



## Open Urban Spaces for Flexible Urbanism: An Analysis of Parks in Gaziantep, Kahramanmaraş, and Hatay as Earthquake Parks

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### Abstract

Flexible urbanism is defined as adopting urban places for different functions, usages, and users without radical changes or newly constructed. Flexibility in open urban spaces gains importance especially in emergent situations. The aim of the study is discussed to open urban spaces as parks opportunities and requirements in the context of their usage after a natural disaster. In the scope of the research, applying observation and document analysis within the framework of qualitative research methods, a comparison and documentation table was formed according to defined criterias from literature review and was conducted on the earthquake that occurred on 6th February 2023, in Turkey. According to the table, although all examined parks have different place identity, they have potential to become flexible open urban space. Consequently, flexibility of the open urban spaces, if designed in the accurate way, will form a great solution and help in providing better living conditions for people who are forced to stay out or without houses in any urgent condition with enough equipment and in the quickest way.

## 1. INTRODUCTION

Flexibility, literally, means coordination and qualification in every environmental condition [1] and the concept of changeability is the simplicity to be able to adapt to the environment and its changes at different levels [2]. Flexibility, in general, means a change in the system and making the possibility of obtaining new conditions, needs, and frameworks. Public spaces have an important role in forming social life, initial civilization appearances and biological complexes [3]. And flexible urbanism refers to an approach to urban planning and design that emphasizes adaptability, responsiveness, and resilience to changing circumstances and needs. It is a response to the dynamic and unpredictable nature of urban environments and seeks to create more flexible and resilient urban spaces that can adapt to changing conditions and support diverse uses and activities. This approach is particularly relevant in the context of rapid urbanization and climate change, which are creating new challenges and opportunities for urban development.

One of the key principles of flexible urbanism is the idea of incremental development, which involves the phased and adaptive development of urban spaces over time. This approach allows for greater experimentation and learning and enables urban spaces to evolve in response to changing needs and conditions. It also supports the development of more diverse and inclusive urban environments that can accommodate a range of uses and activities. Another important aspect of flexible urbanism is the use of adaptable and modular design strategies. This involves the creation of urban spaces that can be easily reconfigured and repurposed to meet changing needs and uses. For example, modular buildings and structures can be quickly and easily adapted to serve different functions, while flexible public spaces can be designed to support a range of activities and events. The urban and architectural flexibility provides spatial and functional sustainability of the system and can be considered in the context of planned as well as the already built environment. Contemporary practice of design and planning should target the

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flexibility and transformability as significant drivers of reuse and recycling [4]. In this study, the term "flexible urbanism" was examined through literature review and then an urban park was selected from Kahramanmaraş, Gaziantep and Hatay cities and the use of these parks after the Kahramanmaraş earthquake of February 6, 2023 was examined as an example of "flexible urbanism". The location of these three parks in the city, their accessibility, and their ability to respond to physical and psychological needs were discussed within the framework of the determined criteria, photographs taken directly or indirectly in the area and user experiences were evaluated, and more suitable and flexible solutions were developed in accordance with user needs.

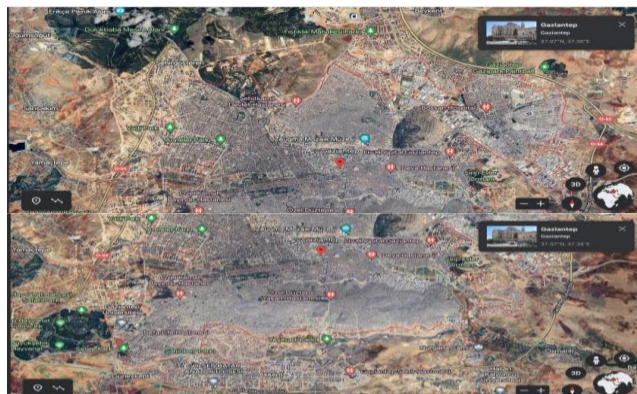
## 2. METHODOLOGY

To study the ability to convert a park to earthquake park, a number of criterias and their application and implementation to the selected parks to be investigated were specified and discussed. Criterias were derived according to analysis of need which was observed during living the situation in the city, examining the needs, and also according to investigation of related literature and practices under earthquake parks, in addition to social media, and news sources. Those criterias if implemented to the parks, will ensure the flexible using of the open parks areas. Finally, a table that contains a number of criterias which are added, rehabilitated, used to enable parks to become earthquake parks, are classified under main categories, such as: physical aspects, psychological aspects, and sociological aspects. The table is used to investigate the application of those criteria to the selected case studies. The Criteria presented in the study were classified into four categories which are physical, psychological, utilities, and multicriteria, and under each type, a number of sub-criteria were investigated.

## 3. ANALYSIS OF PARKS IN GAZIANTEP, HATAY, AND KAHRAMANMARAS AS EARTHQUAKE PARKS

### 3.1. Masal Park- Gaziantep City

Gaziantep Province is a historic city located in the southeastern region of Turkey, situated on the eastern bank of the Euphrates River (Fig.1). With a population of over 2 million people at 2022 [5], it is one of the largest cities in Turkey. Gaziantep has a rich cultural heritage and a long history. The city has been inhabited since the Neolithic period, and it has been ruled by various empires and civilizations throughout history, including the Hittites, Romans, Byzantines, and Ottomans [6]. Gaziantep province is a wealthy city with its large spaces and many green areas and parks (Fig.2). These areas are spread throughout the city and offer a range of activities such as walking trails, picnic areas, playgrounds, boating, and fishing.



*Figure 1. Gaziantep Province Map [7]*



**Figure 2.** Gaziantep Province Map with main parks locations [8]

During the devastating earthquake of Kahramanmaraş that happened on 06<sup>th</sup> February 2023, the earthquake affected the city of Gaziantep as well and occurred damages in the city, multiple buildings in Gaziantep province were affected. Some of them were demolished directly due to the earthquake, some were highly affected that residents left those houses because of the building risk to demolish by itself due to the aftershocks. Some houses were being forced to be demolished after an assessment of the structural system which showed building inability to resist another earthquake, and some other buildings with minor or no harms or effect. As people left their homes, they found themselves in nowhere, people needed a shelter and an area, such as tent, room,...etc., to stay in. Some people shoes to stay at cars, other built tents if they have, some stayed at streets, others left the city, but a number of people stayed at the park, where the tent cities by AFAD took places in some of the main parks in Gaziantep. The tents which were inserted in the main parks provided a suitable temporary shelter for people who lost their houses, during the cold weather people found those tents a suitable shelter, in addition to the food distribution campaigns which enabled to overcome the shortage in food.

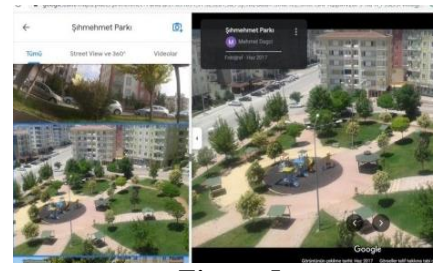
Mainly, there are three types of parks in the city that change their size according to their function, the largest parks which enable barbecuing, camping, etc. have the largest areas, and some of them are part of forest. Secondly the main parks, which enable multi-functional events, are normally plain and in the city center. And finally, the neighbor parks, which are the smallest in their sizes, and are made to provide a space for crowded neighbors. First, there are the Main parks: which have wide space and multiple facilities such as playgrounds, sport grounds, cafes, walking areas, bathrooms, and squares. Have plain grounds and are at the city centers. Such as Vadipark (Fig. 3.) Anneler Park, Masal Park, ...etc.. Second, there are the Picnic parks which are normally away from the city center, have places for barbecues, not plain, they often are in the type of a forest and most of the time a space from a forest. Multiple functions are in the park that support picnics. Most of them are located on the sides of the city, still, in Gaziantep two of those parks are in the city such as (Sahinbey Park, Erikce Park, Yesilvadi Park, etc.(Fig. 4) ). Third, are the Neighbor parks which take place between a multiple number of residential blocks, they normally contain a park with resting chairs, playgrounds, mosques, WCs, and sometimes condolence houses. They help provide social spaces for small activities such as neighbor gathering, sports, ...etc. and at the same time enables more clean air in the neighborhood (Fig. 5).



**Figure 3.**  
Vadipark [9]



**Figure 4.**  
Alleben Goleti Park [10]



**Figure 5.**  
Random neighbor parks in  
the city of Gaziantep [11]

Some of the main parks in the province produce a main belt which connects those parks is in the heart of the city, as the below map; from right to left (100<sup>th</sup> anniversary park-kirkcak park-100 yil ataturk kultur park-kavaklik park-masal park-sport park-botanik park- festival park- fistic park):



**Figure 6.** The green belt in the city of Gaziantep [12]



**Figure 7.** Aerial view for the green belt in the city of Gaziantep [13]

In order to investigate assistance during the earthquake disaster, and investigate how to enable providing this assistance, to chose to study a park in the aspects of a Flexible Urban Area in the province. There were some reasons which directed to choose to investigate a park, and specifically choosing the Masal Park as a case study. It is selected one of the main parks in the city of Gaziantep, which is located on the green line (Fig. 6-7) that passes from the heart of the city and is one of the most important and largest parks in the city. While of the reason to choose the Masal Park (Fig. 8-9-10) to study in specific was its central location in the city center, it is located in an area were a number of buildings for citizens are existing, also the ease to the access to the park given the fact that there is no fence around it, the large area of the park also will enable adapting several criteria which are investigated, and finally the most important reason is the security of the parks as it is located in the city center and not in uninhabited areas or away areas on the sides of the city. After the experiment of the earthquake and the fact that it takes a long time for habitants to get back to their homes. New solutions based on the idea of flexibility, enabling parks to host people through ensuring the availability of the basic needs of the displaced people are met.



**Figure 8.** Masal Park aerial top view [14]



**Figure 9.** Masal Park aerial view [15]



**Figure 10.** Masal Park aerial view [16]

The ability to use some facilities or also establish new ones for storage matters is suitable as there are current kiosks or small shops and additional structures can be added to enhance this matter. Third, the central location of the park eases food obtaining and availability from nearby supermarkets and also eased receiving food during the earthquake. Fourth, the availability of clean water and sanitation facilities is efficient as there are a number of fountains for drinking water which served very well during the earthquake, and the ability to increase them to be sufficient during crisis or disaster. Fifth, for health matters there is sufficient area to establish medical care tents on, in addition to using current facilities for this matter such as the current available wedding halls and exhibition halls. Sixth, the central location of the park in the city center eases car and pedestrian accessibility to the park in addition to the sufficient number of car parks around the park that enabled people to park their cars around the park and sometimes use it as shelter. Seventh, actions to enhance the design for special needs should be adopted to provide proper access and circulation in the park. Finally, the large park area enables establishing assistance receiving facility or ground.

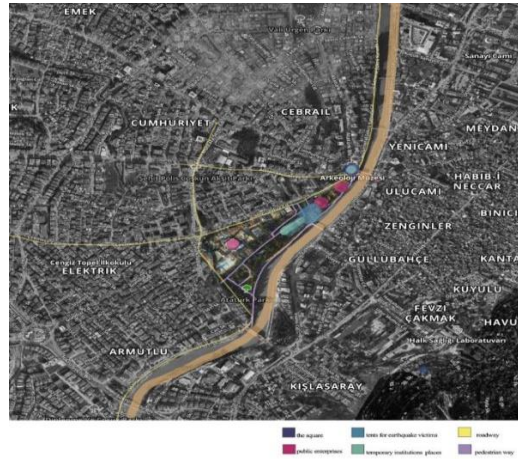
While considering the psychological criteria, the park with its wide areas and current available squares enables social activities, either by using the available squares, or by establishing new squares for proper functions such as when gathering. And for Utilities criteria, for electricity and power constraints it was concluded that addition of electric boxes, solar system panels for electricity charging is necessary. Also enhancing infrastructure for agile such as increasing the number of trash cans and assessing teams and cars for the disposal of waste. While as multi-criteria aspects, the park provides a good security because of its central location in the city center. The ability it provides to establish police tents on due to its space, besides enabling receiving educational services because of its large areas that enables establishing either squares or tents to provide this service, besides the ability of the park to use its current facilities such as the wedding and exhibition halls, or establish new ones to use as management buildings and management concerns during crisis. and besides the availability of near personal care facilities the park enables establishing temporary ones in the shape of tents or kiosks or even rooms due to its area. For assistance distribution establishing either squares or kiosks can be considered also due to the area of the park.

Finally, it is observed from the table (Table 1) that there is the potential of the park to be used as an earthquake park through adopting the investigated flexible urbanism criteria. Those criteria can be either adopted through refunctioning of current available structures or areas or facilities during crises, or by establishing new facilities and enabling the park to achieve better response during crisis. It can be concluded that the Masal park can currently provide response to crisis using its current available facilities, and it also enables enhancing this response due to its potential to adopt the investigated and presented criteria. The park in general is positive in providing proper response and also in preparing to provide a better response. Overall, the Masal park which is considered a park of flexible urbanism due to its characteristics of changing to adopt situations and provide solutions during earthquake disaster, so it can provide functional solution during the case of an earthquake forming a shelter and small city during the crises, with adopting the criteria either by making refunctioning of already existing elements, areas, buildings, squares, rooms, ...etc. in the park, or either by establishing and constructing new ones to enable better response during an earthquake.

### **3.2. Hatay Atatürk Park ve Cumhuriyet (Köprübaşı) Square**

Atatürk Park and the Cumhuriyet (Köprübaşı) Square in the Antakya district of Hatay, which is one of the provinces most affected by the high-intensity earthquake that occurred at 06 February 2023, is researched in terms of post-disaster use as earthquake park. In the historical period, many devastating earthquakes

occurred in Antakya and its surroundings [17]. The region which has seismic activities throughout history, became one of the most damaged places in the earthquake that took place on February 06. After the earthquake, a significant number of buildings including residences, public buildings, and hospitals regardless of their history, construction year, function or size were collapsed or damaged in Antakya.



**Figure 11.** Highlights of the Park [18]

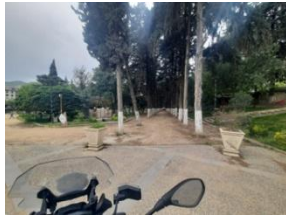
Antakya has a lot of parks especially near the axis of Asi River (Fig.11). After the earthquake, they played an important role in many issues such as gathering, sheltering, aid distribution and communication. Atatürk Park, with its many features, has become one of the most prominent places with its many features right after the earthquake. The park which is located in one of the easiest accessible areas of the city, is close and has a direct accessibility to one of the main squares of the place; Cumhuriyet (Köprübaşı) Square. The square is connected to the other side of the city with a famous historical stone bridge which is not affected by the earthquake. The square is an intersection point for many important streets of the city, then there is easy access on foot or by car to there. Although it is not available till now, it has an opportunity that can be reached by water from the river if desired and planned. More and more, there are many public buildings such as health directorate, municipality, governor's mansion, school, museums in the immediate vicinity of the park. The location indicates that it is a crucial and integrated place for the city for providing assistance and facilitating communication during emergencies. However, the park has specific characteristics. Standing out as one of the great landscape areas of Hatay, Atatürk Park (52.000 m<sup>2</sup>) is a recreation area which welcomes different socio-cultural groups [19]. Before the earthquake, it was a recreation center that allowed different activities such as spending time in cafes, having picnics, doing activities in children's parks, and walking trails. It was a place where citizens from different social backgrounds and ages interacted with the society and hosted different memories, as was the city square nearby [20]. For the study, information about the area was obtained from social media, news and people who know the place. In the light of the obtained information, use of the park and the square after the earthquake was discussed according to criteria(s).



**Figure 12.** Temporary Shelters in the Park

The first criteria are physical situations. After the earthquake, the square and the park hosted many official and voluntary institutions because, there, which is located in the center of the city and in an easily accessible location, is advantageous both for the reach of earthquake victims and ensuring coordination.

Then, a tent city (Figure 11) was set up within the park via distributed tents by organizations (Fig.12). Since the place seemed sheltered via the trees at first, many tents were set up and people settled down. But, there was rained a lot and what seemed like an advantage turned into a disadvantage. As an example, after the rain stopped, the rain water remaining on the tree branches continued to drip onto the tents, and at the same, the ground turned into mud because it was soil. As a solution to the ground, platforms were built and tents were set up on these platforms again. However, since the problems could not be solved completely, the tents were moved to another place as can be seen at figure-12 taken around 20<sup>th</sup> April 2023.



**Figure 13.** Current Situation of the Park



**Figure 14.** The Wide Hard Floor

On the other hand, in order to meet the needs of earthquake victims, a cooking and food distribution area was created immediately. Thus, shelter and food were provided to the earthquake victims who stayed in the tent and close environment. However, there were problems with storage here. Existing cafes were used as storage areas for materials and food products and they were not sufficient, because their sizes are small. There was another physical problem about the park, this is the sanitation area. It was not enough. This means that people cannot regularly meet their very important needs such as clean clothes, showers and toilets. This may be due to the lack of infrastructure.

The park (Fig.13) and the square have many potentials such as having easy access for emergencies, being open space, and being able to use the river transportation facility or helicopter for an extreme situation. A wide hard-floored square can be used to reach by vehicles. However, security units were established on hard ground areas (Fig.14). Therefore, it was not used effectively for transportation or for tents. Especially the square could have been a very suitable place for a helicopter to land in Antakya, which it can hardly reach by road. However, urban decorations and the statue prevented this possibility. In fine, green in the region can be an advantage in harsh climatic conditions (such as wind, precipitation). Hence, there is a flexible space with the potential to become an earthquake park if it would be well-organized.



**Figure 15.** Children Park



**Figure 16.** Psychological Support Center

Another criteria is socialization. As the park was a well recreation area before the earthquake, it continues to be used with the same function. A children's park with its park and the existing green area allowed socialization for all age groups (Fig.15). Individuals affected by the earthquake need psychological support (Fig.16). For this reason, specialist support is as important as socialization. A temporary psychological support center was set up in this park where earthquake victims could receive support. Another criteria is utility. Electricity is one of the most important needs for charging phones, lighting, etc.

For this reason, a generator was ensured in the park. Another important point is to have a well-functioning infrastructure for the continuity of a clean and hygienic environment. However, clear information on this issue was not available. Considering that the earthquake victims stayed here for a short time, it can be concluded that there is no sufficient infrastructure on there (Fig.17).



**Figure 17.** Temporary places was established on the square for management, organization and distribution of needed materials

At the last part of the table, there are multi-criteria which are differ from each other. The studied park and square located many public buildings such as municipality building, governor's office, district governor's office, police department, museum, health center and educational institutions. If these structures had not been damaged in the earthquake, the administration would have operated from this region. The buildings damaged due to earthquake, functions such as management, organization and distribution were provided with the temporary spaces built in the park and square in the initial stage. Another reason why it is provided from here is that it is easier to access every part of the city from here. Security is the most important factor for people to continue their lives safely and for the functions examined in the table to continue in an order. There was a center set up for law enforcement. Police and military were in the area for security, management, and assistance both physical and psychological. In short, as a result of the research and observations, it has been seen that the park has many advantages such as central location, easy accessibility, greenery, being next to the river, soft and hard ground, enclosed areas, being close to public buildings etc. Even though the park and square allow flexible urban use with these features, it could be the most effective center after the disaster in the city due to the lack of adequate planning and lack of infrastructure.

### 3.3. Atatürk Park, Kahramanmaraş

“In order to ensure that life becomes normal as soon as possible after the disaster, the vital needs of the people affected by the disaster must be met as quickly as possible [21]. For this reason, it is of great importance to create emergency meeting areas where victims can gather safely, access accurate information and shelter, and place the victims in this area” [22].



**Figure 18.** Atatürk Park, aerial view, May 2023 [23]

Kahramanmaraş, which is a very rugged geographical region, has an important vegetation stratification depending on the altitude. East Kayseri, Sivas and Malatya, located in the Mediterranean, north of the city of Kahramanmaraş; In the south, there are the cities of Osmaniye and Gaziantep. In addition, 35%



(508,450 hectares) of the province is forest. There are many parks and picnic areas in Kahramanmaraş. Some of these parks are natural areas that were later organized by municipalities, and some of them are completely artificial and subsequently produced recreation, gathering, sports and playgrounds [24]. Atatürk Park (Fig.18), which was examined in this study, is one of these large green areas. Atatürk Park, which has an important place among the green areas in the city of Kahramanmaraş is located in the south of the city, 3 km from the city center of Kahramanmaraş and on the road to Adana.



**Figure 19.** Aerial view of Atatürk Park, May 2023 [25]

Atatürk Park (Fig.19-20), which is examined in the study, is connected to the Dulkadiroğlu district, which is one of these districts, and is 2 km away from the "bazaar" where shopping units, residences and workplaces are located. The park is also located just opposite the city terminal, close to Piazza Shopping Center, the only shopping center of the city, and the entrance to the city via Adana road. The park is like a green buffer zone between the factories and the "bazaar" area. The park was established between 1969 and 1970 [26]. The active green area parcel in the city center and covers an area of 13.1 hectares [27]. After this large green area was arranged as a park and opened for use, it has become a resting and gathering area with many users. There is a cultural center, indoor fairground, wedding hall, more than one cafeteria, sitting areas and various playgrounds within the boundaries of the park.



**Figure 20.** Views from Atatürk Park, before the earthquake [28], [29]

Immediately after the earthquake that took place in Kahramanmaraş on February 6, 2023, an urgent problem of shelter arose due to the destroyed houses in the region. Shortly after the earthquake, tents were sent to the region by the Red Crescent, AFAD and many non-governmental organizations. Parks and large areas, which were previously designated as meeting areas in the city, turned into tent cities with the establishment of tents that came quickly. This rapid transformation is the subject of the study "flexible". It is a good example of the concept of "urbanism" from recent times. Atatürk Park is one of the many parks that turned into a tent city in a short time after the earthquake. Thanks to its large area, central location and sheltered structure, the park has become a suitable area for this transformation and sheltering need. While the number of trees in the park provided a sheltered area, the hard surfaces reserved for the walking path and other uses also provided a suitable area for pitching tents.

On April 19, 2023, some inspections were made in the region and as a result of these inspections, it was observed that many institutions and non-governmental organizations donated various tents to the region. Although some of these tents are suitable for the weather conditions, as a result of the interviews with the tent owners, it has been determined that many tents are insufficient for long-term shelter. It has been reported by those living in the earthquake zone that some tent types are inadequate against weather

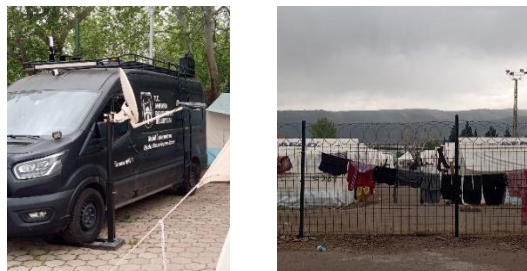
conditions such as rain and wind, and water flows into the tents after heavy rains after the earthquake. When it rains, water enters the tent from the ground and upper surfaces of the tents and the tent owners have many problems. For this reason, it is possible to reach the following conclusion; Tents are emergency shelters that can be set up very quickly and can be moved quickly, but when they are not produced with appropriate materials and methods, they cause problems for users. To this problem experienced by users, some precautionary measures or a more accurate transformation can be suggested for urgent shelter needs. Some permanent protective urban design elements that can provide shelter against wind and precipitation, and some cover elements that will provide a sheltered area are suggested for this and similar parks, which are examples of flexible urbanism.

Various numbers have been given to the tents in Atatürk Park in order to associate the tents with their users, to specify addresses when necessary, and to maintain order in the tent city (Fig. 21). These numbers indicate a kind of address and provide a sense of belonging to the people in tent cities that are established quickly and work like a small neighborhood. However, despite the fact that the park has a water infrastructure, after the earthquake, it was revealed that the water resources in Atatürk Park were not suitable for use as drinking water for a long time, as in the whole city. This problem has been solved with regular and irregular drinking water aids from the environment. However, this is not a very sustainable solution due to reasons such as transportation cost, ecological consequences and insufficient aid. As a sustainable solution to this problem, it is recommended to install water treatment systems at certain points. Thus, a permanent solution will be provided not only for emergencies but also for the general use of the park.



**Figure 21.** Activity tents set up in the open areas **Figure 22.** Education tent in the park

As a result of the observations made in the park area, it was observed that many different tents were set up (Fig.21). Since there is enough open space, there are also areas where event tents can be set up as well as accommodation tents. Various volunteers and educators organize games, music and dance activities for children in these tents (Fig.22). These events are held at regular intervals. However, permanent spaces are suggested for relaxing activities and workshops where the elderly and women can participate regularly, produce and spend time in their daily lives. These production areas will be educational areas suitable for the common use of the total, except for the post-disaster times, and will play a positive role in restoring the psychology of the society in emergency situations such as earthquakes. At the same time, it will be an example of a public space suitable for flexible use, as its function may vary according to needs.



**Figure 23.** Mobile internet service trolley **Figure 24.** Clothes laid by tent residents for drying

In addition to all these functional features as functional criteria, in the park; there are many buildings open to continuous social use such as wedding hall, cafeteria, and fairground, there is sufficient electrical infrastructure. At the same time, apart from the power lines drawn into the tent, the park is also illuminated with street lighting in accordance with the use of the recreation area. Thanks to the

appropriate infrastructure, electrical installations can be installed in the tents for needs such as lighting and phone charging. Telephone lines are working in the region, but when we look at the situation, it is seen that the internet resource is insufficient and mobile internet service is provided. The Internet is needed for all kinds of communication and training needs in the field. The vehicle seen in the Figure 23 is the mobile internet resource sent by Ankara Metropolitan Municipality. In addition to mobile internet support the entrance of the tent city, there is a mobile laundry sent by various institutions and non-governmental organizations. Tent City users do their laundry in these laundries and use the various wire dividers around the park as dryers (Fig.24).

In addition, various activity and training tents, which are larger than the tents used for sheltering, have been set up for children. With all these multi-functional tents, mobile showers and toilets, and a large number of tents, the open spaces within the park have become largely occupied. There are public toilets in the park that are currently open for use. However, due to the increase in the number of active users, these toilets were insufficient and mobile toilets were started to be used. In addition, since the park is an open green area that is actively used during the day, there is no shower facility. Therefore, portable showers are also installed. But the tents are spread over a very large area. For this reason, portable showers collected at a certain point were deemed insufficient for use. It may be recommended to place a certain number of showers in a certain area in the parking area. Because the tents are located all over the park. For this reason, when user comfort is considered, it is recommended that mobile need centers such as WC , shower, laundry, personal care centers should be placed in clusters in close association with the shelters. In this way, users will not have to go far for their hygiene needs from tents that need a temporary "house". In order to provide this clustered settlement and to provide a more organized and flexible transformation of the park, it can be a useful practice to construct the hard ground and green areas in the park in certain rhythmic patterns.

It has been observed that the number of security guards has been increased in Atatürk Park, as in other tent cities, in order to ensure pre-disaster security. Recently, there are security guards in the park, but as the number of users increases, ensuring security has become more important and it has been beneficial to increase the number of personnel. In order to meet the needs of the people living in the tent city and to ensure security, there are soldiers as well as security guards in various parts of the park. As a result of the examinations made in the park and some interviews with the users, it has been seen that there are some advantageous and disadvantageous situations after the transformation of the park. It is possible to say that the park's becoming a regular shelter for a large number of people in a very short time is a qualified example of being " flexible ", which is the subject of the study. The park was not designed to be a tent city, but since it is in a large area, provides a certain level of security and has suitable infrastructure for basic needs, it has undergone a very important functional transformation in the city in case of an urgent need and responds to the user's needs in a minimum time. transformed into a large-scale shelter.

### 3. CONCLUSION

There are various alternatives for flexible urban usage in emergency situations in the built environment [30]. However, not every urban or public space has the same potential for the flexible usage. To discuss these three different parks from various cities Gaziantep, Kahramanmaraş and Hatay, which are affected from the earthquake are examined.

**Table 1.** Analysis of the Criterias in Masal Park-Gaziantep, Atatürk Park-Hatay, Atatürk Park-Kahramanmaraş

Park	Gaziantep, Masal Park	Hatay, Atatürk Park ve Cumhuriyet Square	Kahramanmaraş, Atatürk Park
Criteria	Analysis		
Physical Criteria			
1 <b>Shelter (Ground type and Area):</b> There is a plain ground (ground of grass or tiles, etc.) suitable to insert and establish tents, With large areas.	<b>Availability:</b> [+] <b>Suggestions:</b> [+] The park can expand to join larger areas.	<b>Availability:</b> [+] <b>Suggestions:</b> [+] The park can expand hard grounds for more suitable for tents.	<b>Availability:</b> [+] <b>Suggestions:</b> [+] Hard grounds can be clustered in certain sizes and qualities.
2 <b>Storage:</b> There are Rooms, buildings, kiosks, ...etc. (Above or Underground) suitable to be used to store supplies (such as: tents, blankets, food, hygiene materials, .....etc.)	<b>Availability:</b> [+] <b>Suggestions:</b> [+] 1 floor small area rooms can be constructed which can be used during normal days for other functions.	<b>Availability:</b> [-] <b>Suggestions:</b> [+] Small cafes in the park or undamaged public buildings in the vicinity. Number of the places could be increase.	<b>Availability:</b> [+] <b>Suggestions:</b> [+] [+]The cafeteria, fairground and wedding hall buildings in the park can be used as warehouses if needed.
3 <b>Food:</b> The location of the park is in the city center close to several markets, being in the city center.	<b>Availability:</b> [+] <b>Suggestions:</b> [-]	<b>Availability:</b> [+] <b>Suggestions:</b> [-]	<b>Availability:</b> [-] <b>Suggestions:</b> [-] Open kitchens where people can cook their own meals can be suggested.
4 <b>Clean water:</b> There are free drinking water fountains, and there are clean water tanks.	<b>Availability:</b> [+] <b>Suggestions:</b> [+] Underground water tanks which can be added and constructed.	<b>Availability:</b> [-] <b>Suggestions:</b> [+] Underground water tanks can be added and constructed	<b>Availability:</b> [+] <b>Suggestions:</b> [+] Clean water problem can be solved by placing water purifiers.
<b>Sanitation facilities:</b> There are free water fountains, and there are water tanks. There are enough WCs, Bath Areas, and Clothes Washing areas.	<b>Availability:</b> [+] <b>Suggestions:</b> [+] Increasing number of WCs, Constructing water fountains and bath areas can be considered	<b>Availability:</b> [+] <b>Suggestions:</b> [+] Increase the number of WCs, Construct water fountains and bath areas.	<b>Availability:</b> [-] <b>Suggestions:</b> [+] The number of toilets and showers can be increased, and shower areas can be built if needed.
6 <b>Medical care:</b> There are areas of ground to establish hospital tents on. There is a 1 floor building suitable for this usage.	<b>Availability:</b> [+] <b>Suggestions:</b> [+] Single-storey buildings in the area can be used in times of crisis.	<b>Availability:</b> [-] <b>Suggestions:</b> [+] There are many public buildings in immediate environment, they can be used for mobile hospital etc.	<b>Availability:</b> [-] <b>Suggestions:</b> [+] One of the buildings with different functions such as cafeteria and wedding hall in the area can be arranged in accordance with the use of the hospital.
7 <b>Accessibility:</b> The park is in an area easy to access with or without cars.	<b>Availability:</b> [+] <b>Suggestions:</b> [-]	<b>Availability:</b> [+] <b>Suggestions:</b> [-]	<b>Availability:</b> [+] <b>Suggestions:</b> [-]
8 <b>Parking area:</b> There is an area for parking refugee's cars.	<b>Availability:</b> [+] <b>Suggestions:</b> [-] There is a sufficient area for parking cars around the park from the four sides	<b>Availability:</b> [+] <b>Suggestions:</b> [-]	<b>Availability:</b> [+] <b>Suggestions:</b> [-]
9 <b>Special needs:</b> Design for people with special needs is considered (such as WCs, Ramps in buildings, walking strips,.....etc.)	<b>Availability:</b> [-] <b>Suggestions:</b> [+] Accessibility standards for disabled individuals should be considered, such as adding yellow strips, ramps, and disabled WCs.	<b>Availability:</b> [-] <b>Suggestions:</b> [+] Adding yellow strips, ramps, and disabled WC.	<b>Availability:</b> [-] <b>Suggestions:</b> [+] Adding yellow strips, ramps, and disabled WC.
10 <b>Assistance:</b> There is ability to receive assistance (such as food, tents,...etc.) by cars, helicopters, or trucks.	<b>Availability:</b> [+] <b>Suggestions:</b> [+] Helicopter landing area can be constructed and used as square during normal situations.	<b>Availability:</b> [+] <b>Suggestions:</b> [-]	<b>Availability:</b> [+] <b>Suggestions:</b> [+] Helicopter landing area can be constructed and used as square during normal situations.

**Table 1. (Continued) Analysis of the Criterias in Masal Park-Gaziantep, Atatürk Park-Hatay, Atatürk Park-Kahramanmaraş**

Park	Gaziantep, Masal Park	Hatay, Atatürk Park and Cumhuriyet Square	Kahramanmaraş, Atatürk Park
Criteria	Analysis		
<b>Psychological Criteria</b>			
11 <u><b>Social assistance:</b></u> There are squares, children's playgrounds, and sport playgrounds.	<b>Availability:</b> [+] <b>Suggestions:</b> [-] There is sufficient area used as square and which can be used for socialism, also the large area of the park enables establishing another squares and new arrangement for squares and giving each one a function based on the criteria.	<b>Availability:</b> [+] <b>Suggestions:</b> [-] Solar panel can be installed	<b>Availability:</b> [+] <b>Suggestions:</b> [-] In addition to children's activities, activity areas can be suggested for groups such as women and the elder people.
<b>Utility Criteria</b>			
12 <u><b>Electricity and Power:</b></u> There are Electricity boxes, and solar systems for charging electricity equipment, and free charging sockets.	<b>Availability:</b> [-] <b>Suggestions:</b> [+] Electricity boxes and electricity charging areas, also solar system panels for providing electricity can be constructed.	<b>Availability:</b> [-] <b>Suggestions:</b> [+] Solar panel can be installed	<b>Availability:</b> [-] <b>Suggestions:</b> [+]
13 <u><b>Infrastructure for Agile:</b></u> There are Trash collecting points, and there are arhygiene materials.	<b>Availability:</b> [-] <b>Suggestions:</b> [+] increasing number of trashcans and assessing teams and cars for the disposal of waste.	<b>Availability:</b> [-] <b>Suggestions:</b> [-]	<b>Availability:</b> [-] <b>Suggestions:</b> [+]
<b>Multi-Criteria</b>			
14 <u><b>Security: (Physical, Psychological, and Sociological)</b></u> There is a nearby police station. The park's location is in the city center. There is a room (tent, kiosk, .....etc.) to provide this service during earthquake.	<b>Availability:</b> [+] <b>Suggestions:</b> [-] [-]A tent can be inserted anywhere in the park to be used as temporary police center.	<b>Availability:</b> [+] <b>Suggestions:</b> [-]	<b>Availability:</b> [+] <b>Suggestions:</b> [-]
15 <u><b>Education: (Physical, Psychological, and Sociological)</b></u> There are areas (such as grounds to establish tents, rooms, suitable open areas) which enable education for refugees about the disaster, how to recover, measure, use assistance, etc.	<b>Availability:</b> [+] <b>Suggestions:</b> [-] Due to the large park area, tents to provide education during crisis can be considered.	<b>Availability:</b> [-] <b>Suggestions:</b> [-]	<b>Availability:</b> [+] <b>Suggestions:</b> [-]
16 <u><b>Management: (Physical, and Sociological)</b></u> There is a building that can be used for management services such as Information desks, law information, distribution and management committees,... etc.	<b>Availability:</b> [+] <b>Suggestions:</b> [-] Either by installing tents, or by constructing 1 floor building that can be used, or using current available structures such as the wedding hall existing in the park and the exhibition building	<b>Availability:</b> [+] <b>Suggestions:</b> [-]	<b>Availability:</b> [+] <b>Suggestions:</b> [+] It can be provided with tents or the use of existing buildings.
17 <u><b>Personal Care Facilities: (Physical, and Psychological)</b></u> There are nearby personal care facilities such as men and women (hairdresser), ...etc.	<b>Availability:</b> [-] <b>Suggestions:</b> [+] Since the park is in the city center there is a number of hairdressers, also a tent for this matter can be installed.	<b>Availability:</b> [-] <b>Suggestions:</b> [-]	<b>Availability:</b> [-] <b>Suggestions:</b> [+] Personal care points should be provided.
18 <u><b>Distribution area: (Physical, and Psychological)</b></u> There are areas such as squares, rooms, building, or ground to establish distribution tents and desks.	<b>Availability:</b> [+] <b>Suggestions:</b> [-] Tents can be installed to arrange the distribution work, establishing squares can also make benefit in this matter.	<b>Availability:</b> [+] <b>Suggestions:</b> [-]	<b>Availability:</b> [+] <b>Suggestions:</b> [-] Existing buildings can be used for collection and distribution.

To conclude, all parks have different different urban identity. As it can be easily realized from the table (Table 1), they have advantages and disadvantages. Although they all have the potential to be unique examples of flexible urbanism, many failures and problems have been observed. However, if their potentials have been used sufficiently, the crisis which occurred after the earthquake for sheltering and management, will not be over again. Because the flexibility of the open urban spaces, if used in the correct way, will form a great solution and help in providing better life conditions for people who are forced to stay out or without houses. The study supposes a way to criticize, and develop open urban places via criterias after a natural disaster. It is a way to replan or revise to make up for a shortage for using the open public spaces in different situations as flexible for various functions even in emergency.

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