Rooftop as a Reciprocal Transformation per Diem

Esen Gökçe Özdamar

Department of Architecture, Faculty of Fine Arts, Design and Architecture, Tekirdağ Namık Kemal University, Tekirdağ 59030, Turkey

Abstract: This article focuses on rooftop architecture as an interface and confrontation between the inhabitants and the contemporary city of İstanbul. The utilitised rooftop is suggested as an alternative habitable space in high-density urban environments and wherever there is a shortage of housing. The visibility on the rooftop displays signs of the effects of the limit to growth, such as economic factors, and is affected by the environment, and the utilization of space depends on the needs of the inhabitants. In today's conditions, living in rooftop goes beyond the necessity actions such as dominating the landscape, looking, seeing and being seen, and bringing concepts such as social justice and chaos in the city.

1 Introduction

"In the city, the penthouse is the place to be. It is close to heaven, far above the din and smells of the city. There is nobody above you, meaning that you are king of the mountain. Elevated above the masses, you can survey what surely must be your domain. The penthouse represents the highest achievement any city dweller can achieve"[1].

As Koolhaas mentions, the roof is one of the elements and micro-narratives of building detail which shows the "transition from hunter-gatherer to civilization"[2], however, very little is known about its form. In the modern era, the rooftop or penthouse appeared in New York in the Art Deco apartment buildings of the 1920s and 1930s. They were regarded as the symbol of highest achievement and elegance through displaying division and economic status[3]. Pre-war apartments and flats from the 1950s, 1960s and 1970s in Europe were topped up with a new layer for housing units. The pneumatic and prosthetic rooftop devices installed by Haus-Rucker-Co in the late 1960s and the early 1970s emerged as an example of analysis of the social activities on New York rooftops[4].

As Melet and Vreedenburgh note, "building on the roof is still regarded as topping up". However, no addition in terms of social, functional and architectural terms was added and there was only a denser use of the land. This kind of "topping up created negative publicity for rooftop construction"[5]. The rooftop has influenced both contemporary urban nomad penthouses and parasitic architecture in terms of vertically establishing a new layer to the existing fabric. In his book "Five Points for a New Architecture", Le Corbusier mentions roof garden as one of the rules of a new architectural system and which becomes "a variation on the medieval theme of the *hortus conclusus*, a closed garden of contemplation set apart from the surrounding landscape, which is, however, visible through a continuous horizontal window in the terrace wall"[6]. The roof functioned to reclaim additional living space as in the case of Villa Savoye[7] and the elevated roof in High Court Building in Chandigarh "protect the rooms within from direct exposure to the sun, with broad openings for moving air to carry away built-up heat"[8]. Some other examples include Le Corbusier's paddling pool on top of his Unité d'Habitation housing block in France, Fiat's 1920s Lingotto factory roof-top conversion by Renzo Piano in Torino (1983-2002), Haus-Rucker-Co.'s Rooftop Oasis Structures, a never-constructed avant-garde project of pneumatic structures that were

intended to facilitate alternative behaviors in the city in New York (1971-1973), and JDS Architects' Birkegade Hedonistic Rooftop Penthouses in Copenhagen (2011).

In these cases, the rooftop adds a new layer to the dynamism and diversity of the city and is seen as an adaptive strategy to creating a complex pattern, thus providing a more sustainable context[9]. On the other hand, we can see many cases of built rooftops in Singapore, Hong Kong, China, and on the tops of high-rise buildings in Latin American cities where there is a high urban density. The rooftop has provided a space usually for housing to the shortage of space in the city and in the living space. In urban life, the rooftop has served as a functional and potential space for changing needs within time.

The utilitised rooftop is suggested as an alternative habitable space in high-density urban environments and wherever there is a shortage of housing. As Pomeroy notes, in these vertically developing cities, rooftops can be seen as spaces for supporting the densification, "providing greater surface area for living and playing". "As a living space, they could help solve the increasing inner-city migration issues by providing new homes without compromising land area or the existing urban grain". Sometimes, the rooftop is regarded "as a playing area" for views or "recreational activities". They can also serve to replenish the loss of open space for civil appropriation in their inclusion within the existing urban space vocabulary of the square, street, arcade, void-deck, concourse, and skyway[10].

For functional needs, the rooftop has been utilised for facilities such as rainwater collection, edible gardening and farming, food production, urban beekeeping or green areas as well as energy systems; sun collecting and wind turbines in dense urban environments. Martínez "reinforces the validity of open air roof-terrace dwelling by referring to vernacular, climate- responsive architecture. He does at times concede, however, on the role of roof shelter to temper such terraces[11].

On the other hand, the rooftop creates an image representing both inaccessibility and accessibility to an equal share of public land, and the city extends to incorporate aspects of nature, culture, and settlement, as well as nomadism and mobility. These unconventional functions of the rooftop represent the human instinct of occupying land in the process of adapting to metropolitan life. They also rep-resent the use of land in self-organizing formations instead of defined strategies, as well as breaking free from a defined set of

rules. In some ways, the rooftop functions as a reaction to the intended meanings of the built environment, and to the way this environment is constructed and limited by legislation and various actors in government, architecture, and urban planning. These formations are due to factors such as immigration, population growth, and the densification of the built space in the city. Metaphorically, the illegal roof, which represents the nomadic culture of the city, has emerged as the potential to produce new formations.

2 Roof and rooftop in traditional architecture in Turkey

Silverstein defines the roof as "the most primitive element of architecture", which has symbolic meanings in every culture[12]. "The roof itself only shelters if it contains, embraces, covers, surrounds the process of living. This means very simply, that the roof must not only be large and visible, but it must also include living quarters within its volume, not only underneath it"[13]. For Rapoport, "'roof' is a symbol of home, as in the phrase 'a roof over one's head,' and its importance has been stressed in a number of studies. In one study, the importance of images-i.e., symbols-for house form is stressed, and the pitched roof is said to be symbolic of shelter while the flat roof is not, and is there-fore unacceptable on symbolic grounds"[14].

In traditional settlement patterns, the roof has been mainly used for shelter. In Çatalhöyük (7400 BCE), the 13,5 hectare-area of residential quarter, entry to each house was by means of a hole in the flat roof that also served as the vent for the smoke of the central hearth[15].

Rooftop as an addition emerged in traditional Turkish house in the form of *Cihannüma*, derived from functional needs. In the Ottoman residential architecture, the differences in climate, nature and folklore played a role in the characteristics of the house. One of these characteristics is the *cihannuma*[16], an "airy room on the facade or on the top floor, sometimes in the form of a belvedere or *cihannüme*"[17]. Cihannüma, meaning "one viewing the world" in Persian[18], are rectangular, polygonal or circular rooms whose front and sides are covered with glasses and windows[19]. They are usually "at heights exceeding human height", with fully independent on the roof, with four-way views and a seating area, are accessed by stairs mainly from *selamlik* and built sometimes on the front of the

roof, or in the form of independent tower or pavilion mostly seen in palaces and mansions. Mostly used for sightseeing, resting, cooling in hot summer days and as a corner to escape the busy crowd in the house, these spaces which determine feature of traditional residential Ottoman Architecture[20].

Today, in hot climates in Turkey, the flat roof, also named as the dam, is used as a bedroom on hot summer days where the whole family sleeps and sits at nights on a demountable furniture[21].

3 The rooftop as a symbol of transformation in Istanbul after the 1950s

Throughout the last 10 years, a massive transformation has shaped not only the form, but also the content of İstanbul. The urban open space has been profoundly affected by certain forms of invasion, such as the rapid proliferation of residences, shopping centers, gated communities, and gentrification sites that have invaded the city. Urban growth, renewal, and transformation have radically and simultaneously altered the self-organized nature of the city, promoting more narrowly-defined ways of living–in other words, creating a more homogeneous urban space. The government's establishment of Mass Housing Administration (TOKİ) houses was a turning point in informal city growth, characterized by dense settlements. These rationally planned dense settlements were easily distinguished from the organic, unplanned, informal, and rhizomatic pattern of the city's origin. Today, with a great increase in TOKİ housing blocks, the city is becoming increasingly segregated and fragmented. The phenomena of formal and informal sprawl and

redevelopment is occurring simultaneously.

In the last 10 years, İstanbul has become increasingly "illegitimate" because of the rise in gated communities, gentrification trends, and more importantly the unequal share of public land. The grand project of the commercialization of İstanbul as a global city-starting in the 1990s and becoming increasingly prominent since the 2000s-has begun to display discouraging results, including the displacement of local residents to the peripheries of the city.

The intervention of residents in the built environment has been portrayed as a negative catalyst. These differences have been erased by a top-down approach to urban planning, which diminishes diversity in housing patterns. In İstanbul, this top-down approach has become the dominant practice that defines the borders of design and taste, primarily through media advertisements, as real-estate agencies and construction firms have become the pioneers in determining patterns of housing consumption. The reflections of current policies on the planning of urban space underline a condition in urban space, which at once transforms both residents and urban space.

Historically, the housing patterns of İstanbul had two forms: "the organic, unplanned form and the rational, planned form made by landlords and speculators"[22]. In the current situation, government planning has replaced informal development, from which much of İstanbul's urban form originates. The city is becoming increasingly segregated and fragmented. The phenomena of formal and informal sprawl and redevelopment occur at the same time. Flows of migration and immigration patterns are defining a new landscape (Figures 1-6).

Figure 1. A Rooftop, photographer and copyright holder, Esen Gökçe Özdamar

Figure 2. Rooftop in İstanbul, photographer Hüray Kazan, copyright holder Esen Gökçe Özdamar

Figure 3. Rooftop in İstanbul, photographer Hüray Kazan, copyright holder Esen Gökçe Özdamar

Figure 4. Rooftop in İstanbul, photographer Hüray Kazan, copyright holder Esen Gökçe Özdamar

Figure 5. Rooftop in İstanbul, photographer Hüray Kazan, copyright holder Esen Gökçe Özdamar

Figure 6. Rooftop in İstanbul, photographer Hüray Kazan, copyright holder Esen Gökçe Özdamar

In İstanbul, informality is taken as a strategy in planning. Informal housing is not currently taken as a serious issue. However, housing authorities try to create alternatives to the problem of the *gecekondu* by providing appropriate and accessible housing that does not provide diversity. İstanbul is a city without roots, with its multi-centers, polyvalent forms of content and meaning overlapping each other and it is a city with different 'dimensions in motion', as opposed to trees or their roots. There is no singular root. By virtue of its indeterminable urban nature, it is hard to distinguish a specific or planned pattern of urbanisation in İstanbul. However, throughout the city's history, İstanbul's genetic codes have depended on a multi-centered character. İstanbul can be categorised as a rhizome-city, as defined by Gilled Deleuze and Felix Guattari. Deleuze and Guattari define rhizome as something that "connects any point to any other point. It is composed not of units but of dimensions, or rather directions in motion. It has neither beginning nor end, but always a middle (milieu) from which it grows and which it overspills"[23].

These homes contravene both the city's construction regulations and landowner's rights. For the construction of a *gecekondu*, materials such as stones and bricks were prepared secretly during the daytime and plastered with mud. These small houses were then built at night, with the help of neighbours, generally in the form of a single room in which the entire family resided[24]. However, these rooms lacked basic amenities, such as a separate WC or a kitchen. Instead, all of the housing facilities had to be incorporated into the same space. This condition resembled the characteristic style of traditional Turkish houses, in which food preparation, bathing, and sleeping were all conducted in the same room and built-in furniture for these purposes was

integrated accordingly. In Turkish house, "basic principles have not changed at all and both the Turkish and the Turkish spatial organizations have been shaped according to these basic principles. Just like in a tent, each room is an indoor environment where sitting, resting, eating, working, sleeping and even bathing can be continued". As Eruzun mentions, "the combination of these areas of action plays an important role in the formation of the room"[25].

In contrast to the traditional house, the single room that formed a *gecekondu* was flexible in the sense that later additions could be implemented, such as building either below or above the ground level as the family grew, or partitioning the space into several rooms, based on the economic situation of the residents. Most of these residents had immigrated to İstanbul to work in the construction sector. The house grew according to the need and economic condition of its dwellers. These dwellers were probably the ones who experienced the change, growth, and sprawl in İstanbul most directly, both as outsiders and insiders, by constructing their space themselves. Sometimes, the addition of a vegetable garden beside a *gecekondu* was observed. These vegetable gardens could sometimes support a small neighbourhood with food; the immigrants became urban farmers.

An illegal rooftop is also a *gecekondu* with the addition of an upper mezzanine, constructed on top of a building without the approval of the appropriate building authorities. The illegal rooftop can be built on top of a historical ship that is to be restored, on a school/university or government building, or on ancient ruins, like a parasitic alien with many different functions and potential uses, as we can observe in İstanbul. One can affix a new roof to an existing structure, add a platform, install a roof dwelling structure, locate the structure on the host (i.e., load bearing columns), and attach a lightweight structure (made from steel or aluminum). It is worth noting that the illegal rooftop is not restricted to low-income economic conditions, but is also observed in the construction dwellings by high-income groups, where contemporary materials such as steel are used for the construction of fugitive rooftops (which in such cases are often raised with a crane after permission is obtained illegally). These illegal rooftops are most often observed as a smaller mezzanine with a terrace, or a floor with steel construction that is later transformed into a space with further additions. Typically, the exposed steel pillars rising above the columns in the terrace floor of a building indicate the possible elevation of the building in the near future. In İstanbul, the construction of the illegal rooftop has become a dominant feature of the cityscape (Figure 7).
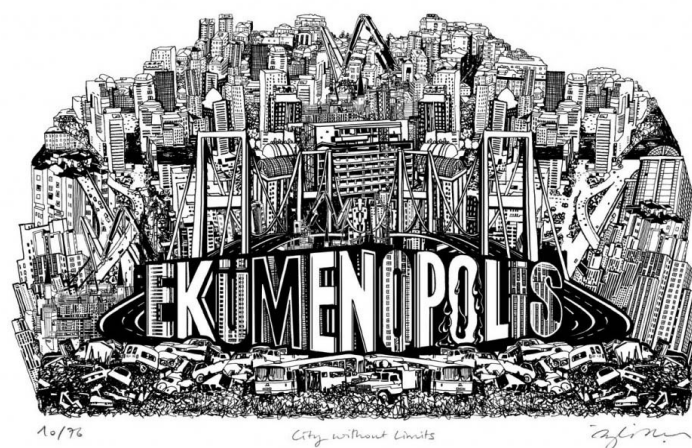

Figure 7. A documentary film by Imre Azem, Ecumenopolis: City Without Limits, 2011[26] Rooftop architecture invades the city. The rooftop signs the interaction between human within the built architecture and environment in the city. Ecumenopolis: City Without Limits (2011), a documentary film by Imre Azem displays the contradiction between "modernization" and urban renewal in İstanbul. The film reveals how speculative investments and the rapid growth of the city of İstanbul create a polarised vision for the future of the city.

One pragmatic idea behind urban roofing lies in its parasitic or symbiotic character, a space that benefits from the existing infrastructure and amenities such as sewage and electrical lines while it requires only that one plug into existing urban sprawl because renewal is highly expensive. The city centers are becoming highly expensive and prices are going up because of land speculation.

Therefore, the rooftop in İstanbul has a self-organizing and unplanned existence; it is adaptable and transient. The

rooftop reveals the boundaries between individuality and community. Although it seems to be isolated from the cityscape, the rooftop reflects a liminal edge between existence and annihilation in the city. Herein, through its parasitic development, a new form of confrontation emerges between architecture, urban life, and nature.

However, the question remains: can a rooftop function as a public space, or can it form a symbiosis between public and private interests in the design process and in the management thereafter? There are currently no statistics on the space that fugitive rooftops yield or invade, due to their liminal condition in which they may or may not be illegally built. The recognized development projects of a building primarily occur during the official planning and construction stages; later modifications or upgrades can generally be conducted on-site and sometimes not recorded.

4 Blurring boundaries between the space of visibility and non-visibility

Ian Borden defines boundaries: "as the edge of things as the spatial and temporal limit between the here and there, in and out, present and future. The boundary in all its manifest forms-wall, facade, gate, fence, river, shore, window-appears as a discrete separation between alternate sides of its magical divide; things are dispersed and ordered in space. However, for postmodern urban space, in which architects attempt a wrapping and layering of space, and where urban managers increasingly review its representation and control, nothing could be farther from the truth; boundaries are not finite, but zones of negotiation"[27].

"For Simmel, the 'boundary' is not a spatial fact with sociological consequences, but a sociological fact that forms itself spatially". Boundaries do not cause sociological effects in themselves, but are themselves formed by and in between sociological elements[28]. The visibility on the rooftop displays signs of the effects of the limit to growth, such as economic factors, and is affected by the environment, and the utilisation of space depends on the needs of the inhabitants. There are different forms of migration that are hybridising the city: the flight of people flocking to the gated communities, new inhabitants settling at the edge of the city, eviction from the center and gentrification

areas attracting a new crowd. From a local perspective, this has resulted in the spatial segregation of residents of a 21st century mega-city[22]. Therefore, we can ask if a new relationship between the act of constructing a rooftop - whether legally or illegally - and an equal share of land can be established in İstanbul. In this age of uncertainty, diversity, and differentiation, the contemporary city is being reshaped under urban transformation, where a different form of illegality and inequality is emerging. In the contemporary city of illegal rooftops, expressions of values like power, economy, and society are all transforming into a single norm. In order to follow global trends, a typical form of architecture is invading the areas where the rooftops once existed.

Renewal or upgrading occurs simultaneously with destruction, usually involving the relocation of residents. The tendency towards gated communities and attempts to live with people who share similar lifestyles manifests a greater segregation than already exists. However, in İstanbul, where the rooftop displays something invisible in the city, the situation is particularly bleak, in the sense that it symbolizes inequality in the share of public land, the ineffective use of public space. Informal housing in İstanbul is not yet taken as a serious issue; however, housing authorities attempt to create alternatives to the problem of the *gecekondu* by providing appropriate and accessible housing for not only immigrants, but also local İstanbul residents.

5 Conclusion

Politically and strategically, İstanbul as a rooftop city reveals the perspective of inhabitants and their ability to cope in the space between top-down planning and self-organization. For one thing, planning culture does not have a grounded root in İstanbul, while self-organization has been practiced since İstanbul was first settled. In current housing policies in Turkey, there is too much emphasis placed on imitating global trends and transforming cities into competitive brands, and these top-down strategies lack the support of local communities.

On the other hand, architecture and urban design need to amalgamate possible forms of existence, relations, and differentiation by taking them into its programmatic structure. Therefore, the fugitive rooftop,

whether it displays visibility or invisibility, increases our metaphorical thinking about the borders of invisible realities; this encounter emphasizes hybridization of the city through interaction with - and intervention in - architecture. The rooftop city inspires a new discussion about residents' involvement or attachment to the city, and represents a new metaphor for the potentiality of articulating the city through dynamic random occurrences. These interventions in everyday practice in the built environment underline new forms of the self-organization of space through interaction and communication. However, this intervention also reveals that the meaning and the formation of a city is a more open and dynamic hybrid structure.

Conflict of interest

No conflict of interest was reported by all authors.

Acknowledgement

References

[1] Melet E., Vreedenburgh E. Rooftop Architecture: Building on an Elevated Surface. Rotterdam: Nai Publishers, 2005:7.

[2] Feng J., Zhenning F., Petermann S., Koolhaas R., Amo, Harvard Graduate School of Design, Boom I. Roof. Italy: Marsilio, Venice Architecture Biennale, Ele-ments of Architecture, 14. International Architecture Exhibition, 2014:404.

[3] Melet E., Vreedenburgh, E. Rooftop Architecture: Building on an Elevated Surface. Rotterdam: Nai Publishers, 2005:8.

[4] Haus-Rucker-Co, viewed 24.06.2019, http://www.spatialagency.net/database/haus-rucker-co.

[5] Melet E., Vreedenburgh, E. Rooftop Architecture: Building on an Elevated Surface. Rotterdam: Nai Publishers, 2005:10.

[6] Others are pilotis, the free plan; the horizontal window; and the free façade. Colquhoun A. Modern Architecture, Oxford History of Art. Oxford, New York: Oxford University Press, 2002:148, 150.

[7] Roth L. M., Roth Clark, A. C. Understanding Architecture, Its Elements, History, and Meaning. New York, London: Routledge, 2014:581.

[8] Roth L. M., Roth Clark, A. C. Understanding Architecture, Its Elements, History, and Meaning. New York, London: Routledge, 2014:116.

[9] Melet E., Vreedenburgh, E. Rooftop Architecture: Building on an Elevated Surface. Rotterdam: Nai Publishers, 2005:9.

[10] Pomeroy J. Room at the Top-The Roof as an Alternative Habitable/Social Space in the Singapore Context. Journal of Urban Design, 2012, 17(3):413-24. doi:10.1080/13574809.2012.666176.

[11] Medio S. The Unresolved Rooftop. Archnet-IJAR, International Journal of Architec-tural Research, 2012, 6(2):118, 115-31. doi: 10.26687/archnet-ijar.v6i2.87.

[12] Silverstein M. The First Roof: Interpreting a Spatial pattern. In: Seamon D., (ed.). Dwelling, seeing, and designing: toward a phenomenological ecology. Albany, New York: State University of New York Press, 1993:77, 77-101.

[13] Alexander C. A Pattern Language: Towns, Buildings, Construction. New York: Oxford University Press, 1977:570.

[14] Rapoport A. House Form and Culture. Englewood Cliffs, N.J.: Prentice-Hall, 1969:134. (Originally from: Cramer R. D. Images of Home. AZA Journal, XLVI, 1960, 3:41, 44).

[15] Hodder I. Çatalhöyük, Leoparın Öyküsü, 2017, İstanbul: Yapı Kredi Yayınları.

[16] Çetin Y. Osmanlı Konut Mimarisinde Cihannümalar (Seyir Köşkleri). Sanat Tarihi Dergisi, 2008, 17(2):45, 43-58.

[17] Bertram, C. Imagining the Turkish House, Collective Visions of Home. Austin: University of Texas Press, 2008:33.

[18] Originally from Kanar M. Farsça-Türkçe Sözlük, İstanbul, 2000:401.

[19] Originally from Arseven C.E. Cihannüma", Sanat Ansiklopedisi, C. 1, İstanbul, 1983:22, Akın N. Ev, Türkiye Diyanet Vakfı İslam Ansiklopedisi, C. 11, İstanbul, 1995:510).

[20] Çetin Y. Osmanlı Konut Mimarisinde Cihannümalar (Seyir Köşkleri). Sanat Tarihi Dergisi, 2008, 17(2):44, 45, 46, 47, 43-58.

[21] Alioğlu E. F. Mardin, Şehir Dokusu ve Evler. İstanbul: Tarih Vakfı, 2003:62.

[22] Kuipers S., Broekema H. Failed Policy, Successful Architecture: Self-Made City Istan-bul, 2013. Viewed 12.06.2018, http://failedarchitecture.com/failed-policy-successful-architecture-self-made-city-istanbul/.

[23] Deleuze G., Guattari F. Thousand Plateaus: Capitalism and Schizophrenia. Minneapolis: University of Minnesota Press, 1987:21.

[24] Akbulut MF, Başlık S. Transformation of Perception of the Gecekondu Phenomenon. METU JFA, 28(2):6, 1-44. doi: 10.4305/METU.JFA .2011.2.1.

[25] Eruzun C. Kültürel Süreklilik İçinde Türk Evi. Mimarlık Dergisi, 1989, 236(4):68, 68-71. viewed 17.06.2019, http://dergi.mo.org.tr/dergiler/4/566/8580.pdf.

[26] Azem I. Ecumenopolis: City Without Limits, 2011. Viewed 01.08.2015, http://http://www.ekumenopolis.net/.

[27] Borden I. Thick edge: Architectural Boundaries in the Postmodern Metropolis. In: Borden I., Rendell J., (ed.). InterSections: Architectural history and critical theory. London and New York: Routledge, 2000:222, 221-46.

[28] Borden I. Thick edge: Architectural Boundaries in the Postmodern Metropolis. In: Borden I., Rendell J., (ed.). InterSections: Architectural history and critical theory. London and New York: Routledge, 2000:225, 221-46.