

# Scales of Change

## Book of abstracts

*Commemorating 50 years of  
Landscape Architecture study programme  
at University of Ljubljana*

University of Ljubljana



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# Scales<sub>of</sub> Change

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## From grey to green squares. Fighting climate change.

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Due to urbanization cities are constantly expanding, often at the expense of green areas. This reduction of greenery can be seen on the examples of six historical squares in two countries: The Square of liberty, Trifković square and Gallery square in Novi Sad, Serbia and Macedonia square, Karposh uprising square, and Old train station square in Skopje, North Macedonia. Since they are under the urban heat island effect, in order to improve the microclimate and mitigate the effects of climate change, this paper proposes a green design model applicable to similar squares that deal with the lack of greenery. This paper deals with the past, present, and future state of the appearance and function of the mentioned squares and their grey/green values. After collecting historical data, field observation was conducted with the implementation of checklists on spatial features, user activity, and vegetation which yielded data on the quality of the analyzed area. The results showed that these squares are "grey" – have a high share of impermeable paved surfaces and a low amount of greenery. As these locations are on important city points, implementing a green design would increase their eligibility for the city's greenery system and improve their ecological role. The creation of a design model that is universal and applicable to other "grey" squares is our main goal. This model will have in common features such as usage of water and heat permeable surfaces, planting resistant trees in sunlit areas which increase shade and planting grass areas that allow unhindered wind movement through the square. The model is widely applied because transforming "grey" to green squares improves the local microclimate and including green squares into the cities greenery system creates a wider effect on a large scale by mitigating climate change effects such as urban heat island.

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## INTRODUCTION

City squares have been the fundamental component of the cities' structure since the ancient times. They are reflections of society, more than just open urban places and their design has been adapted over the years to the changing demands of the users (van Melik, 2008), often at the expense of green areas. From the second half of the 20<sup>th</sup> century till now, some of the city centre squares deteriorate the quality of life because they acquired unattractive images of empty paved spaces or traffic islands (Giddings *et al.*, 2011). Due to urbanization and climate change, there is, more than ever, a need to enrich urban environments with greenery. So, now is the right moment to turn these “grey” squares into green in order to improve the local microclimate and to create a wider effect on a large scale by mitigating climate change effects such as urban heat island.

## METHODOLOGY

**Study area:** The subject of research are six historical squares in two countries: The Square of liberty, Trifković square and Gallery square in Novi Sad, Serbia and Macedonia square, Karposh uprising square, and Old train station square in Skopje, North Macedonia (Figure 1). The mentioned squares were chosen as examples of the reduction of greenery.

**Data analysis:** After collecting historical data, field observation was conducted with the implementation of checklists on spatial features, user activity, and vegetation which yielded data on the quality of the analyzed area. As the final step, in order to improve the microclimate and mitigate the effects of climate change, this paper proposes a green design model applicable to similar squares that deal with the lack of greenery.

### NOVI SAD

### SKOPJE



Figure 1. Location of analyzed squares

## DISCUSSION AND CONCLUSION

As these locations are on important city points, implementing a green design would increase their eligibility for the city's greenery system and improve their ecological role. The green model is widely applied because transforming “grey” to green squares and including them into the cities greenery system (Figure 4) is a step to fight climate change and increase the quality of life in the city.

Figure 4. Proposal for connecting squares into greenery system

## RESULTS

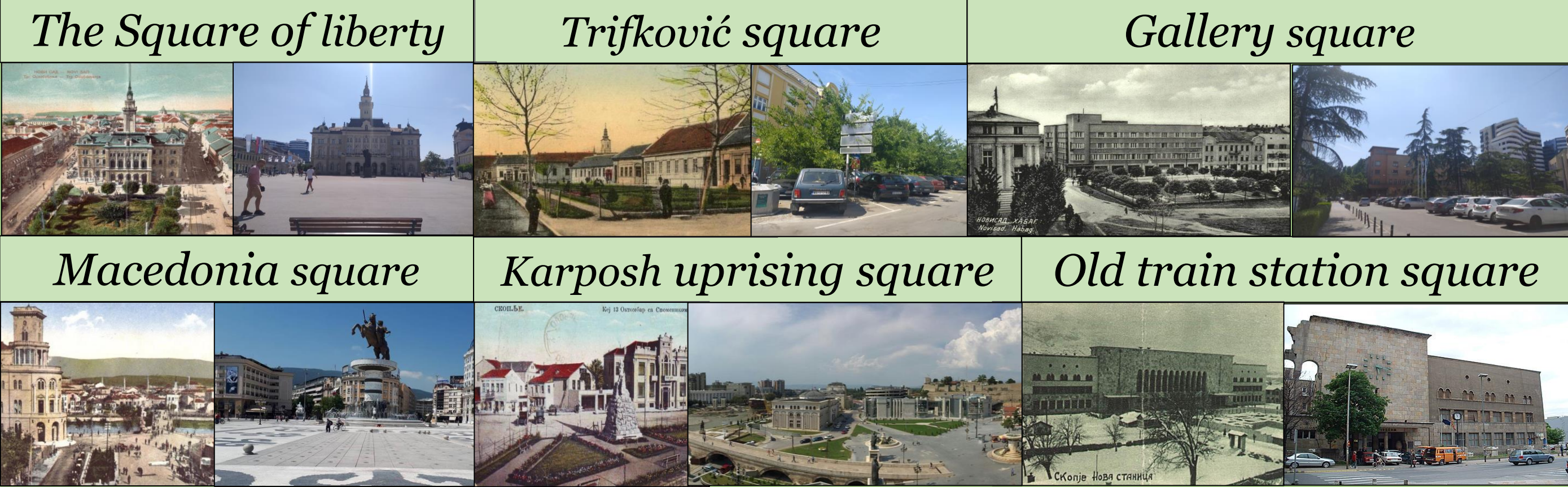


Figure 2. Past and present appearance of the squares

| Location                               | Novi Sad, Serbia                                |                                    |                                | Skopje, North Macedonia         |                                 |                          |
|----------------------------------------|-------------------------------------------------|------------------------------------|--------------------------------|---------------------------------|---------------------------------|--------------------------|
|                                        | Square of liberty                               | Trifković square                   | Gallery square                 | Macedonia square                | Karposh uprising square         | Old train station square |
| Distance from city centre              | <10 min walk                                    | <10 min walk                       | <10 min walk                   | 0 min walk                      | <5 min walk                     | <10 min walk             |
| Shape                                  | open                                            | partially open                     | closed                         | open                            | open                            | open                     |
| Accessibility                          | accessible                                      | partially accessible               | partially accessible           | accessible                      | accessible                      | accessible               |
| Observability                          | yes                                             | partially                          | partially                      | yes                             | yes                             | partially                |
| Illumination                           | sufficiently                                    | insufficiently                     | insufficiently                 | sufficiently                    | sufficiently                    | sufficiently             |
| Grey/green ratio (%)                   | 99-1%                                           | 79-21%                             | 60-40%                         | 95-5%                           | 86-14%                          | 97-3%                    |
| Parking lots surface area (%)          | /                                               | 28%                                | 26%                            | /                               | /                               | 16,5%                    |
| Noise presence                         | to a small degree                               | to a large degree                  | to a large degree              | to a small degree               | to a small degree               | to a large degree        |
| Exhaust gases presence                 | to a small degree                               | to a large degree                  | to a large degree              | to a small degree               | to a small degree               | to a large degree        |
| Pedestrian zone                        | yes                                             | no                                 | no                             | yes                             | yes                             | no                       |
| Urban furniture equipment              | good                                            | bad                                | bad                            | medium/bad                      | medium                          | bad                      |
| Water presence                         | no                                              | no                                 | no                             | yes                             | yes                             | no                       |
| Blending of architectural styles       | partially                                       | no                                 | partially                      | yes                             | yes                             | yes                      |
| Expressed height difference of objects | no                                              | partially                          | yes                            | yes                             | yes                             | yes                      |
| Intensity of use                       | very intense                                    | intense                            | intense                        | very intense                    | very intense                    | intense                  |
| Time of most frequent use              | in the evening                                  | during the day                     | during the day                 | all the time                    | all the time                    | during the day           |
| The most frequent users                | middle age population                           | middle age population              | middle age population          | young and middle age population | young and middle age population | middle age population    |
| Traffic                                | pedestrian                                      | car/pedestrian                     | car/pedestrian                 | pedestrian                      | pedestrian                      | car/bicycle/pedestrian   |
| Staying or passing                     | passing and staying                             | passing                            | passing                        | passing and staying             | passing and staying             | passing                  |
| % of high, medium and low vegetation   | 0%-50%-50%                                      | 75%-21-4%                          | 65%-35%-0%                     | 76%-21%-3%                      | 3%-17%-80%                      | 10%-1%-89%               |
| Deciduous/evergreen                    | 100% deciduous                                  | 100% deciduous                     | 31%-69%                        | 79%-21%                         | 15%-85%                         | 88%-12%                  |
| Wide or narrow tree crown              | Narrow ( <i>Robinia pseudoacacia</i> 'Globosa') | Wide ( <i>Celtis australis</i> L.) | Wide ( <i>Cedrus</i> sp.)      | Wide and narrow                 | Wide and narrow                 | Wide                     |
| Flower decorative species              | /                                               | <i>Rosa</i> sp.                    | <i>Prunus serrulata</i> Lindl. | /                               | Seasonal flower                 | /                        |
| Thick or airy crown                    | airy                                            | airy                               | thick                          | thick and airy                  | airy                            | thick and airy           |
| Laun/paving ratio                      | 0/100%                                          | 21%-79%                            | 40%-60%                        | 1%-99%                          | 12%-88%                         | 3-97%                    |

Table 1. Results of check lists on space, activity and vegetation

All six squares are “grey” – have a high share of impermeable paved surface and low amount of greenery.

The scarce vegetation does not fulfill their ecological role.

## GREEN MODEL

- Decrease of air temperature, increase of air humidity and increase of shade - **planting resistant trees in sunlit areas** (species with wide and dense canopy)
- Increase of air flow - **planting grass areas** that allow unhindered wind movement through the square
- Increasing of **water and heat permeable surfaces** (lawns instead of paved surfaces)
- **Improvement of biodiversity** (attraction of pollinators, continuous blooming, perennials, native species)

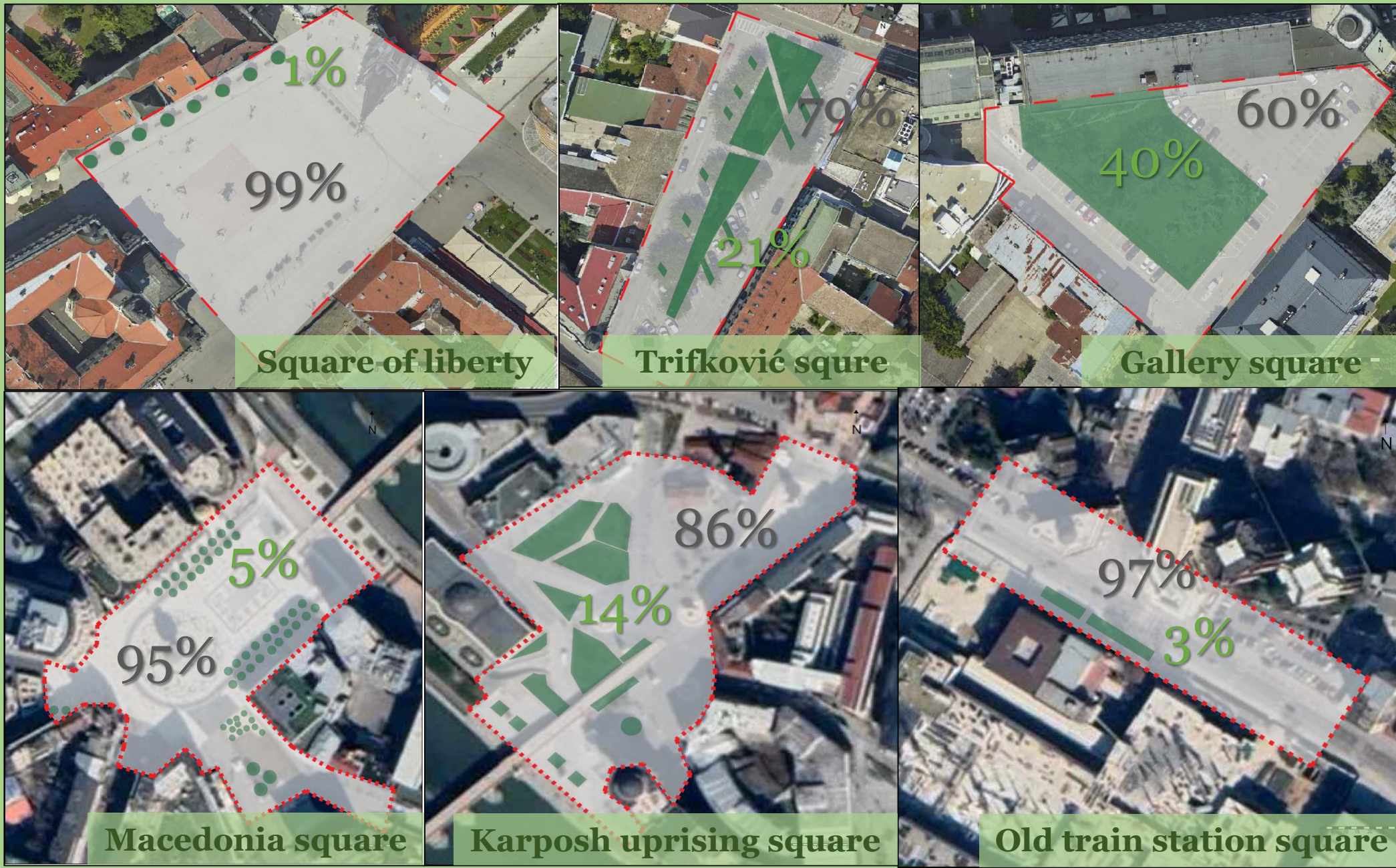


Figure 3. Grey/green values of analyzed squares

**References:** van Melik, R. G. (2008). Changing public space. The recent redevelopment of Dutch city squares. Utrecht: Koninklijk Nederlands Aardrijkskundig Genootschap/Faculteit Geowetenschappen Universiteit Utrecht.  
Giddings, B., Charlton, J., & Horne, M. (2011). Public squares in European city centres. Urban Design International, 16(3), 202-212.