

## 18. Planning vertical differentiation?

Geodesign workshop in the case study area of Neve-Sha'anan neighbourhood in Tel Aviv

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### 18.1 INTRODUCTION

Many ethnic communities prefer to live in segregated neighbourhoods that minimize potential contacts with other local or foreign groups. Social comparison processes motivate individuals to evaluate themselves according to others, which may lead to voluntary congregation (Johnston et al., 2007) or spatial exclusion (Abrams and Hogg, 2006). Intra-group differentiation through self-identification and residential dynamics – a type of “micro-segregation” as coined by Flint Ashery (2015, 2018; see also Flint Ashery et al., 2012) – enables individuals of various sects to live side-by-side in apartment buildings. Their sense of home and community is rooted in the presence of neighbours belonging to the same sub-sect in the same building. Micro-segregation is a powerful generative process, providing people with a sufficiently strong sense of home and belonging. The micro-segregation dynamics operate at the city block or the apartment building level, while the neighbourhood may appear to be socially mixed and highly integrated.

Vertical differentiation, resulting from individuals’ residential decision-making and initiatives, raise a question about what kind of order is possible in an intensely ethnically diverse society (Maloutas et al., 2012; Harris, 2015). Although emerged from the European bourgeois city, the middle classes in the Anglo-American city have opted for residence in socially homogeneous suburban locations creating a different pattern from the traditional dense and less segregated European city as well as from the more recent model of vertical segregation in the tower-housing of East Asia and Latin

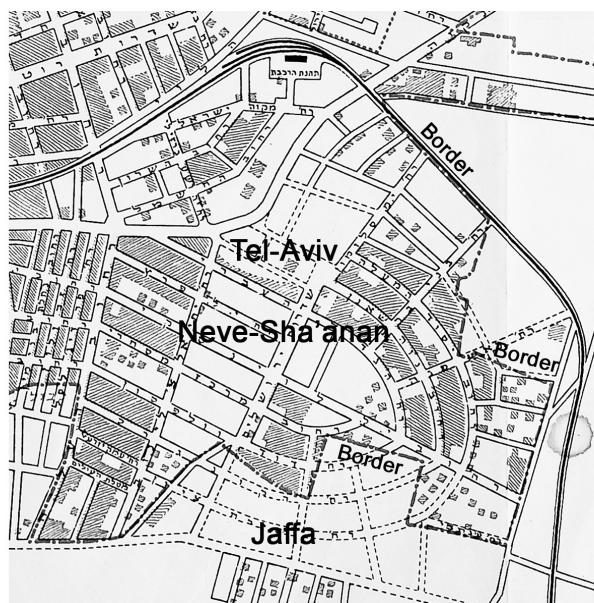
America (Graham and Hewitt, 2013; Graham, 2016; Saitluanga, 2017; Flint Ashery, 2019).

Political discourse often uses the increase of social mix as the main justification to support gentrification processes. However, and despite the ecologic turn to denser cities and the increased social mix unintendedly produced by gentrification (Martin, 2017), research on vertical social differentiation among residents in diverse inner city is yet in its infancy (Maloutas et al., 2012; Flint Ashery, 2017a, 2017b). No studies examine the viable opportunities and solution that a PSS (planning support system) can provide to address small-scale segregation and its social effects.

An early definition of Planning Support Systems was provided by Harris (1989), who described PSS as “spatially-enabled information systems integrating geographic information systems (GIS), models, and user-friendly geovisualization interfaces – including sketch planning functions and dynamic dashboards – supporting the planning process.” Since then, many PSS have been created and mostly address the knowledge creation or the impact assessment parts of the planning process (Flint Ashery and Steinlauf-Millo, 2021; Flint Ashery, *forthcoming*). Among recent advances in PSS, Geodesign Hub<sup>©</sup> (GDH) has broader potential to link geographic knowledge to planning in an explicit collaborative and participatory processes. These issues are discussed here regarding Neve-Sha'anana neighbourhood in Tel Aviv-Yafo, our case study area, where gentrification is induced and already occurring. The accelerated process of gentrification that the neighbourhood is undergoing raises a question about the impact of micro-segregation on the reproduction of socio-spatial inequalities through the opportunities that vertical differentiation may provide to the mixed population of the neighbourhood. By filling in the gaps in current knowledge about the verticality of Neve-Sha'anana using planning tools (Steinlauf-Millo et al., *forthcoming*), we hope to promote governance framework and stakeholder involvement and contribute to their wide-range implementation.

### 18.1.1 The Case Study of Neve-Sha'anana Neighbourhood

Neve-Sha'anana was founded in 1921 following the ideas of the ‘garden city’, in the shape of ‘The Menorah’ (temple lamp), as one of the first Hebrew neighbourhoods to be established in the south of the growing city of Tel Aviv (Figure 18.1). Since its early days, Neve-Sha'anana has struggled with organizational, spatial, social and economic issues. In particular, the division between two municipalities – Tel Aviv and Jaffa – until 1950, led to a different development of the north and south of Neve Sha'anana. These differences are evident in the master plans which contradict the ideals of the neighbourhood as a garden city, and in the absence of open and built public areas. Since then, the area has developed into one of the city’s most complicated areas.



Source: Droyanov (1936).

*Figure 18.1 Neve-Sha'anah: the border between Tel-Aviv and Jaffa dividing the initial 'Menorah' plan*

Neve-Sha'anah, a dense inner neighbourhood, marginalized and neglected, functions as a kind of 'limit case'. Neve-Sha'anah has a surface area of 760,000 square metres and around 15,000 residents of various ethnicities and economic means. Many of them are foreign workers, refugees and asylum seekers. As per the Central Bureau of Statistics (CBS) and Tel Aviv Socio-Economic Research Centre (SERC), Neve-Sha'anah is home to approximately 4,900 documented residents, along with 9,000–10,000 undocumented foreign residents (including family members). The neighbourhood has relatively high levels of crime, prostitution and drug use. Considering its diversity, it is an interesting case study for examining vertical patterns in a compact area primarily driven by private development initiatives.

As examples of these private initiatives, there are two problematic central bus stations. The old station was built in the 1940s in the northern part of the neighbourhood on land donated to the municipality in exchange for the right to build a commercial centre. This resulted in a bustling and hectic commercial district in the neighbourhood. The new station, located in the southern part of the neighbourhood, was constructed between 1967 and 1993 with a surface of 240,000 square metres of transportation and commerce over seven floors. The

station blocked the delicate urban structure of the 'Menorah plan' because it was too big, noisy and busy, and brought harmful pollutants into the neighbourhood.

### 18.1.2 Neve-Sha'anans Population Groups

Blanero (of the Socio-economic Research Center, Municipality of Tel-Aviv-Yafo), interviewed in 2020, identifies five communities of Israeli, African, Asian, Eastern European, and South American origin living in the neighbourhood. The documented Israeli population has lived in the neighbourhood since before the mid-1990s migration waves. On average, about 70 per cent of the local old residents are older than the rest of Tel Aviv's population (CBS statistics, 2020). Half of the *undocumented* residents are of African origin, and the other half are East Asian, East European and South American. Most of the undocumented residents live in small businesses on the lower floors of buildings or on the upper floors in buildings without a lift.

Since the early 1990s, the Israeli population of Neve-Shaanan has been replaced by foreigners. Initially, it was East Europeans followed by East Asians and African refugees and job seekers. Over the last few years, however, gentrification has reversed the trend, with the inflow of Israeli students and young professionals gradually replacing the foreign population. As the gentrification process intensifies, displacement of undocumented residents increases and the profile of the neighbourhood is changing.

Neve-Sha'anans is currently considered a mixed neighbourhood, with 14 recognized synagogues and countless unrecognized alternative religious institutions serving the foreign community, as well as eight education institutions and one community centre that reflect the diversity of the population. Many of these close-knit communities are interested in living close together and have spontaneously created exclusive religious, cultural and ethnic enclaves. According to the socio-economic index used in Israel (referring to geographical locations and based on demographic, educational, income, employment, etc. data), Neve-Sha'anans's population index is 3.6/10, without considering the undocumented foreign communities (SERC statistics, 2013), compared to 8/10 for the city as a whole.

A rapid process of gentrification continues in Neve-Sha'anans, which is simultaneously accompanied by sharply rising inequality and growing segregation based on property value and wealth. It is a common theme for both the developing and developed world that the unequal access to housing and the increase in income inequality between homeowners and renters have significant long-term effects beyond just property ownership. In an extremely ethnically diverse society, structural changes affect people's ability to self-organize and raise concerns about what kind of social relations can be maintained. An influx of more affluent residents has been forcing established and lower-income residents to

relocate, and a new Israeli population has been settling down in the neighbourhood over the last couple of years. Many of these people are young professionals, artists, students, singles, or young couples who seek affordable apartments close to the city centre. Furthermore, local homeowners and large-scale landlords from afar act as real estate investors, buying small apartments and renting them to these new incoming groups. Because gentrification is embedded and bound by socio-economic and ethnic frames, it is crucial to understand the dynamics and the impact of the process of neighbourhood change that may be involved in this incomplete and fragmented process.

### 18.1.3 Vertical Planning in the Neve-Sha'anana Neighbourhood

Neve-Sha'anana is initially divided into parcels of about 400 square metres. Each parcel allows for a building to be placed in the front, leaving space for a courtyard in the back. Over the years, the parcels were built up according to the plan to create a very dense neighbourhood, with only 4–5 metres between buildings. The neighbourhood has almost no open space or public built structures.

Tel Aviv-Yafo has a wide range of planning and policy tools that address Neve-Sha'anana's complex urban state. In terms of plans, there are two covering the majority of the area, 'town planning scheme 44' (1941) and 'detailed scheme F' (1946) which designates the area as a mixed-use of residential, commercial and industrial levels of up to four storeys. Combined with the national earthquake strengthening plan, buildings may reach seven storeys. In addition to these plans, the municipality promotes planning throughout the neighbourhood in accordance with the city's master plan, TA/5000 (2016). There are two new master plans that have been approved recently that will turn large parts of the neighbourhood into a dense metropolitan area. Combined with private initiatives, these plans can add up to 1.5 million square metres of built-up area and around 7,000 residential units.

Policy-wise, the TA/5000 plan functions as a planning policy. This does not suggest a building design; it only indicates the maximum floor area divided by the size of the plot (e.g. building rights) and the maximum building height in each area. This area is expected to provide a unique opportunity within its surroundings for high-rise projects that are just getting underway in Tel Aviv. The resulting vertical pattern is reflective of the micro-integration processes as a form of neighbourhood change.

Tel Aviv-Yafo's high-rise construction policy is reflected in TA/5000. In this master plan, several areas are designated for high-rise construction, most notably along the Ayalon Road highway and the nearby MEA. An eight-storey residential area is planned for the heart of the neighbourhood.

As well, the planning department of the municipality is working on two new planning policies for different parts of the neighbourhood. One of the

policies relates to the south-east part of the neighbourhood, the new central station zone. The second relates to high-rise buildings on the periphery. Both policies are currently in the planning process (Figure 18.2). Our participatory exercise will therefore examine how vertical segregation/social mix is viewed as a problem in the case of Neve Sha'anana. The next section discusses ways of maintaining a sense of belonging and community for specific groups without having the negative effects of vertical segregation through unequal conditions for their social reproduction.

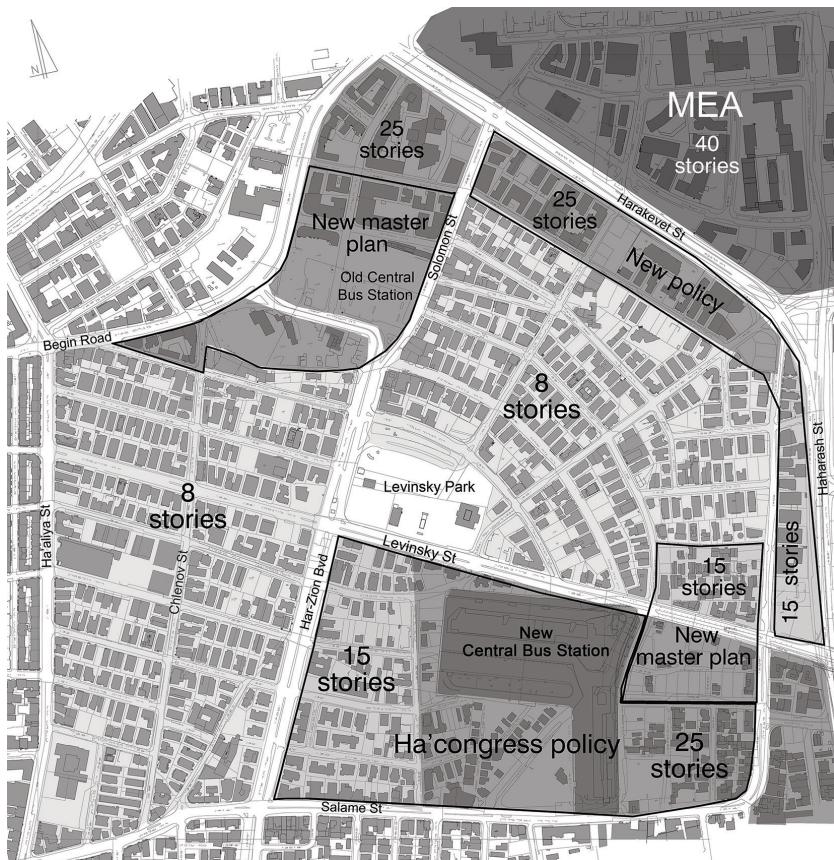


Figure 18.2 Vertical planning in Neve-Sha'anana as reflected in TA/5000 and other local plans and policies

## 18.2 THE NEVE-SHA'ANAN WORKSHOP

The primary source of digital information on the Neve-Sha'anana neighbourhood comes from the spatial database of the Municipality, which includes GIS mapping with all the layers of city planning, such as buildings, roads, land uses, floors, and so on. Data from the city planning department, such as master plans and planning policies, as well as OpenStreetMap information and socio-economic data from the research centre were gathered to produce the evaluation maps for the evaluation model. Socio-economic data was also used to set the population goals for 2045, estimated to triple by the end of the decade. Based on the preliminary analyses, ten spatial variables were selected, and ten evaluation maps were produced. As described by IGC method, design innovations were selected from ten spatial variables that were carefully selected to match the Israeli planning system, the Strategic Plan for Tel Aviv-Yafo (2017) and the unique urban situation of Neve-Sha'anana.

The Neve-Sha'anana neighbourhood workshop was held via Zoom from 29 to 30 June 2020. Workshop participants' backgrounds included GIS, urban planning, architecture, social and political science, and technology, a mixture of competencies for a geodesign study, and they were familiar with the Neve-Sha'anana neighbourhood.

### 18.2.1 Proposing Policy and Project Diagrams for 2045

The main purpose of the workshop was to present a development scheme for 45,000 people living in Neve-Sha'anana in 2045. To meet the needs of the developing neighbourhood, ten innovation systems were selected in advance. Each innovation system was given specific objectives and targets.

On the first day of the workshop, and after learning the basic operations of GeoDesignHub, the workshop's workflow followed Steinitz's (2012) framework for GeoDesign.

The workshop participants divided themselves into four teams based on their main interests (stakeholders): Saturated Construction oriented Development (SCoD), Culture Community-oriented Development (CCoD), Authorities and Government (AGOV) and Business and Entrepreneurship oriented Development (BEoD). Each team prioritized its guidelines based on the values it set as a group of main interests. Further on, each team defined its priority areas for development according to its planning guidelines and the specific characteristics of Neve-Sha'anana, that is, selected, edited or added policy and project diagrams – simple sketches of anticipated or intended changes to one of the ten systems – to generate its Version 1 proposals for 2045. For instance, the CCoD team focused on building new institutions that could serve

the growing community. Additionally, they expressed concern about using the new central bus station for community purposes and mixing and combining the different cultures of the neighbourhood in order to improve social life. In contrast, the SCoD team focused on maximizing the area for high-density mixed-use housing.

Ten initial evaluation maps depicted how the current scenario works, and simulated and assessed the potential impacts of each scenario, making decisions that are based on science and available data, using a defined and unified graphic language among the participants, and facilitating their understanding and dialogue.

Based on their preferences, the teams assembled the first synthesis by selecting combinations from the matrix of project/policy diagrams. At the end of the first round of synthesis, the GDH PSS platform evaluated the first version of the scenarios for impact and compared it to each of the evaluation maps.

### **18.2.2 Contingent Negotiation Processes over the Future of Neve-Sha'anana Neighbourhood**

On the second day, each team presented its final version. A negotiation process started during the workshop in order to find consensus on preferable alternative scenarios among the groups. For this purpose, the sociogram tool was utilized. According to the results of these analyses, based either on the similarity of designs or their potential symbioses, a consensus was rapidly found. The original four groups at Bar-Ilan's workshop (SCoD, CCoD, AGOV and BEoD) were combined into two teams (AGOV+BEoD; SCoD+CCoD).

The new teams began to generate a negotiated solution for the neighbourhood. This initial negotiated set of alternatives was Version 2. Each one of the teams adjusted its set of values, according to the new teams' preferences, used the comparison grid and the negotiation tools provided by the platform, and created an alternative design which met the new agreements.

Although the link between AGOV and BEoD was considered a weak one, the teams had a basic agreement on values. According to the participants, market forces lead to the concentration of established populations on upper floors and weaker populations on lower floors. Proximity to the city centre and sea views, along with an accelerated gentrification process, contribute to these micro-segregation trends. Clearly, the ability to reduce this pattern is decreasing as buildings become obsolete and their operating and maintenance systems become more expensive. The most significant disagreements of this team were over the amount of mixed high- or medium-density residential and commercial buildings and the need to replace/refurbish them, as derived from the initial perceptions of each team. Other than that, they agreed on most of the planning schemes, including the reuse of the central bus station as a commercial hub;

the institutions' locations; the need to enhance walkability and cycling; the future purposing of solar roofs and rainwater retention policies, and  do on Team SCoD+CCoD agreed on most things and chose the central bus station as the prominent spur for the development of the neighbourhood. The main issue discussed was regarding the quality of life of the residents and finding ways to improve them with policies considering sustainable green building and urban agriculture. The final round of negotiation between the two teams was conducted using GeoDesignHub tools which produced the final version for each of the groups.

Then, the two teams were united into one team, and a final negotiated design for Neve-Sha'an'an in the year 2045 was generated. This design cycle was based either on the similarity of designs or their potential symbioses. The teams could easily and rapidly change, add or delete options and create or modify diagrams – also considering other teams' works – until they reached their desired impact performance in their design.

In the final negotiated design, the best ideas were incorporated and the worst were eliminated. The final design protected the unique initial design of the neighbourhood (streets' position); designated the problematic central bus station to be a commercial hub; placed the mixed high-density residential and commercial buildings along the Ayalon highway and Harakevet main road; placed the mixed medium-density residential and commercial buildings along other main streets; added much needed public institutions and green public spaces; applied policies for green infrastructure, water retention and solar rooftops combined with agriculture and green rooftops.

The proposed planning policy aimed to minimize micro-segregation in the upper and lower quarters of buildings. Close-knit communities that wish to maintain their own living space apart from the modern Western world could benefit from considering the vertical dimension since it enables both separation and inclusion within society at the same time. While it raises the level of urban heterogeneity to combine and mix populations in one building, with the increase in density and construction heights, the benefits of reducing vertical micro-segregation become clear. In cases where high-rise buildings serve a large number of tenants and are actually operated as autonomous units within their surroundings, insights from the macro level should be applied to the micro level to reduce the level of inequality and tensions.

The policy, therefore, also supports mixed-use housing by providing subsidized residential units and a variety of sizes within each building. The workshop participants proposed implementing the innovative model of 'construction–evacuation–construction' from the Ramat Eliyahu neighbourhood of Rishon Lezion, where the weak veteran population of the area is combined with new strong residents in high-rise buildings. With this process, the veteran population is placed directly into the new apartments even before

the old buildings have been demolished. A route such as this one is designed to solve problems that may arise in urban renewal projects when organizing tenants is difficult due to uncertainty and insecurity of apartment owners in relation to the receipt of the new property, in addition to the uncertainty of the developer in relation to building rights and project costs.

### 18.3 CONCLUDING REMARKS

Based on previous studies that indicated vertical differentiation of specific groups within buildings can create opportunities for integration at the neighbourhood level, this work illuminates the role of planning in dealing with vertical differentiation within local social and political processes. In relation to the 11th Sustainable Development Goal (SDG), this chapter takes a micro-level approach to the goal of “Make cities and human settlements inclusive, safe, resilient, and sustainable.” It examines how technology can contribute to a meaningful negotiation process at a micro level of vertical differentiation and shift the emphasis from the products of planning to the negotiation process as the key consideration in planning. Following Flaxman (2010), planning the Neve-Sha’anan in Bar Ilan University’s geodesign workshop is a relevant example of digital planning and contributes to policies that have been regulating the process. This chapter examines how digital planning can be used to develop strategies for addressing residential patterns driven by socially pressing issues, such as socio-spatial inequalities.

The future management of our investments in cities, infrastructure and citizens will have a digital component. In order to facilitate this digital transition, we need research capability and the ability to understand the trade-offs and organizational implications systematically. In this chapter, we discuss vertical segregation/social mix as a planning policy problem, as well as the need to preserve the sense of belonging and community for specific groups while avoiding vertical segregation’s negative effects through unequal conditions for their social reproduction. In spite of maintaining a segregated pattern at the building level, there is a high degree of involvement in public spaces, services and institutions at the urban level. In this way, the community’s members can maintain their own living space detached from the modern Western world. While maintaining their communal identity and committing to the functional significance of nesting, they can continue to be active in urban public life.

In the participatory exercise of the Neve-Sha’anan Neighbourhood workshop, participants explored strategic planning alternatives for a complex set of intra- and inter-system links among policies and projects in a future-oriented spatial-temporal manner, using considerable openness, flexibility and efficiency. After reporting influence at two time-steps, 2020 (current) and 2045, the Neve-Sha’anan geodesign workshop was deemed worthwhile. As

a top-down process among experts, which could be broadened to include residents and other stakeholders (landlords, retailers, developers, etc.) as well as other expert disciplines, it could serve as a model for thinking strategically about difficult and contentious planning and policy challenges.

Neve-Sha'anán supports earlier studies (e.g. Maloutas and Karadimitriou, 2001) which show that vertical social differentiation and community segregation do not have a zero-sum relationship and that, in fact, the former is a complement to the latter. In this case, however, understanding how planning is negotiated and the opportunities for introducing technological methods to negotiation processes becomes crucial in undermining the tradition that retail-residential imbalance is an inevitable part of neighbourhood growth. The emergence of new technologies requires a scientific analysis of policy to understand how they will impact residents and society. There is also a need to understand the administrative and organizational implications of these policies. In the absence of systematic analysis that considers the values of multiple stakeholders, including citizens, conflicts in our environment could worsen. A further investigation of the micro-level implications of digital planning and its implications for urban development is needed as areas undergoing contentious pressures for change are likely to increase.

## REFERENCES

Abrams, D. and M.A. Hogg (2006), *Social Identifications: A Social Psychology of Intergroup Relations and Group Processes*, London: Routledge.

CBS statistics (2020), 'Neve Sha'anán population by age and year 2014–17'.

Droyanov, A. (1936), *Tel Aviv Book*, Historical Archive, Tel Aviv-Yafo Municipality.

Flaxman, M. (2010), 'Fundamentals of GeoDesign', in E. Buhmann, M. Pietsch and E. Kretzler (eds), *Proceedings of Digital Landscape Architecture 2010 at Anhalt University of Applied Sciences*, Berlin/Offenbach: Wichmann, pp. 28–41.

Flint Ashery, S. (2015), 'Public welfare or sectarianism: a new challenge for planning', *Planning Theory & Practice*, 16 (3), 299–318.

Flint Ashery, S. (2017a), '“Decision not to decide”: a new challenge for planning', *European Planning Studies*, 25 (6), 1076–98.

Flint Ashery, S. (2017b), 'Residential choices as a driving force to vertical segregation in Whitechapel', in *The Annual International Conference on Geographic Information Science*, Cham: Springer, pp. 39–57.

Flint Ashery, S. (2018), 'Schelling-type micro-segregation in a Hassidic enclave of Stamford-Hill', *Housing Studies*, 33 (7), 1038–59.

Flint Ashery, S. (2019), 'Vertical examination of residential patterns in Whitechapel', in *Micro-residential Dynamics*, Cham: Springer, pp. 35–49.

Flint Ashery, S. (forthcoming), *Geodesigning Our Future: Urban Development Dynamics in Israel*, Springer.

Flint Ashery, S., I. Benenson and N. Alfasi (2012), 'Between friends and strangers: micro-segregation in a Haredi neighborhood in Jerusalem', *City & Community*, 11 (2), 171–97.

Flint Ashery, S. and R. Steinlauf-Millo (2021), 'Geodesign between IGC and Geodesignhub: theory and practice', in S.C.M. Geertman, C. Pettit, R. Goodspeed and A. Staffans (eds), *Urban Informatics and Future Cities*, Cham: Springer, pp. 431–46.

Graham, S. (2016), 'When life itself is war: the urbanization of military and security doctrine', in D. Simpson, V. Jensen and A. Rubing (eds), *The City between Freedom and Security*, Berlin: De Gruyter, pp. 114–28.

Graham, S. and L. Hewitt (2013), 'Getting off the ground: on the politics of urban verticality', *Progress in Human Geography*, 37 (1), 72–92.

Harris, A. (2015), 'Vertical urbanisms: opening up geographies of the three-dimensional city', *Progress in Human Geography*, 39 (5), 601–20.

Harris, B. (1989), 'Beyond geographic information systems', *Journal of the American Planning Association*, 55 (1), 85–90.

Johnston, R., M. Poulsen and J. Forrest (2007), 'The geography of ethnic residential segregation: a comparative study of five countries', *Annals of the Association of American Geographers*, 97 (4), 713–38.

Maloutas, T., V.P. Arapoglou, G. Kandylis and J. Sayas (2012), 'Social polarization and de-segregation in Athens', in T. Maloutas and K. Fujita (eds), *Residential Segregation in Comparative Perspective*, Farnham: Ashgate, pp. 257–83.

Maloutas, T. and N. Karadimitriou (2001), 'Vertical social differentiation in Athens: alternative or complement to community segregation?', *International Journal of Urban and Regional Research*, 25 (4), 699–716.

Martin, R.W. (2017), 'A quantitative approach to gentrification: determinants of gentrification in US cities, 1970–2010', Department of Insurance, Legal, Studies, and Real Estate, Terry College of Business, University of Georgia.

Saitluanga, B.L. (2017), 'Vertical differentiation in urban space: a case of Aizawl city', *Singapore Journal of Tropical Geography*, 38 (2), 216–28.

SERC statistics (2013), 'The socio-economic ranking of Tel Aviv-Yafo, based on data from the 2008 Census', Center for Socio-Economic Research, Tel Aviv-Yafo Municipality.

Steinitz, C. (2012), *A Framework for Geodesign: Changing Geography by Design*, Redlands, CA: Esri Press.

Steinlauf-Millo, R., S. Flint Ashery and A. Tchetchik (forthco , *Reducing Gaps between Planning and Implementation through Geodesign*, Tichnun.

## INTERVIEWS

Blanero, R. (2.2.2020, 5.3.2020, 2.9.2020), The Socio-economic Research Centre, Municipality of Tel-Aviv-Yafo (in Hebrew).

Horn, E. (19.4.2020, 21.6.2020, 6.9.2020), The Built Heritage Research Centre at the Technion, Haifa (in Hebrew).