve geleneksel olarak bahçecilik değerlerinden yararlandıklarını ortaya koymaktadır. Daha da önemlisi, dut ve hünnap ağaçları, yürüyüş ve buluşma mekanı gibi sosyal ve ritüel aktiviteleri temsil eden kamusal alanlar için bir tasarım önerisi olarak uygulanmıştır Yaprak dökken türde ve yuvarlak şekilde olan her iki ağaç da, yazın kaldırımlarda yapraklarıyla gölge oluşturmakta ve kışın güneş ışığının nüfuz etmesini sağlamaktadır. Sonuç olarak, yaprak dökken ağaçların yeşil bir gölgelik gibi doğrusal bir yapıda uygulanması, kamusal alanlarda kültürel değerlerin yeniden canlandırılması yoluyla sadece mekanın karakterini canlandırmaya değil, tasarım sürecinde sürdürülebilirlik ilkelerine de katkıda bulunmaktadır.

REVITALIZATION OF CULTURAL VALUES IN URBAN LANDSCAPE THROUGH STREET TREES DESIGN

This research aims to revive the cultural values through the landscape design in a historic site located in northeast Iran with an arid climate. The area of study has undergone a physical transformation, in particular, the reconstruction of the main street has been detrimental to old trees along the central path, which has resulted in changing landscape and character of the area. The research methodology was based on qualitative techniques consisting of structured observation, photography, sketching, and graphical analysis. The findings revealed that some of the local fruit trees were of significant value to the inhabitants and that they have traditionally benefited from gardening values. Importantly, Mulberry and Jujube trees were applied as a design proposal for the public spaces to represent social and ritual activities such as a place for hangouts, walking, and talking.

Both trees having round shapes with deciduous specifications provide leafy shade for the sidewalks in summers and penetration of sunlight in wintertime. In conclusion, the application of deciduous trees in a linear structure with a green canopy could contribute to not only reviving the character of the site but principles of sustainability in the design process through the revitalization of the cultural values in the public spaces.

RAHMAN TAFAHOMI; MA, PhD.

Received MA in Urban and Regional Planning and Design from Azad University of Tehran, Iran (1998-2002). Earned his PhD. Degree in Architecture from University Technology Malaysia (2006-2012), and Postgraduate Certificate in Learning and Teaching in Higher Education from the University of Rwanda (2019-2020). Major research interests include architecture, landscape architecture, urban design, heritage, behavioral patterns, and education in architecture. tafahomi@gmail.com

