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Table I Post-disaster case study analysis based on the disaster impact and post-disaster rehabilitation
Tabela I Analiza primjera nakon katastrofa na temelju čimbenika utjecaja katastrofe i rehabilitacije nakon katastrofe

Case study disaster (country, region/city, date/year of disaster event)	**Japan, Tohoku Region, 11 March, 2011**
Disaster category	Earthquake and Tsunami
Disaster name	"The Great East Japan Earthquake Disaster"
Identity impact	
Disaster damage statistics	Population impact: Total of 15,879 deaths and 2,712 missing persons across 12 prefectures. Property impact: About 130,000 homes in 10 prefectures were destroyed and about 260,000 homes in 13 prefectures were half-destroyed.
Post-disaster outcomes	Long-term evacuation of population in the affected region due to the level of radiation. Internal and external relocation of population.
Post-disaster rehabilitation strategy	The relocation of land use, physical rebuilding of local areas and future land use patterns.
Case study disaster (country, region/city, date/year of disaster event)	**United States of America, Gulf coast, 25 August, 2005**
Disaster category	Flood
Disaster name	"Hurricane Katrina"
Identity impact	
Disaster damage statistics	Population impact: Around 1800-2000 persons died. Property impact: The physical damage cost estimated to US$ 250 billion.
Post-disaster outcomes	Internal and external relocation of population.
Post-disaster rehabilitation strategy	Flood-resistant standards in building construction. Restoration of flooded buildings. Repair and rehabilitation of landscape.
Case study disaster (country, region/city, date/year of disaster event)	**United States of America, Pacific region/California, 4 December, 2017**
Disaster category	Wild Fire
Disaster name	"Thomas Fire"
Identity impact	
Disaster damage statistics	Population impact: 2 persons died. Property impact: 1,063 structures destroyed; 281,900 acres destroyed, out of which 181,300 acres are National Forest lands.
Post-disaster outcomes	Evacuation and displacement of thousands of people. Evacuations of animals. Burning the vegetation transformed the landscape.
Post-disaster rehabilitation strategy	Recovery of property in progress. Vegetation reestablishment.
Case study disaster (country, region/city, date/year of disaster event)	**Bosnia and Herzegovina, Sarajevo, 1992-1996**
Disaster category	War
Disaster name	"The Siege of Sarajevo"
Identity impact	Destruction of cultural heritage and memory; Changed identity through the transformation process.
Disaster damage statistics	Population impact: 10,514 civilians out of which 1,598 were children died or disappeared. 1,741 persons out of which 356 were children, were injured or became permanently disabled. During the war, 600,000 persons of the city's pre-war population left and 150,000 displaced persons arrived. Property impact: 60% of the houses were destroyed Identity impact: Destruction of cultural heritage and memory.
Post-disaster outcomes	Internal and external relocation of population. Urban transformation as the result of deliberate destruction. Re-defined identity of the urbanscape.
Post-disaster rehabilitation strategy	Reconstruction of physical damage. Rehabilitation process still in progress. Reconciliation with the past.

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The Urbanscape Duality during a Disaster and Post-disaster

Dualnost urbanog pejsaža tijekom i poslije katastrofe

DISASTER
DUALITY
REHABILITATION
URBANSCAPE
URBAN RESILIENCE

KATASTROFA
DUALNOST
REHABILITACIJA
URBANI PEJSAŽ
URBANISTIČKA SNAGA

This paper explores the role of urbanscape in a disaster and post-disaster context by focusing on the usage of open public space in this specific period. In terms of the factors arising from disaster consequences and their impact on society and space, the research will focus on understanding the importance and role of these open public spaces and their urban structure through the analysis of the selected post-disaster case studies. The purpose of the research is to reveal the duality of urbanscape, by emphasizing its positive and negative qualities during a disaster and in its aftermath.

Članak istražuje ulogu urbanog pejsaža usmjereno na način korištenja otvorenih gradskih prostora tijekom i poslije katastrofe. Uzimajući u obzir čimbenike koji proizlaze iz posljedica katastrofa i njihovog utjecaja na društvo i prostor, istraživanje se bavi razumijevanjem značaja i uloge otvorenih gradskih prostora i njihove urbanističke strukture kroz analizu odabranih primjera. Cilj istraživanja je pokazati ulogu dualnosti urbanog pejsaža, naglašavajući njegove pozitivne i negativne kvalitete koje se ogledaju tijekom i poslije katastrofa.

Introduction

Uvod

Many cities across the world have been forced to meet the challenges of unpredictable disasters. The United Nations International Strategy for Disaster Reduction defines disaster as a "serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources".[1]

Disasters have a short-term and a long-term impact on the society and the urbanscape. The urbanscape in this research is understood as the open public spaces within the city (streets, parks, squares, bridges, the surrounding hillside, the river, etc.), that include the natural and built environment of a city.

According to the Report of The United Nations Development Programme [UNDP] Bureau for Crisis prevention and Recovery (2010), 208 million people were affected by natural disasters in 2010, including earthquakes, floods, cyclones, volcanic eruptions, and droughts.[2] In total, 373 natural disasters led to 300,000 deaths and the displacement of 42 million people, up to 17 million in 2009.[3]

The urban structure that holds and forms a city becomes ruptured during a disaster. Therefore, the need for rehabilitation and urban resilience becomes inevitable in the aftermath of a disaster. The United Nations International Strategy for Disaster Reduction defines resilience as "the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions".[4] This work explores strategies for achieving resilience on case studies affected by different types of disasters. Therefore, the structure of the paper has two main parts: the disaster typology overview and the case study analysis using the methodology of comparison.

The main questions we need to address are: Why do we search for the duality of urbanscapes? How is this duality expressed? What are the positive and negative qualities of these open public spaces during a disaster and in the aftermath of a disaster?

During a disaster, urbanscapes as the open public spaces within a city, serve as one of the main targets of impact (vulnerability)[5], but at the same time, in post-disaster situations they serve as spaces for fleeing and evacuations (security) or as places in which redesign can occur with healing intentions.[6] They embody the duality of security and vulnerability. For this reason, the purpose of the research is to reveal how this duality of security and vulnerability is expressed.

The role of urbanscape duality in this paper is shown through the natural and the built environment of a city, referring to a range of green spaces (parks, greenways, river, surrounding hillside), the system of open public spaces (street, squares, etc.) and urban structure. Open public places include social and cultural activities within the built environment and provide an immense benefit to urban life. Therefore, parks and squares enable urban interaction and gathering and natural green spaces offer sustainability.[7] This network of open public spaces within the urban context contributes to the quality of everyday life and at the same time plays an important role in disaster management. Places for gathering in everyday life become transformed into places for temporary shelters and evacuation routes. The people's perception and use of these spaces in everyday activities emphasizes their inherited qualities in order to cope with disaster situations.[8] Therefore, by understanding

1 UNISDR, 2009: 9
2 UNDP, 2010
3 ODI, 2013
4 UNISDR, 2009: 24
5 "The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard." [UNISDR, 2009: 30]
6 Bojanić Obad Šćitaroci, Marić, 2015; Bojanić Obad Šćitaroci, Zaninović, Sargolini, 2017
7 Saxena, 2016
8 Allan, Bryant, 2010
9 Maureira, Kayvan, 2017

their qualities in the everyday urban pattern, open public spaces can reduce the impact of a disaster and influence the post-disaster rehabilitation.

Disaster Classification Overview

Pregled tipologije katastrofa

Disasters can be divided into two main categories: disasters under the natural impact, such as earthquakes, floods, wildfires, etc. and disasters under the human impact such as war, terrorism, genocide, etc. Unlike the man-made disasters that often occur expectedly, some of the natural disasters appear without a warning and do not leave enough time to prepare for evacuation. In terms of their unpredictable factor of appearance, the disaster impact can be divided into several phases: the pre-disaster phase of everyday life, the disaster impact phase, the urban resilience and evacuation phase after a disaster and the post-disaster and rehabilitation phase.[9]

As a part of the Heritage Urbanism research project[10], the research shows how urbanscape becomes the urban resilience layer during a disaster and the main medium during the disaster impact and in the post-disaster rehabilitation process.

The disaster impact has been studied in various studies indicating that it is not only the impact of the disaster on the environment that is important, but also the ability of the environment to recover and the possibility to return to the normal pattern of life.[11] The normal pattern of life and everyday behaviour have been analysed to show their importance in the resilience process during a disaster and how this resilience pattern is influenced by the pre-war condition.[12] In the domain of the use of public spaces to prevent and reduce the disaster impact, studies have explored their possibilities in terms of handling a disaster and their importance in the recovery and rescue process. Their role in the prevention of floods has proved that the maintenance of wetland was a better option to sustain the flood impact than building dams, since the roots systems of trees can easily slow down the flood water rising.[13] Many earthquake planning regulations have all emphasized the need for having open spaces in the surrounding environment of buildings that need to be identified to enable easy evacuation of people and places for essential supplies. One of the important factors in the emergency planning for wildfire disasters is the continuity of fuels in the form of building fire lines. The practice of fire breaks is carried out regularly during the fire impact. These open spaces are created in the forest by controlled burning of the existing vegetation to prevent the fire spreading.[14]

Most of the studies explore the role of open spaces in disaster management, but their role has not been sufficiently explored from the dualistic point of view, that is, their role of security and vulnerability at the same time. Therefore, the aim of this paper is to confirm the existence of urbanscape duality during a disaster and to explain its importance in the disaster resilience and post-disaster rehabilitation process.

Disaster Case Studies Comparative Analysis

Komparativna analiza primjera katastrofa

For the purpose of the research, the selected case studies within this paper are related to both natural disaster and man-made disaster events. They were chosen by the criteria of diversity in disaster events and the significance in strength, which influenced the power of the impact on the people and space. The chosen case studies include the analysis of the earthquake and tsunami in Japan (2011), floods that occupied the Gulf Coast of the United States (2005), the wildfire in California (2017) and Sarajevo during the Bosnian War (1992-1996). The comparative analysis of the selected case studies that is given in Table I is based on the classification of the disaster impact and the post-disaster rehabilitation strategies. In terms of their impact and rehabilitation, the main aim is to show different outcomes in each of the selected disaster categories. Based on these outcomes, the case studies are further analysed in Table II, focusing on the disaster and post-disaster function of the urbanscape, through its green, open public spaces and urban structure. Each of these elements assesses a different role in creating the function and influence of the urbanscape in terms of the disaster impact and resilience.

The great east Japan earthquake – The earthquake in Japan in 2011 was, with the Moment Magnitude [M] 9.0, the largest recorded disaster of that type in Japan.[15] As a large ocean-type reverse fault earthquake, it induced a great tsunami that was measured

10 Heritage Urbanism – Urban and Spatial Models for Revival and Enhancement of Cultural Heritage is the project financed by the Croatian Science Foundation [HERU HRZZ-2032] and it is being carried out at the Faculty of Architecture, University of Zagreb, principal investigator is academician Mladen Obad Šćitaroci, Ph.D.

11 Maureira, Kayvan, 2017

12 Maureira, Kayvan, 2017; Pilav, 2012

13 Saxena, 2016

14 Saxena, 2016

15 http://www.globalissues.org/article/794/japan-earthquake-tsunami-nuclear

Fig. 1 Sendai Yuriage neighbourhood before and after the earthquake in Japan, 2011
Sl. 1. Naselje Sendai Yuriage prije i poslije zemljotresa u Japanu, 2011.

over a wide area, mainly along the Pacific side of the Tohoku region and the northern part of the Kanto region.[16] The combined impact of the earthquake and tsunami left a total of 15,879 deaths and 2,712 missing persons reported across 12 prefectures (as of December 26, 2012). About 130,000 homes in 10 prefectures were destroyed, and about 260,000 homes in 13 prefectures were half-destroyed.[17] Most of the victims died as a consequence of the tsunami, 92% of the victims died because of drowning.[18] The nuclear disaster that followed in the Fukushima Prefecture led to a long-term evacuation because of the level of radiation. Due to this evacuation, many people were forced to leave their homes which led to the external and internal migration of the affected population. During the disaster, it is shown that the open public spaces within the affected region made it possible to implement easy evacuation of people. Many parks were occupied with shelters. The familiar movement of the existing roads and routes within the urban structure influenced this decision-making process.[19] In the aftermath of the disaster, the diversity of the urban structure and planning the process in advance made it easy to provide temporary accommodation for people that were evacuated. The surrounding hillside landscape enabled a clear overview of the scope of the disaster impact. The post-disaster rehabilitation strategy included developing future land-use patterns to reduce the risk of future tsunami impact. The future land-use patterns involved the re-location of land use and raising the elevation of land in the form of relocating communities to higher ground. Due to the contamination of the nuclear power plant, many of the people will not be able to return to their homes for more than 10 years.[20]

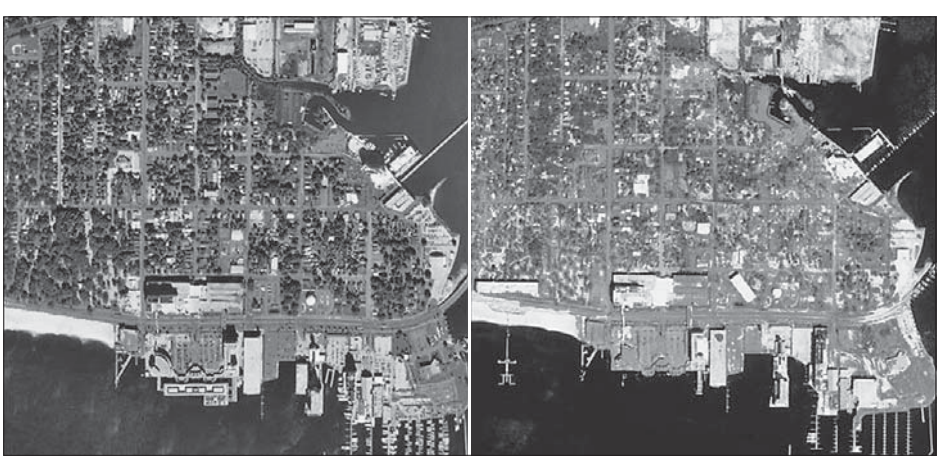

Fig. 2 Biloxi, Mississippi neighbourhood before and after the hurricane that struck the Gulf coast of the United States of America, 2005
Sl. 2. Naselje Biloxi, Mississippi prije i poslije uragana koji je zahvatio morsku obalu Sjedinjenih Američkih Država, 2005.

Hurricane Katrina was characterized as one of the strongest storms in the last 100 years in the United States. On 25 August, 2005 the hurricane hit the southeast coast of Florida as a category 1 strength hurricane and later evolved to a category 5 hurricane.[21] With two more landfalls, the hurricane caused severe destruction in physical damage and the death of 1800-2000 people.[22] Open public spaces during the disaster had an important role in establishing the rescue and recovery management. The unbuilt open spaces provided places for refugee zones, rescue tents and the necessary medical facilities. During the disaster, one of the main factors that increased the flood levels was the shallowness and the urban shape of the shoreline. The existing urban structure in the post-disaster response offered the possibility to create a strategic overview for positioning the rescue zones for food, water and medicine supply. The post-disaster rehabilitation included implementing flood-resistant construction standards, restoration of flooded buildings and the rehabilitation of landscape.[23]

The Thomas Fire started on 4 December 2017 and occupied the Ventura and Santa Barbara County in California.[24] Being the largest wildfire in the history of California, it caused the burning of 281,900 acres of land, out of which 181,300 acres were National Forest lands, the destruction of 1,063 structures and the death of 2 people.[25] Half of the burned area was not even under the fire impact within the last 30 years.[26] The extensive property damage led to the evacuation of thousands of people and their displacement. Due to the appearance of strong winds it was difficult to stop the fire growing. The fire burned the vegetation that supports the slopes and transformed the landscape. Unlike other natural disasters, wildfires are perceived to be preventable by having the possibility of controlled burning. During the fire, strategic locations were to be

16 Kazama, Noda, 2012
17 IRP, 2013
18 EERI, 2011
19 Maureira, Kayvan, 2017
20 Johnson, Olshansky, 2016
21 https://www.americanrivers.org/2015/08/preventing-another-unnatural-disaster-ten-years-after-hurricane-katrina/
22 Glantz, 2008: 1
23 FEMA, 2006
24 https://www.nytimes.com/interactive/2017/10/10/us/california-fires-maps-photos.html

built to defend fire lines and control the fire. These fire lines are open spaces created in the forest that should have a discontinuity in their pattern to reduce the fire extending.[27] Along with their role to sustain the fire impact, this controlled burning can also help to promote diversity in the reestablishment of the vegetation. The post-disaster rehabilitation is still in progress and it will include the reestablishment of the vegetation and property recovery.

The Siege of Sarajevo – The Siege of Sarajevo, during the Bosnian War for independence, was one of the longest in modern history and lasted from 5 April, 1992 to 29 February, 1996.[28] Positioned in the surrounding hillside, the Serb forces continuously attacked the city resulting in massive population and property destruction and the destruction of cultural heritage with the main aim to erase history and identity. Approximately 400,000 residents were trapped in the siege, and they were cut off from food, medicine, water and electricity supplies.[29] During the siege, 10,514 civilians out of which 1,598 were children died or disappeared. 1,741 people out of which 356 were children, were injured or became permanently disabled. 60% of the houses were destroyed.[30] During the war, 600,000 people of the city's pre-war population left the city and 150,000 displaced people arrived.

During the siege, the surrounding hillside served as the main strategic position, both for the aggressor and the defensive line. Situated in the valley, the urban structure of the city provided a clear view for the aggressor attacks, but at the same time made it possible to provide a spatial defensive strategy in creating a belt of urban resilience. During the siege and after the war, many green spaces and parks were transformed into cemeteries. Due to the lack of heating supply, three-quarters of all urban trees and nearly all peri-urban trees within the siege line were cut down for firewood.[31] Many green spaces and parks have been deliberately contaminated with landmines by the aggressor. Everyday life and the urban pattern of the city had to be transformed and shifted from the ground to the underground layer of the city, by creating an underground corridor.[32] Being cut from all essential supplies, the familiar routes that defined the people's movement pattern influenced the routes for food and water supply as the main source for survival and essential needs. These routes determined positioning the strategic points of the urban resilience within the city to misguide the snipers from the surrounding hillside, while at the same time these open public spaces were continuously under the impact of the snipers, being their main target points.

Fig. 3 Sarajevo during the siege and after the war ended, 1992-1996
Sl. 3. Sarajevo tijekom opsade i nakon završetka rata, 1992.-1996.

The post-disaster rehabilitation is currently still in progress and it is manifested through the internal and external relocation of people, reconstruction of physical damage, redefined identity of the urbanscape and the possibility of reconciliation with the past.

Discussion

Diskusija

The case study analysis enables the comparison of disaster outcomes, both natural and man-made. Based on the comparative analysis of four significant disaster case studies, out of which 3 natural and 1 man-made, war is the only disaster that leaves both loss of civilian life and property destruction and the deliberate destruction of cultural heritage and memory to erase history and identity. This is because war is primarily a man-made and organized act and secondly because the

Fig. 4 Coffey Park, Santa Rosa neighbourhood before and after the wildfire in California, 2017
Sl. 4. Naselje Coffey Park, Santa Rosa prije i poslije šumskog požara u Kaliforniji, 2017.

25 https://www.usatoday.com/story/news/nation-now/2017/12/22/thomas-fire-becomes-californias-largest-wildfire-history/978640001/

26 BAER, 2018

27 Saxena, 2016

28 http://www.sa92.ba/v1/index.php?showimage=326

29 Troncota, 2015

30 Ernst, Vukicevic, Jakulj, Ilich, 2003

31 Lacan, McBride, 2009

32 Pilav, 2012

TABLE II POST-DISASTER CASE STUDY ANALYSIS THROUGH THE ROLE OF URBANSCAPES DURING THE DISASTER AND IN POST-DISASTER RESPONSE, WITH THE USE OF GREEN SPACES, OPEN PUBLIC SPACES AND URBAN STRUCTURE.
TABELA II ANALIZA PRIMJERA NAKON KATASTROFA PROMATRAJUĆI ULOGU URBANOG PEJSAŽA TIJEKOM KATASTROFE I POSLIJE KATASTROFE, KORIŠTENJEM PERIVOJNIH PROSTORA, GRADSKIH OTVORENIH PROSTORA I URBANE STRUKTURE.

Case study disaster	**JAPAN, TOHOKU REGION, 11 MARCH, 2011; EARTHQUAKE AND TSUNAMI**	**The role of urbanscapes during the disaster and in the post-disaster response**
Urbanscape category		
Green spaces		In the aftermath of the disaster, the hillside landscape enabled a clear overview of the disaster destruction; Many parks were used for shelters.
Open public spaces		During the disaster open public spaces enabled evacuation of people.
Urban structure		Diversity in the urban structure created spaces for accommodating people in the aftermath of the disaster; The familiar movement lines before the disaster influenced the decision-making in the evacuation process during the disaster.
Case study disaster	**UNITED STATES OF AMERICA, GULF COAST, 25 AUGUST, 2005; FLOOD**	**The role of urbanscapes during the disaster and in the post-disaster response**
Urbanscape category		
Green spaces		The shallow depth and the urban shape of the shoreline increased the flood level during the disaster.
Open public spaces		Open public spaces had an important role in the rescue and recovery management during the flood; The existing roads were used as evacuation routes in the aftermath of the disaster; The unbuilt open spaces enabled positioning refugee zones, recue tents and medical facilities in the aftermath of the disaster.
Urban structure		The urban structure offered the possibility to create an overview for setting rescue zones for supplies in the aftermath of the disaster.
Case study disaster	**UNITED STATES OF AMERICA, PACIFIC REGION / CALIFORNIA, 4 DECEMBER, 2017; WILDFIRE**	**The role of urbanscapes during the disaster and in the post-disaster response**
Urbanscape category		
Green spaces		The controlled burning helped to reduce the impact of the disaster and to promote diversity in the reestablishment of the existing vegetation.
Open public spaces		Open public spaces were used to create fire lines in the forest to control the fire during the disaster.
Urban structure		The discontinuity in the urban pattern of the fire lines helped to reduce the spreading of the fire during the disaster.
Case study disaster	**BOSNIA AND HERZEGOVINA, SARAJEVO, 1992-1996; WAR**	**The role of urbanscapes during the disaster and in the post-disaster response**
Urbanscape category		
Green spaces		The surrounding hillside was used as the main strategic position both for the snipers and the defensive line during the disaster; Green spaces and parks were transformed into cemeteries during the disaster and in the aftermath of the disaster; Trees within the siege line were cut down for firewood during the disaster; During the disaster, many green spaces were deliberately contaminated by landmines.
Open public spaces		Open public spaces were used as the main target points of snipers during the disaster; The familiar everyday routes influenced the urban resilience pattern for the defensive line to sustain the impact of constantly being under attack.
Urban structure		Situated in a valley, the urban structure made it possible to create a belt of urban resilience, as a defensive spatial strategy during the disaster; The everyday movement pattern influenced the routes for food and water supply – the source of survival and essential needs during the disaster; The urban structure allowed the transformation of everyday life and spaces into the underground by creating an underground urban corridor to sustain the impact during the disaster.

interval in which the aggressive disaster happens can last for a much longer time than in other categories. In their post-disaster rehabilitation process, every disaster category has the same outcome in the form of relocation of its population. In comparison with natural disasters, this relocation of population is more expressed in war disasters. In terms of the disaster impact and the time interval in which the disaster lasts, the results from the post-disaster case study analysis show that the number of casualties is bigger in natural disasters. This is mainly because natural disasters occur without a warning and do not leave enough time for resilience and evacuation. The impact on property is immense in all disaster categories.

In all disaster categories, during the post-disaster response the network of open public spaces within the urbanscape enabled a clear overview of the scope of the disaster impact and strategic positioning of rescue zones during earthquake and flood disasters. It allowed creating strategic lines and locations to control fire in forests and to provide urban resilience during the war impact. Open public spaces made it possible to establish easy evacuation during the disaster and temporary accommodation in the aftermath of the disaster. They provided places for refugee zones, rescue tents and the necessary medical facilities. Within the natural disaster categories, the post-disaster rehabilitation strategy was based on the assessment and historical review of the area that has been under impact. It included future urban redevelopment in terms of re-location of land use to reduce the risk of future disaster impact. As a part of this urban redevelopment, open public spaces have been transformed and enabled to support the survival and recovery process according to their function. They became the link between the way people use them every day and their role during the post-disaster rehabilitation interventions. The deliberate destruction of cultural heritage during the war with the intention to erase history and memory left an enormous impact on the urbanscape identity. Therefore, the rehabilitation of war-torn urbanscape requires a redefinition of their identity and finding the possibility to reconcile with the past, unlike the natural disaster affected regions that require rehabilitation in terms of physical reconstruction. This redefinition is carried out based on the hypothesis of how some of these spaces within the urbanscape behave when they are deformed or destroyed and how the hypothesis of redefinition brings back or sets a new urbanscape by redefining its purpose in the form of recovery after the destruction.

The criteria for re-assessing the role of urbanscapes during the disaster and post-disaster response are based on their urban resilience during the disaster and rehabilitation process and their role as the disaster impact. The analysed data points out that planning should include the criteria for urbanscapes purpose under natural disaster in their overall assessment and positioning, because urbanscape embodies the urban resilience role in the form of evacuation during the disaster and recovery management in the aftermath of the disaster. During war, open public spaces simultaneously present the main target points of impact and the urban resilience line of protection. Therefore, the dualistic role of urbanscapes during a disaster is evident under the impact of war. Their role of security and vulnerability transforms the urbanscape and the people's everyday life during a disaster. The everyday life pattern plays an important role in both disaster categories, the decision about evacuation routes in natural disasters and forms of resilience in man-made disasters.

Conclusion

Zaključak

The research shows how the role of duality that shapes the urbanscapes can be perceived from two perspectives – their primary role of everyday life and their secondary role in disaster occurrences. The role of everyday life is a familiar urban pattern, but the secondary role as an invisible urban pattern alters and enhances the existing urban layers of the city. The presented analysis shows how this hidden and imaginative layer is influenced by people's perception and use of the places that form the urbanscape.

With the main aim to reveal the duality of vulnerability and security, the purpose of the presented analysis was to show how the duality of urbanscapes during a disaster and post-disaster event reveals an imaginative and hidden urban layer of the city that needs to be re-assessed in order to adapt to the transformation in disaster situations. The re-assessment occurs in altering the urban pattern of everyday life into the role of urban resilience during a disaster and the role of urban recovery in the aftermath of a disaster.

Since this urban layer remains hidden until a disaster occurs, as a result it is necessary to emphasize the awareness of its existence in terms of future planning. The involvement of this temporary hidden urban layer in future planning could reveal an urban resilience model that would reduce the impact during deliberate destruction and strengthen the belt of urban resilience during disasters.

[Written in English by authors; proof-read by Vedrana Marinović, mag.philol.angl.]

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TABLES I, II Authors

Sažetak

Summary

Dualnost urbanog pejsaža tijekom i poslije katastrofe

Katastrofe su nepredvidljivi događaji kojih je rezultat promjena uobičajenoga načina života i urbane strukture grada, a mogu se podijeliti u dvije glavne kategorije: katastrofe kao posljedice prirodnog utjecaja (potres, poplava, požar i dr.) te katastrofe kao posljedice utjecaja ljudskog djelovanja (rat, terorizam, genocid i sl.). Za razliku od katastrofa uzrokovanih ljudskim djelovanjem, koje su nekada predvidive, prirodne katastrofe pojavljuju se bez najava i ne ostavljaju dovoljno vremena za djelovanje. U oba slučaja utječu na društvo i okoliš.
Karakter grada vidljiv je u urbanom krajoliku pa ovaj rad istražuje načine korištenja urbanoga krajolika (pejsažnih površina, sustava otvorenih javnih prostora i urbanih struktura) u situacijama različitih katastrofa. Otvoreni javni prostori oblikuju urbani krajolik i u svakodnevnom su životu prostori okupljanja, događanja i kretanja. Tijekom katastrofa oni postaju prostori nesigurnosti, a u situacijama nakon katastrofa služe kao prostori za bijeg i evakuaciju te time utjelovljuju ideju dualnosti putem sigurnosti i ranjivosti.
Većina studija istražuje ulogu otvorenih prostora u upravljanju gradom nakon katastrofa, ali nije istražena dualnost javnih prostora, njihova istovremena dvojna uloga: sigurnosti i ranjivosti. Cilj je ovoga rada potvrditi postojanje dvojnosti urbanoga krajolika i objasniti njegovu važnost za vrijeme i u procesu oporavka nakon katastrofe. Stoga su glavna pitanja analize primjera u metodi usporedbe sljedeća: što je dualnost gradskih krajolika u trenutcima katastrofa; kako se izražava dualnost; koje su pozitivne i negativne kvalitete otvorenih javnih prostora urbanoga krajolika tijekom i nakon katastrofe. Rad u sklopu istraživačkog projekta *Urbanizam naslijeđa* pokazuje kako urbani krajolik postaje dio sloja urbane otpornosti za vrijeme katastrofa i glavni medij tijekom utjecaja katastrofa na društvo i okoliš te čimbenik u procesima obnove i oporavka nakon katastrofa.
Analizirani primjeri uključuju: potres i tsunami u Japanu (2011.), poplavu u SAD-u (2005.), požar u Kaliforniji (2017.) i razaranje Sarajeva tijekom rata 1992.-1996. Analiza je provedena na temelju klasifikacije utjecaja katastrofe na prostor i stanovništvo te strategije oporavka nakon katastrofe, s obzirom na ishode prema vrstama katastrofa. Usporedbenom analizom navedena četiri primjera, od kojih su tri posljedica djelovanja prirode i jedan posljedica djelovanja ljudi, rat predstavlja specifičnu katastrofu koja uz gubitak mogućnosti građanskog življenja i uništavanje prostora sadrži također namjerno uništavanje kulturne baštine, te na taj način zatiru povijest i identitet urbanoga krajolika. Rat je teško usporediv s prirodnim katastrofama jer je organiziran i događa se tijekom duljeg razdoblja.
Katastrofe donose i posljedicu privremenog iseljavanja stanovnika pa je, u usporedbi s prirodnim katastrofama, preseljenje stanovnika izražen tijekom i nakon rata. U pogledu utjecaja katastrofe i vremenskog intervala u kojem katastrofa traje, rezultati analize primjera pokazuju da je broj ljudskih gubitaka veći u prirodnim katastrofama. Rezultat je to nepredvidivosti prirodnih katastrofa. Uništavanje urbanoga prostora prisutno je u svim kategorijama. Urbani prostori pogođeni prirodnom katastrofom zahtijevaju obnovu fizičke strukture – rekonstrukciju, a ratom razoren urbani krajolik zahtijeva i oporavak – redefiniranje identiteta i medijaciju s prošlošću.
Kriteriji za procjenu uloge i mogućnosti korištenja urbanoga krajolika tijekom i nakon katastrofe temelje se na sposobnosti urbanoga krajolika da se prilagodi procesu katastrofe i oporavka. Analizirani podatci ukazuju da bi planiranje trebalo uključivati kriterije za urbani krajolik i njegovu fleksibilnost jer urbani krajolik utjelovljuje ulogu sigurnosti i prilagodljivosti grada tijekom i nakon katastrofe. Tijekom rata otvoreni su javni prostori istovremeno glavni prostori napada, ali i obrane. Zbog toga dualnost urbanoga krajolika, njegova uloga sigurnosti i ranjivosti, omogućava svakodnevni život ljudi i tijekom katastrofe. Potvrđivanje postojanja dualnosti urbanoga krajolika uvodi i analizu dualnoga urbanog prostora koja otkriva maštovit i skriven gradski sloj koji se treba obnoviti i koji je neprocjenjiv u fleksibilnosti funkcioniranja grada za vrijeme katastrofa te istovremeno preuzima ulogu glavnog prostora urbanog oporavka nakon katastrofe. Budući da taj urbani sloj ostaje skriven do katastrofe, kao rezultat potrebno je istaknuti svijest o neophodnosti njegova postojanja i nezaobilaznog sloja planiranja za budućnost. Uključivanje toga skrivenoga urbanog sloja u buduće planiranje moglo bi stvoriti model urbane otpornosti koji bi smanjio utjecaj tijekom namjernog uništenja i ojačao urbanu otpornost tijekom katastrofe.

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Biographies

Biografije

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