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RESEARCH ARTICLE

URBAN MORPHOLOGY'S IMPACT ON PUBLIC REALM SOCIAL COHESIVENESS IN ALMATY

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Abstract. *Since the notion of active public realm life was coined, more and more scholars and researchers have been researching public realm life, transportation efficiency and related terms about why they are essential and how spaces can incubate social cohesion. Yet, there is a limited investigation, particularly in Kazakhstan, of how urban morphology affects the core issues of the public realm's role in creating more socially cohesive communities. Thus, this paper seeks to find out whether we can improve public realm life vitality in a case study of Republic Square, which is considered to be one of Almaty's central, cultural, and political stages, by evaluating the existing urban morphology and analysing the outcomes of the selected site using a triangulation of morphological mapping, observation and survey methods. A connection will be extracted between public realm life vitality and use efficiency by engaging with urban morphology, through which it is possible to examine the synergy and determine if it is feasible to achieve these two and how we can mediate them. However, the current urban planning of Republic Square hardly facilitates active social life due to a lack of accessibility, low density, poor functional mix, blank interfaces, and insufficiency of the nighttime economy. Still, further research is required to investigate the selected site's fast traffic concerning the city's transportation system to propose perspective design strategies.*

Keywords: *urban morphology, public realm, street life, urbanism, Almaty.*

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ҒЫЛЫМИ МАҚАЛА

АЛМАТЫ ҚАЛАСЫНДАҒЫ ҚАЛА МОРФОЛОГИЯСЫНЫҢ ҚОҒАМДЫҚ КЕҢІСТІКТІҢ ӘЛЕУМЕТТІК ЫНТЫМАҚТЫҒЫНА ӘСЕРІ

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Аңдатпа. Белсенді қоғамдық кеңістік тұжырымдамасы танымал болғаннан бері көбірек ғалымдар мен зерттеушілер қоғамдық кеңістіктерді, көлік тиімділігін және олардың не үшін қажет екендігі және кеңістіктер әлеуметтік біріктіруге қалай ықпал ететіні туралы соған байланысты ұғымдарды зерттейді. Алайда, қазіргі таңда әсіресе Қазақстанда қалалық морфологияның әлеуметтік тұрғыдан біртұтас қауымдастықтар құрудағы қоғамдық кеңістіктің рөлі туралы негізгі сұрақтарға қалай әсер ететіні туралы зерттеулер шектеулі болып тұр. Осылайша, бұл мақала Алматының орталық, мәдени және саяси нысандарының бірі болып табылатын Республика Алаңындағы қоғамдық өмірдің өміршеңдігін қазіргі қалалық морфологияны бағалау және таңдалған зерттеу алаңының нәтижелерін талдау арқылы жақсартуға болатынын анықтауға тырысады. Оған қала құрылысы морфологиясын талдау, бақылау және сауалнама әдістерін триангуляциялау арқылы жеткізіледі. Белсенді қоғамдық кеңістік пен пайдалану тиімділігі арасындағы байланыс қалалық морфологиямен өзара әрекеттесу арқылы анықталады, оның көмегімен синергияны зерттеуге болады және осы екі мақсатқа қол жеткізуге болады ма және біз оларға қалай делдалдық жасай аламыз. Дегенмен, Республика алаңының қазіргі қала құрылысы қолжетімділіктің жоқтығына, төмен тығыздыққа, функционалдық араласудың нашарлығына, жабық интерфейстерге және түнгі экономиканың жеткіліксіздігіне байланысты белсенді қоғамдық өмірді құруға мүмкін болмай тұр. Дегенмен, перспективалық жобалау стратегияларын ұсыну үшін қаланың көлік жүйесіне қатысты таңдалған учаскенің жылдам қозғалысын зерттеу үшін қосымша зерттеулер қажет екенін көрсетеді.

Түйін сөздер: қала морфологиясы, қоғамдық орта, көше тіршілігі, урбанизм, Алматы.

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НАУЧНАЯ СТАТЬЯ

ВЛИЯНИЕ ГОРОДСКОЙ МОРФОЛОГИИ НА СОЦИАЛЬНУЮ СПЛОЧЕННОСТЬ ОБЩЕСТВЕННОГО ПРОСТРАНСТВА В АЛМАТЫ

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Аннотация. *С момента популяризации понятия активного общественного пространства всё больше и больше ученых и исследователей изучают городские общественные места, эффективность транспорта и связанные с ними термины о том, почему они необходимы и как городские пространства могут способствовать социальной сплоченности. Тем не менее, существует ограниченное исследование, особенно в Казахстане, того, как городская морфология влияет на основные вопросы роли общественного пространства в создании более социально сплоченных городских сообществ. Таким образом, в этой статье делается попытка выяснить, какие возможные проблемы имеются и каким образом улучшить жизнеспособность общественной жизни на Площади Республики, одной из центральных, культурных и политических площадок Алматы, путем оценки существующей городской морфологии и анализа результатов выбранного места исследования с использованием триангуляция методов городского морфологического картографирования, наблюдения и обследования. Будет выявлена связь между активным общественным пространством и эффективностью использования путем взаимодействия с городской морфологией, с помощью которой можно изучить синергию и определить, возможно ли достичь этих двух целей и какие имеются пути их опосредовать. Однако нынешняя градостроительная планировка площади Республики не способствует активной общественной жизни из-за недостаточной городской доступности, низкой плотности, плохого функционального микса, пустых интерфейсов и недостаточности ночной экономики. Тем не менее, необходимы дальнейшие исследования для изучения скоростного движения выбранного участка в отношении транспортной системы города, чтобы предложить перспективные стратегии преобразования выбранного участка исследования.*

Ключевые слова: *городская морфология, общественное пространство, жизнеспособность улиц, урбанистика, Алматы.*

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1 INTRODUCTION

This article aims to reveal the relationship between the public realm's vitality, urban design morphology and urban transportation efficiency underlying today's cities. Almost all of the major cities in the world are facing severe issues in the public realm as fast-growing urban high streets cut people's habitats into fragmented pieces, making social life segregated (Bingham-Hall, 2016). After noticing the dominance of cars, people started experimenting with limiting cars and returning the public realm to pedestrians. Especially after the importance of the public realm and primarily street life was introduced to the general public at the end of the 1960s (Jacobs, 1961). Furthermore, one of the critical aspects of car dominance is the morphology of urban patterns, which directly create the public realm (Dovey et al., 2018).

However, almost all of the research papers focus on how specific methods or physical barriers can limit cars, and urban transportation is also an essential part of the city, especially in today's urban lives. Most of the findings and implements are oriented to living areas known as home zones (Purcell, 2013). With the issue of urban transportation efficiency and its relationship with public realm life vitality not only in living areas but in mixed-used streets have also been overlooked and insufficiently addressed, there is a gap existing in how we perceive the synergy between these two factors and what is the feature of its public realm morphology beneath which made them the way it looks today (Kamalipour & Peimani, 2019). Therefore, as a test-bed for the study, the authors selected a public realm located in Almaty's central part in a cross-section of primary streets in Republic Square.

By engaging the notion of public realm life together with urban transportation, it has been a thorough process to consider not only from a pedestrian perspective but in a broader scope to critically go over the previous research and fill out the missing part, which is a daily use performative role of the public realm. By addressing this question correctly, the possible relationships between urban morphology, public realm life and the nature of primary roads cut the space into fragmented square parts. Moreover, the research makes it possible to mediate the conflicts between cars and pedestrians and provides insights to improve and further implement in more shared spaces.

Three significant issues address being aware of the limited research on the balance between spatial space and the public realm life of pedestrians. In car-oriented cities, communities advocate for building streets and removing physical barriers to improve the efficiency and permeability of cars. At the same time, pedestrians consistently think streets should belong to their nature, which is serving people. Beneath the conflicts are the social, economic and political confrontations. It is, in turn, essential to find out whether fast traffic will influence public realm vitality and, in turn, will constrain it to boost and incubate public realm interactions directly.

Moreover, is it possible to simultaneously balance transportation efficiency and public realm life vitality in Republic Square? As it is engaged with many different areas and cases of different relationship patterns between cars and pedestrians, how do the urban design pattern and its morphology affect the balance of these two, and is there a relatively better model emerging from analysing the existing urban model to learn and improve the current public realm of Republic Square?

2 LITERATURE REVIEW

For decades, urbanities witnessed the development of the discourse for whom the public realm should be designed. With the concept of "eyes on the street" (Jacobs, 1961) and the activities between buildings being coined and brought out, it also advocated for the diversity which can be induced by the mix and overlap of functions (Brien & Cheshire, 2016). After which, it almost became common sense that urbanists all agreed that the intensity and vitality are the most essential parts that streets should have. Besides, intruding the open city which revealed the significance that differences and conflicts are embraced by which everyone shared the same rights in utilising spaces

(Carmona, 2015). At the same time, it has been argued that the public realms for citizens to interact are streets and roads, where people tend to meet outside their private spaces (Inam, 2022). This is also against the notion coined by modernists that streets are merely for transporting and mobility which should be elevated and segregated from people's living area which has been proved in many cities that is not an excellent way to improve the vitality of social life as it limits the possibilities and separates living spaces (Kamalipour & Peimani, 2019).

The modernistic urban planning approach is part of a broader ideological shift in governmental policies, which has been highlighted as causing increased polarisation and tension in society through the undermining of traditional social structures (Atkinson, 2003). Aelbrecht and Stevens (2019) argue that as a result social cohesion has entered the discourse as a way of overcoming these issues. Jeffries et al., (2009) highlight that cohesion has become troublesome to define as it cannot be reconciled over different policy agendas it has been used in. Nonetheless, Carvalho and Netto (2023) provide a broad definition that can be used to describe the social order of physical and non-physical settings. Minton (Minton, 2012) emphasizes how social cohesion involves the community coming together and tolerance in neighbourhoods. Dovey et al. (2018) build on this in the context of urban morphology, stating that a public realm acts as a place of encounter where social cohesion can take place, as it is essential to developing tolerance and understanding in this time of increased polarisation.

The selected study area is located in the historical part of Almaty (Figure 1). D. Kunaev developed the area in the 1970s as a new central plaza for large-scale events (Figure 2a). The public realm accommodated large-scale celebrations, festivals, military parades and other events. Initially, the Republic Square was designed as a public realm to demonstrate the power of the Soviet Union. There were state parades and meetings to show the political power of Soviet authorities (Kozhakhmetov & Abilov, 2022). The Republic Square has been a place for political tensions since the first protests in December 1986 rather than an everyday use public realm. It happened due to its location next to governmental offices. However, since 1991st, the public realm has been installed with different statues, installations and monuments for independence, victims of 1986 and political repression during Stalin's time. Recently, a memorial for the victims of January 2022 has been installed. The public realm closed during the underground retail and entertainment complex construction in 2007 (Khodzhiyev et al., 2022). Reconstruction works included the removal of the Soviet pedestal and an underground pedestrian link between the upper and lower sides of Satbayev Street. While the square was fenced off, and traffic was restricted during construction works up to 2012 (Figure 2b), some citizens had a hostile reaction to it, firstly in terms of car traffic and secondly due to its contradictory background and history. The selected site has always been the centre of tension between local communities, drivers, state, and political groups.

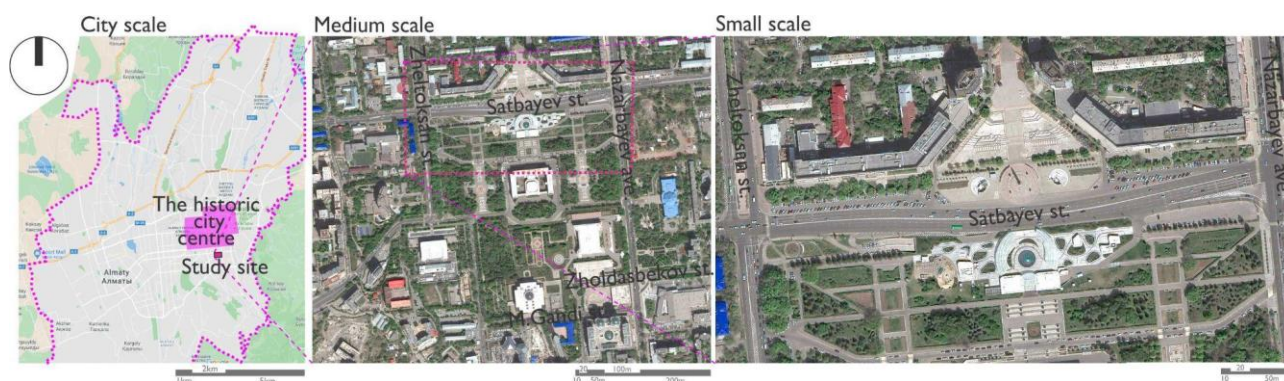


Figure 1 – The location of the selected investigation site (Google Maps, 2023)

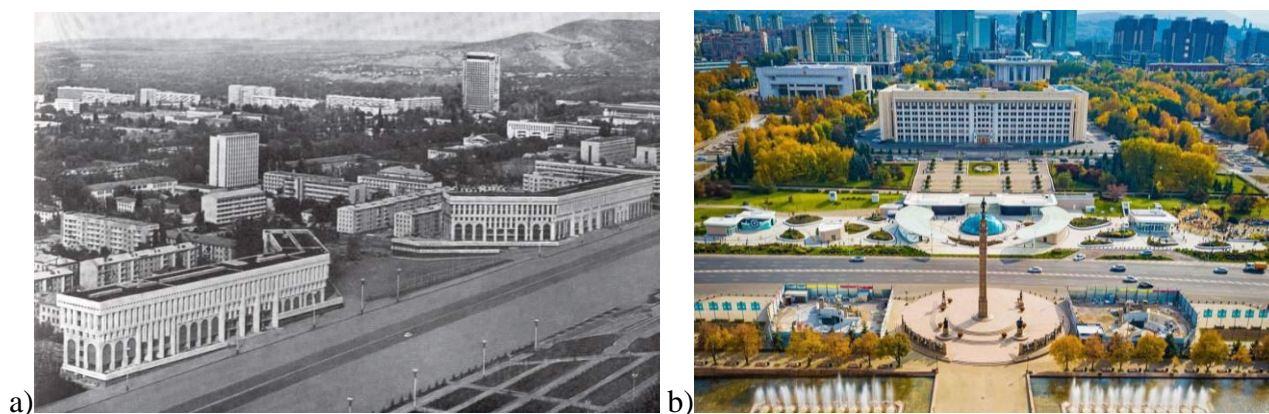


Figure 2 – Past and present view of the Republic Square

a) Republic Square during the Soviet Union ([Tengrinews, 2017](#));

b) Republic Square after the reconstruction on top of the underground shopping centre ([Ahmetova, 2020](#))

3 MATERIALS AND METHODS

The research methodology applied to the selected study is primarily urban morphological mapping, observation and photography in the public realm. Morphological mapping was illustrated on ([Google Maps, 2023](#)) and revealed the current urban design problems in Almaty. The relationship between public and private realms, including the carway space proportion, distinguishes who controls the public realm. Connectivity, permeability and accessibility illustrate the bond with the neighbouring districts regarding social links. Analysis of interfaces illustrates if the buildings and privately fenced public realm interact with street life. The ground-level night-time economy extends our understanding of whether the existing buildings facilitate public realm vitality. Densities and functional mix investigate to what extent the urban morphology facilitates a wide range of activities and motivates people to use it. Greenery analysis reveals if the public realm is welcoming regarding leisure and everyday usage for local communities and visitors.

Non-participant observation includes analysing people's public space perception within the selected site. All findings in the public realm are photographed to illustrate the existing issues in urban morphology and design. The anonymous survey is used to backbone the urban morphological map analysis and observation. The questionnaire approach was adapted from ([Abilov et al., 2023](#)) and ([Kozhakhmetov et al., 2023](#)). The survey analysis intends to identify the users' perception of the public realm in and around Republic Square. The questionnaire was conducted from the 17th to the 20th of April, 2023. There were fifty respondents questioned during these days. The number of respondents is sufficient to evaluate within the limited time constraints of the study. These findings are used to sustain perspective design strategies, which might be applied in cohesion with citizens' and local communities' vision for future improvements in the public realm.

4 RESULTS AND DISCUSSION

The connectivity analysis illustrates that the area is primarily car-oriented, with two to six car lanes along Satbayev, Zheltoksan, Nazarbayev, Timiryazev, and Zholdasbekov streets. The investigation site is well connected with other parts of the city ([Figure 3](#)). However, regarding pedestrians, the public realm has a poor connection from North to South, and there needs to be a link between the lower and upper sides of the highway, cutting Republic Square into fragmented parts. To go to the opposite side of Satbayev Street, pedestrians should go 600 meters to Nazarbayev and Zheltoksan Streets or through an underground crossing way, which is currently closed. The public realm is not walkable due to poor pedestrian connectivity and the broad highway. It negatively affects the

daily use of the public realm by locals. Furthermore, there is no cycling lane connectivity or BRT ways. Overall, connectivity analysis confirms that the selected study site's public realm is separated by comprehensive carways ignoring potential users such as local communities, people working around, and children.

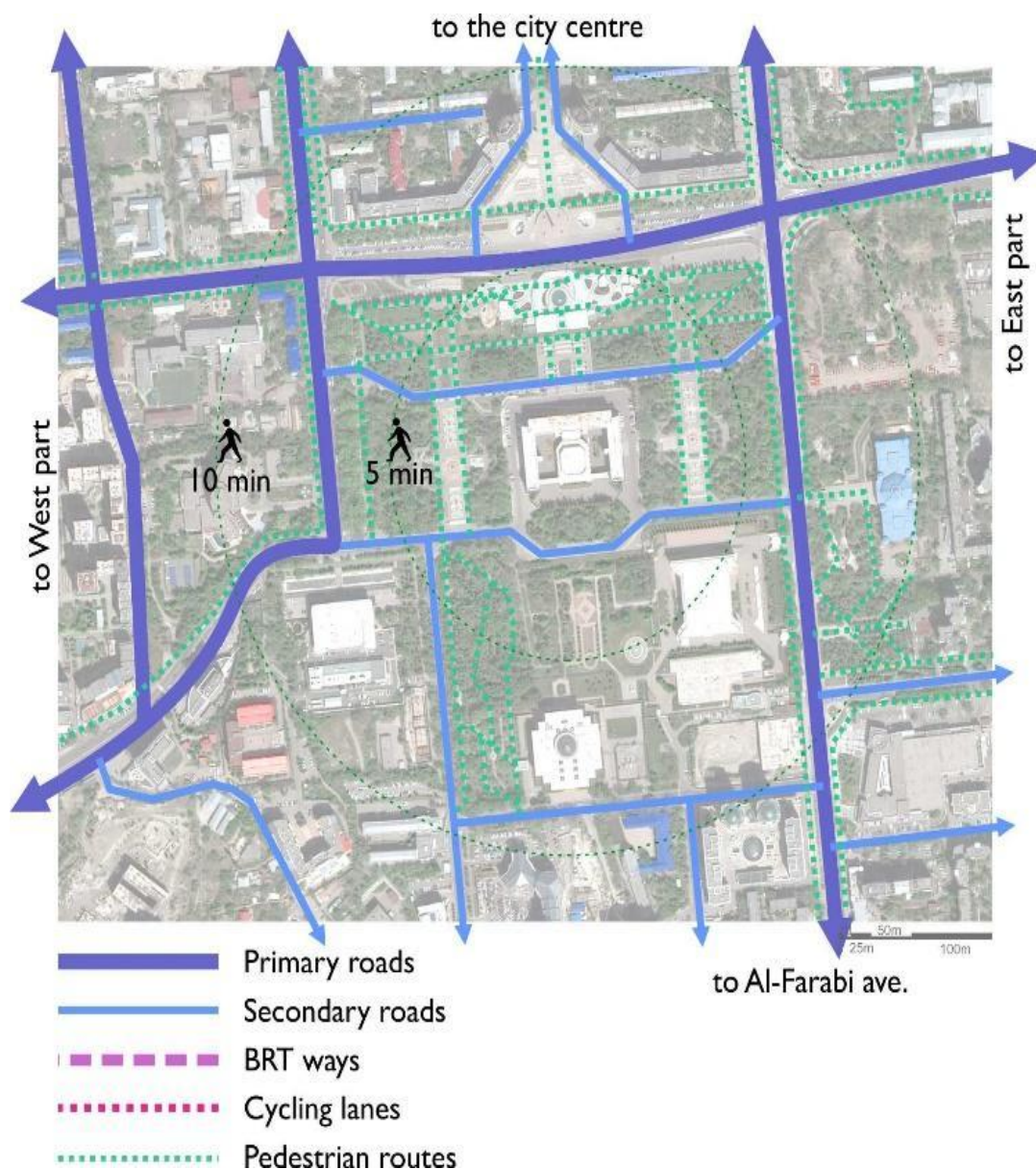


Figure 3 – Connectivity analysis of the selected investigation site [author's material]

Public and private realms analysis show that the selected site is dominantly publicly owned. Particularly near Republic Square are many state-owned parks and landscaped green spaces (**Figure 4**). There is a park for the Foundation of the First President, a square in front of the Central State Museum of the Republic of Kazakhstan, and a square for Journalists. Still, the territory beyond the central part is privately owned by private companies or long-term construction, as well as state educational institutions. There is InterContinental Almaty, as well as various other small enterprises and businesses. Even though the public realm is publicly owned, Republic Square is occupied by asphalted carways and vehicles, where the illusion of publicly owned space vanishes with dense traffic (**Figure 5**). Thus, potential urban design strategies should consider the limitations through transportation efficiency while encouraging walkability.

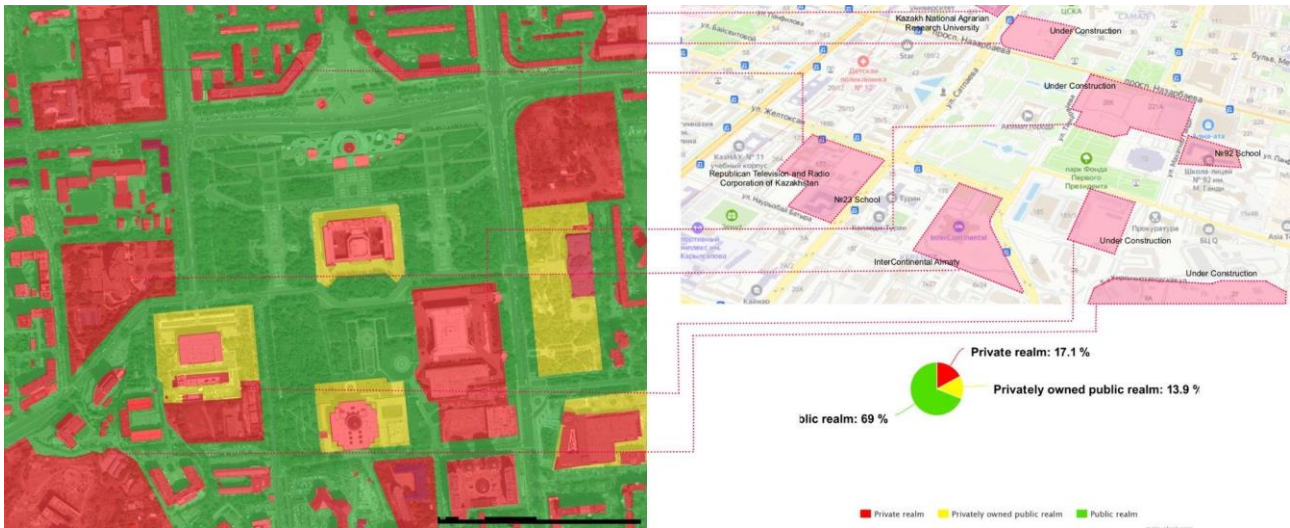


Figure 4 – Analysis of public and private realms [author’s material]



Figure 5 – Proportion of carways regarding public and private realms [author’s material]

According to the analysis of the functional mix, gigantic monofunctional buildings predominantly occupy the selected site (Figure 6). Most of them are state office buildings, such as the headquarters of local authorities, government organisations, educational institutions, shopping centres and museums. It implies that the area concentrates on work and visiting facilities. There are residential buildings in combination with visit functions. However, such a large area still has a relatively low percentage of residential buildings. Dovey and Pafka (2018) argue that the lack of live functions might cause an abandoned public realm at a late time when offices close. Although the proportion of grey-type buildings is large, these are long-term construction and restoration projects. Even though this is one of the city's primary public realms, the percentage of visiting and entertainment activities on the study site is exceptionally modest. Although the amount of public space is high, most of these places are not used or developed considering daily visits and recreation, and the affordability of such profit-oriented facilities may limit the public realm's performative role in fairness. A lack of mix negatively affects both nighttime safety and the vitality of the urban environment. As a result, the public realm is occupied only by cars.

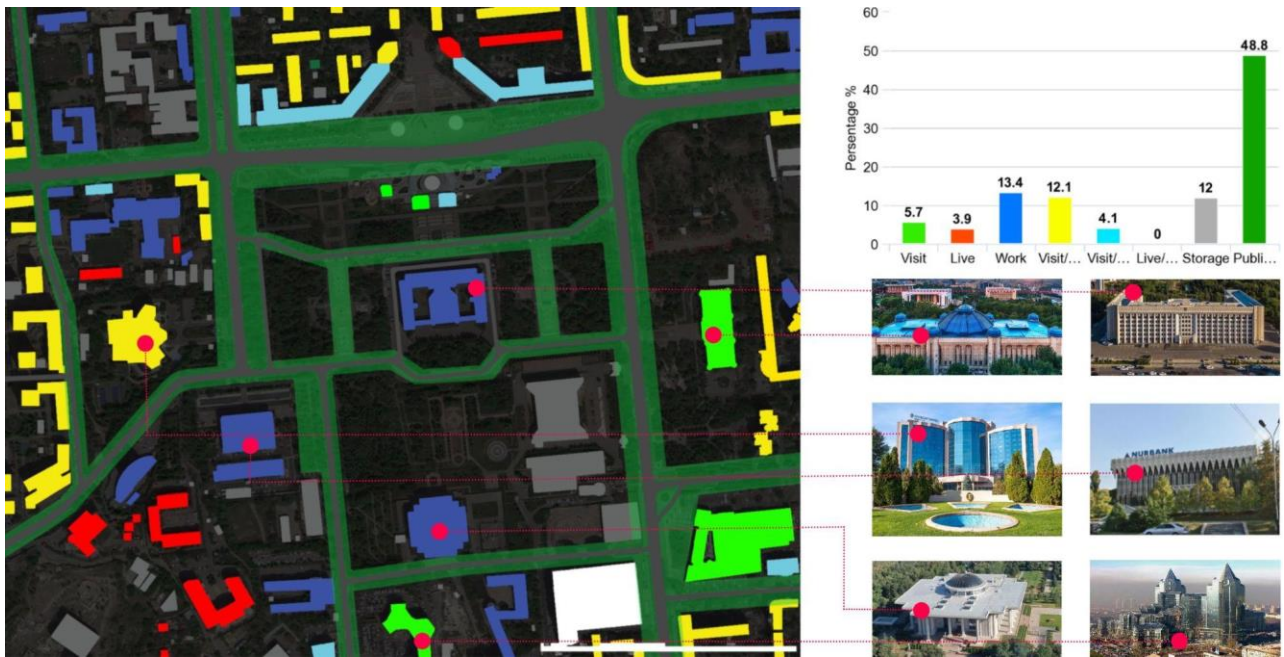


Figure 6 – Functional mix of the buildings in the site [author’s material]

Figure 7 illustrates that many interfaces are edges of private and public realms, mainly pedestrian setbacks. Visually, the high proportions of pedestrian setbacks in front of the impermeable interfaces cannot contribute to street life and can even threaten public safety in the selected study site (Kamalipour & Peimani, 2019). Direct and opaque, impermeable, and car setback interfaces are relatively even and very low. Moreover, there are no straightforward and transparent interfaces which interact with pedestrians. There are low proportions of direct/transparent interface links to the low possibility of goods display and exchange in Republic Square (Dovey & Wood, 2018). The need for more people currently makes Republic Square deserted, resulting in an unused space. This creates a sense of disconnect and will not become a lived-in. When this is coupled with the “Big Box” monofunctional use of some buildings on the site, this disconnect is exaggerated further (Stevens, 2007).

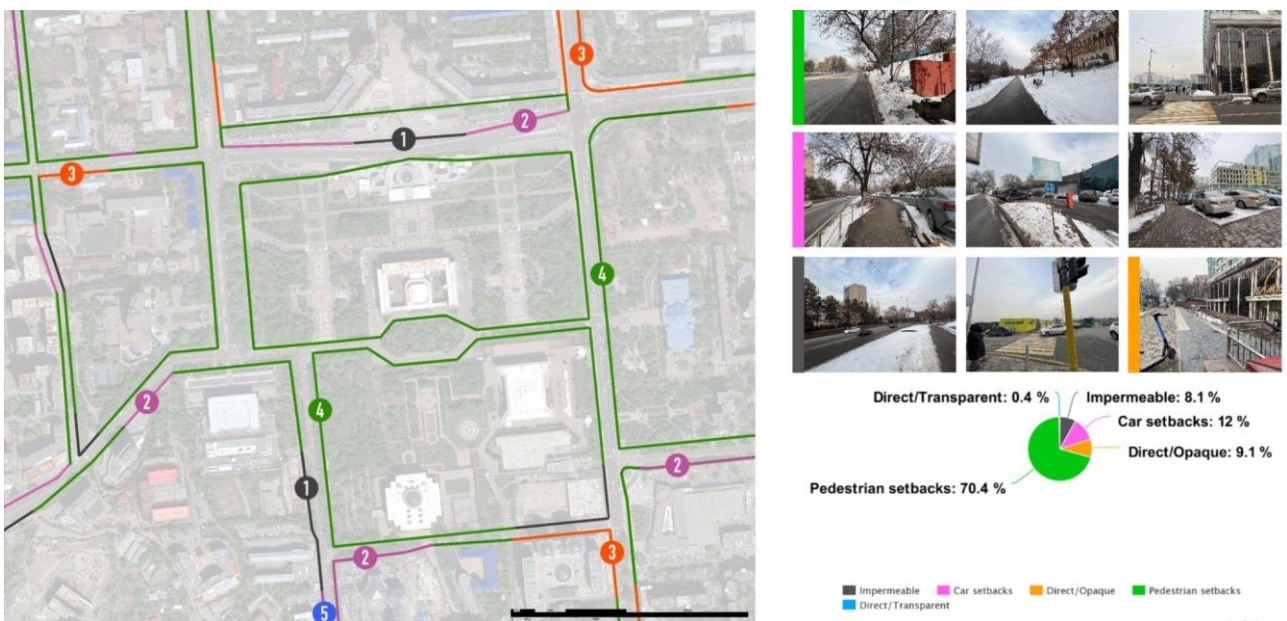


Figure 7 – Analysis of interfaces [author’s material]

The analysis of the ground-level nighttime economy illustrates that the active buildings until 6 p.m. are more than half the total number of facilities in the research area (**Figure 8**). It leads to the fact that the main public realm is active only until the evening and needs to be more equitable for nighttime walking alone, even though the south side of Republic Square and 19.2% of facilities work until midnight. Still, more than the capacity to provide 'eyes on streets' is needed for the large open area, mainly on Republic Square's south and east. It represents that there needs to be more business and entertainment activity. Regarding ground security, the public realm depends on the control of CCTV (**Minton, 2012, p. 29**) due to a lack of functional mix, and a significant proportion of impermeable interfaces do not interact with a private inner realm at night. Furthermore, most of the park's green spaces could be better lit at night, making the area psychologically insecure.



Figure 8 – Night activity [author's material]

The Republic Square area's building footprint density analysis illustrates that most of the land is open (**Figure 9**). While about half of the total number of buildings is a high rise, the FAR is significantly low, which might lead to decreased liveliness in the neighbourhood (**Dovey & Pafka, 2018**). Open spaces are primarily used for broad carways and green parks. It implies that, in terms of social control, the area is heavily reliant on CCTV and state supervision. This urban morphology partially does not provide "eyes on streets" to improve a feeling of invisible social security (**Jacobs, 1961**).

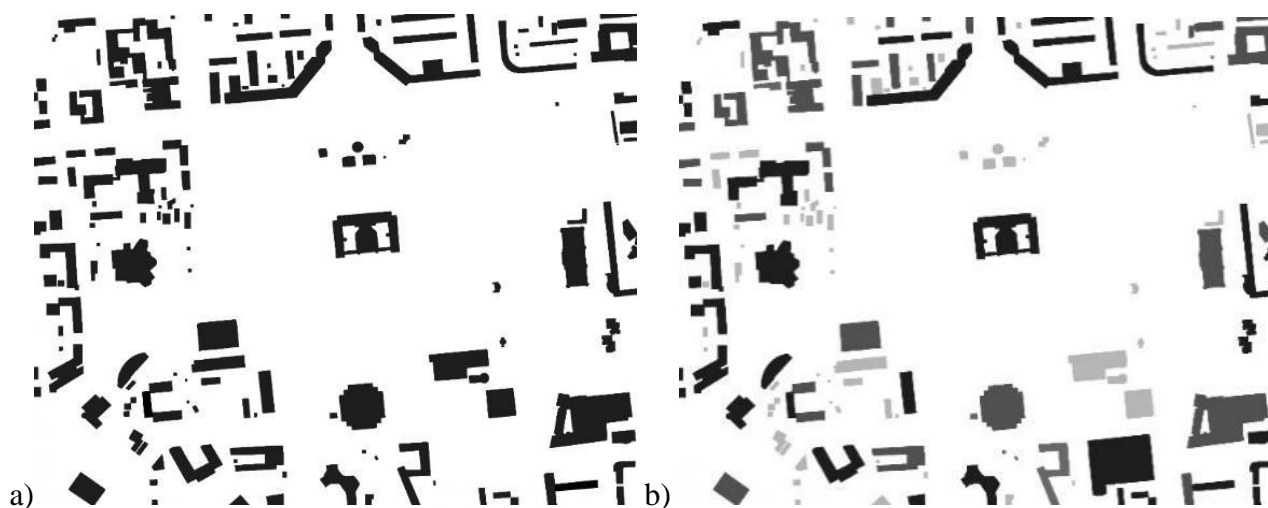


Figure 9 – Analysis of urban densities; a) Buildings footprint; b) Buildings height [author's material]

The observation of the public realm reveals that primarily, there are two spots attracting people to use (Figure 12). Firstly, the renovated plaza in front of the City Hall with cafes, street food and a playground for children. Secondly, the fountains on the other side of Satbayev Street, next to the Monument of Independence, are critical destinations for visitors. Unfortunately, there is no direct link between the two attractive destinations. As a result, they could be more active.

Consequently, the perspective interventions could be to redesign the highway in between. Noteworthy, public space users gather around entertaining facilities rather than historical reminders. Although there are monuments and sculptures around Republic Square, people pass them, except on memorial days such as Independence Day, December 1986 and January 2022 cases.



Figure 12 – Perceptions of the public in the area [author’s material]

Table 1 provides a picture of the respondent’s gender, age range and relation to the public realm on the selected research site. The overall number of respondents is 50 users of the public realm on the selected study site. Approximately similar quantities of males and females were willing to answer the questionnaire. In the age range more active are 26-45 aged people. As the survey was conducted during work days, a group of workers use Republic Square daily. During weekends, locals use the renovated playground with their children and grandchildren. Random visitors also were questioned as the public realm works for the whole city. There were received responses from drivers using the parking along Satbayev Street to evaluate adequately.

Table 1
Profile of respondents [author’s material]

Demographic profiles	Total	Percentage
Surveyed amount of respondents	50	100%
Gender		
Male	22	44%
Female	28	56%
Age Range		
18-25	10	20%
26-45	19	38%
45-65	13	26%
>66	8	16%
Respondents relation		
Workers in the area	12	24%
Local communities	17	34%
Random visitors	10	20%
Drivers	11	22%

Table 2 represents the outcomes of the questionnaire. Respondents' answers are designed to support morphological mapping and observation results. Firstly, hardly half of Republic Square users are satisfied with the quality of architectural and esthetical views of buildings. Primary, it results from the fire in January 2022 actions in City Hall and demolishing buildings around Republic Square. However, satisfaction with Republic Square facilities, such as landscaping, playgrounds, and sports equipment, is shallow among all groups of visitors. While workers in the area use the public realm around 11 times per month on average, other groups rarely use it. Also, respondents ticked the greenery of Republic Square to be unsatisfactory.

Secondly, only a few respondents who live in nearby areas had been acquainting in Republic Square with strangers or people from the neighbourhoods within the selected study site. In addition, the feeling of an open community is shallow. Most respondents assume that there is poor accessibility between different public spaces. Therefore, the public realm is dull in general. Incredibly late at night, people avoid walking along, considered insecure due to the lack of "eyes on the streets".

Thirdly, there are two main issues that inhibit using Republic Square. Workers in the area complained about long distances, lack of affordable food, hot in the summer square, and being tedious to use daily. Local communities criticise the noise of passing cars, lack of daily use facilities, and long distance from home. While random visitors mention political protests, lack of connectivity, and poor appearance of buildings as a point to be less attractive there, drivers believe there are insufficient parking spaces and no attractions to stop.

Table 2.

Results of the survey [author's material]

Research questions Respondents' relation to the public realm	Respondents' relation			
	Workers in the area	Local community	Random visitors	Drivers
Satisfaction with architecture and urban design of Republic Square (maintenance of spacial space and architectural and esthetical view of buildings surrounding the public realm).	32%	45%	65%	56%
Satisfaction with Republic Square facilities (such as landscaping, playgrounds, and sports equipment).	38%	20%	45%	20%
The average frequency of using everyday facilities in Republic Square is monthly.	11 times	Four times	None	1-time
Satisfaction with Republic Square greenery.	35%	29%	40%	19%
Frequency of acquainting in Republic Square with strangers or people from the neighbourhoods within the selected study site.	None	Low	None	None
A feeling of open community.	25%	32%	5%	0%
Users who had difficulties with accessibility and permeability in a public realm within the selected study site.	78%	86%	54%	38%
Frequency of crossing to another side of Satbayev Street in Republic Square.	Low	Low	None	None
A feeling of safety at night time (walking along within the selected study site).	50%	35%	29%	73%
Main issues that inhibit using Republic Square.	Long distances, Lack of affordable food, It is hot in summer, and Boring to use	The noise of passing cars, Lack of daily use facilities, Far away from the home	Political protests, Lack of connectivity, Poor appearance of buildings	Lack of parking spaces, No attractions to visit

The analysis of the selected site revealed that Republic Square is currently used as a highway for Satbayev Street rather than a public space for citizens. Several primary issues negatively affect the efficient use of a transportation corridor and public space for pedestrians. There are both spatial and non-spatial issues. Spatially, the urban morphology of the selected site does not facilitate people to use the public realm:

1. Despite being well-connected in terms of transportation, there is a lack of accessibility in the public realm. A car-oriented Satbayev Street separates Republic Square. The analysis of public realm ownership proves that the public realm fundamentally belongs to vehicles, especially Republic Square.

2. The neighbourhood's density only allows a few local communities to use it daily due to the distance to walk from their homes.

3. Although the public realm is relatively greener, they are not well connected, particularly the plaza in front of the City Hall.

There are non-spatial issues that partially overlap with spatial outcomes of the public realm:

1. There need to be more direct and transparent interfaces that directly communicate with pedestrians to motivate locals to come.

2. There must be more facilities in the selected study area, except the renovated plaza. The lack of nighttime ground economy leads to an emptiness of space after 6 p.m. when all offices and state buildings are left out.

3. The fact that there were several tragic riots and constant protests made the public realm unattractive to visit frequently.

4. Car-oriented urban design and the lack of pedestrians in Republic Square caused big-scale problems, making it more inequitable for daily visits.

5 CONCLUSIONS

The investigation of Republic Square illustrated that insignificant and minor urban design issues created significant adverse outcomes in the long term. The initial project was primarily designed to serve the Soviet urban planning system. After the independence, it was modified with memorials and sculptures and later with an underground shopping centre, which is not functioning currently. However, radical urban transformation still needs to be applied. As a result, current urban morphology has caused inefficient use of spatial space, which is car-oriented.

The balance between fast traffic, such as the highway in Republic Square and the pedestrian-oriented public realm might be found by reducing the speed and redesigning the material space into a shared space. This is because the existing urban design of Republic Square is not facilitating activeness in terms of social life and cohesion between local communities. Besides the wide street in Republic Square, there are critical problems regarding the urban morphology, such as lack of accessibility, low density, lack of functional mix, inactive interfaces, poor greenery, and lack of nighttime economy.

Despite adverse outcomes, a considerable urban legacy could be improved and turned into a more effective and active public realm. The public realm has significant space for redesign and becomes a more socially engaged and attractive daily-use destination. However, further research is still required to investigate the fast traffic concerning the whole transportation system of the city, and more design strategies should be applied to improve it. They should go beyond traditional approaches to urbanism and have to consider all social groups but primarily usage by pedestrians.

CONFLICT OF INTEREST

The authors state that there is no conflict of interest.

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