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Reading the change in local urban forms under global processes. Towards the definition of a hybrid lens

Zeynep Tulumen¹

¹ Transitional Morphologies, DAD, Architecture, Politecnico di Torino, Italy

Abstract

Within the cities in transition, the local forms and realities are being shaped progressively by global trends: the social and technological changes that have characterized our recent decades. Plus, in certain contexts where economic and political circumstances are unstable, market forces are causing more smoothly sharp and controversial transformations. These are portions of urban land where rent gaps are formed as a result of a discrepancy between the supply and demand curve. The change in urban form can be a hint for the closing rent gap, nevertheless alone itself is not sufficient for accurate diagnoses. In other words, a holistic understanding of such realities requires an inquiry of the interplay between non-material and physical features of the urban tissues. In this context, in a broader framework, this study aims to contribute in methodological terms, to the challenge of understanding complex city systems by exploiting the instrumentality of urban morphology for a sophisticated reading of transformation processes. The selected neighborhood of Istanbul, parcel that has experienced gentrification process serves as a sample to argue what should be a trans-disciplinary way of reading and representing contemporary transformation processes. Through a microscopic reading of the fabric, the goal of this paper is to demonstrate how to put in relation systematically both tangible and intangible data of the built environment. For tangible data, morphological information, the plot system, is indented and for intangible data, land values are connoted. Finally, urban morphology as a discipline, if integrated with the urban economy field, could empower its potential to comprehend complex urban realities.

Keyword: processes, rent-gap, externalities, plot system, trans-disciplinary

Space, morphology, and non-formal linkages within cities in transition

The fact that urban spaces are rather dynamic, they are in process of continuous transformation is incontestable. The paradigm of transition has been adopted to study morphologies not as the result of a process but as the process itself (Trisciuglio et al., 2021). Nevertheless, such transformation processes can be differentiated depending on their pace in a time frame. The former urban morphologists, Muratori (1960), Conzen (1960) have been studying mainly transformations that are occurring in a long duration as a result of changing socio-economic situations and cultural lifestyles. Hence, the common practice in urban morphology is to look at the present, study the past and project the future. On the contrary, today, in certain contexts where economic and political circumstances are unstable - within cities in transition, in global competition - local tissues are undergoing rather quick and controversial permutations. Together with the centralization of the service industry, gentrification is being adopted as a common transformation model in such geographies. "Waterfront redevelopments, the rise of tourism and convention complexes in central cities, and fashionable high priced shopping districts" have been described as "spatial equivalents" of gentrification within the cities in transition (Ding et al., 2015). In those places notions like economy, property, real estate, and power all too

often dominates the urban land, its development, and transformation. Consequently, the implicit question that arises is: to what extent the field of urban morphology should embrace those bits of knowledge and how? In contexts where no space is being left to morphologists to put in practice their design standpoint, which role can this discipline undertake?

As a general rule, urban morphology gives its contribution to the field through the study of physical form. Although many morphologists exclude non-formal conditions and correlations in their study, some think that revealing those correlations is the leading scope of research and that urban morphology as a discipline should “aspire to as holistic an interpretive synthesis” (Scheer, 2015, Conzen, 2013). Kroft and Malfroy (2013) draw a very thin line to this statement, by stressing that a good urban morphologist should attempt to disclose the aspects of the urban form that slip the agents’ notice who and what influences, shapes that form unconsciously. They give the examples of “burgage cycles” (M. R. G. Conzen, 1960) and “insulation processes” (Caniggia and Maffei, 2001), as an effort of modeling the process of change in urban space related to form. In this sense, urban morphology is seen as an important mean through which non-formal conditions, processes are configured naturally. Besides such epistemological discourse, more recently there has been interesting empirical research by Bobkova (2019) who discussed the potential of urban morphology in supporting theories from different disciplines. The author uses the morphological depictions and analysis of plot systems to augment the spatial comprehension of a specific economic theory explained by economic geographers. This study by Bobkova is a significant attempt to enlarge the orbit of urban morphology and to engage a broader collective to research activities of morphologists.

In this context, this paper will attempt to give a spatial comprehension, through morphological instruments, to an economic theory called “rent- gap” and externalities with the scope of, on the one hand, to understand gentrification processes that occur under the market forces and, on the other hand, to put in question the utility of urban morphology in testing theories coming from other fields. Hence, first, a brief explanation of the rent-gap theory will be given. Afterward, the methodology of the empirical work will be introduced and finally, emergent findings will be discussed.

Rent-gap and positive externalities

An important concept to acknowledge when studying gentrification in contemporary city is the theory of rent gap and related urban externalities deriving from the field of the urban economy. The rent-gap theory by geographer Neil Smith represents the discrepancy among the actual capitalized ground rent of land and potential rent that could be capitalized under the highest and best use of that land, ie. through its most profitable use (Smith, 1964). According to this theory, depreciated or abandoned areas are exposed to a period of reinvestment “once the rent gap is wide enough” on the part of agents from the land and property market seeking for localities of gainful investment. The idea is that, when the difference between former and

latter economic values, is wide enough, all the inertias associated with local urban circumstances that block a regeneration process can be eliminated -in a natural or forced way- fast and strikingly. As a result, a noticeable change, an amelioration, occurs in the depreciated urban area. This change, in certain contexts, may result in higher densities, consolidation, land use adaptations depending on the context. Moreover, the closure of the gap has to do with the creation of marginal social benefits and strong positive externalities in the overall regenerating area. In urban economics, an externality arises when some of the costs or benefits of a transaction are experienced by someone external to the transaction (Sullivan, 2012). When a neighborhood becomes old enough, at a certain moment, its reconstruction reaches an optimum point, but a single renovation is not enough since the advantages of individual amelioration would be distributed among others (Miyao et al., 1987). To close up the gap, the neighborhood needs to internalize what the economists have called “housing upkeep externalities” through a collective act.

Measuring externalities through plot system

As mentioned above, the paper wants to understand the transformation of the built space in the light of economic theories and make them visible through the medium of urban morphology. Within this scope, it proposes to measure positive externalities related to the rent-gap mechanism through a neighborhood taken from the city of Istanbul, which has experienced a gentrification process in the last two decades. The previous work presented in ISUF 2020 focused on describing formal transformations in three different parts of Istanbul as a general diagnosis of contemporary market-led transformations (Tulumen, 2020). This paper, instead, uses one of those samples, Karakoy, as a methodological test ground to indicate a probatory direction. Karakoy is a historical commercial neighborhood that has been changed from one of the most degenerated neighborhoods (characterized by low-class commercial activities) to one of the trendiest places, with a focus on tourism and entertainment sectors, by investors and entrepreneurs (Tulumen, 2020).

For the analysis, two types of data, morphological and economical, are used to perform a hybrid reading. Morphological data operates as a foundation where the physical aspect of the urban space is merged with the socio-economic one. In this sense, plot systems are used since they are, at the same time, both physical, legal, and economical entities (Kropf, 2018; Bobkova, 2019), thus, an appropriate unit to interrelate the different processes that drive urban transformations. Concerning economic data, the fair value of land is used to measure positive externalities that should have been hypothetically created through the closure of the rent-gap. In urban economics, one of the most solid ways of measuring positive externalities is to look at the changes in land values since it is assumed that the benefits and costs are capitalized into a rise or a fall in land price (Miyao et al., 1987).

All the maps have been created using cartographic information acquired from the Metropolitan Municipality of Istanbul (IMM) at the headquarter in Fatih, Istanbul. To what extend the observation period is concerned together with the available database, maps with realization dates 2006, 2013, and 2017 at the scale of 1:1000 were purchased. From these maps information on property limits, building footprint, height and function

were extracted. In the meantime, the data on the fair value of land was obtained from the municipal database in CSV format for each year starting from 2006 until 2019. In the municipal records, the value of land is indicated through the streets for each administrative neighborhood boundaries. A total of 232 street values distributed in 4 neighborhoods were analyzed, but only the ones that remain inside the study area are taken into consideration.

For the assessment, both types of information were initially treated separately through a longitudinal study. On the one hand, plots on which a transformation activity occurred were put chronologically in order under three periodical time frames from 2006 until 2019. The information on transformation activity was gathered from local media publications and field surveys. In this way, the steps of the transformation were sorted from its beginning until nowadays (Image 1). On the other hand, longitudinal data on land values for the same plot system were collected in a datasheet. To assess the change rates a simple formula was used by the software R:

$$\% \text{ change} = \frac{[\text{final value} - \text{initial value}]}{[\text{initial value}]} * 100$$

Later, a ranking of the increasing rates from lowest to highest was made through a probabilistic distribution, and values were divided into four equal quarters (Table 1). To present these numerical data on maps, the plots that are facing assessed streets were marked on the maps. Solely plots that remained in the fourth quartile, as the highest value, are drawn to reveal the areas where the maximum benefit has been capitalized on. In this regard, economic data was contextualized and embedded into physical space.

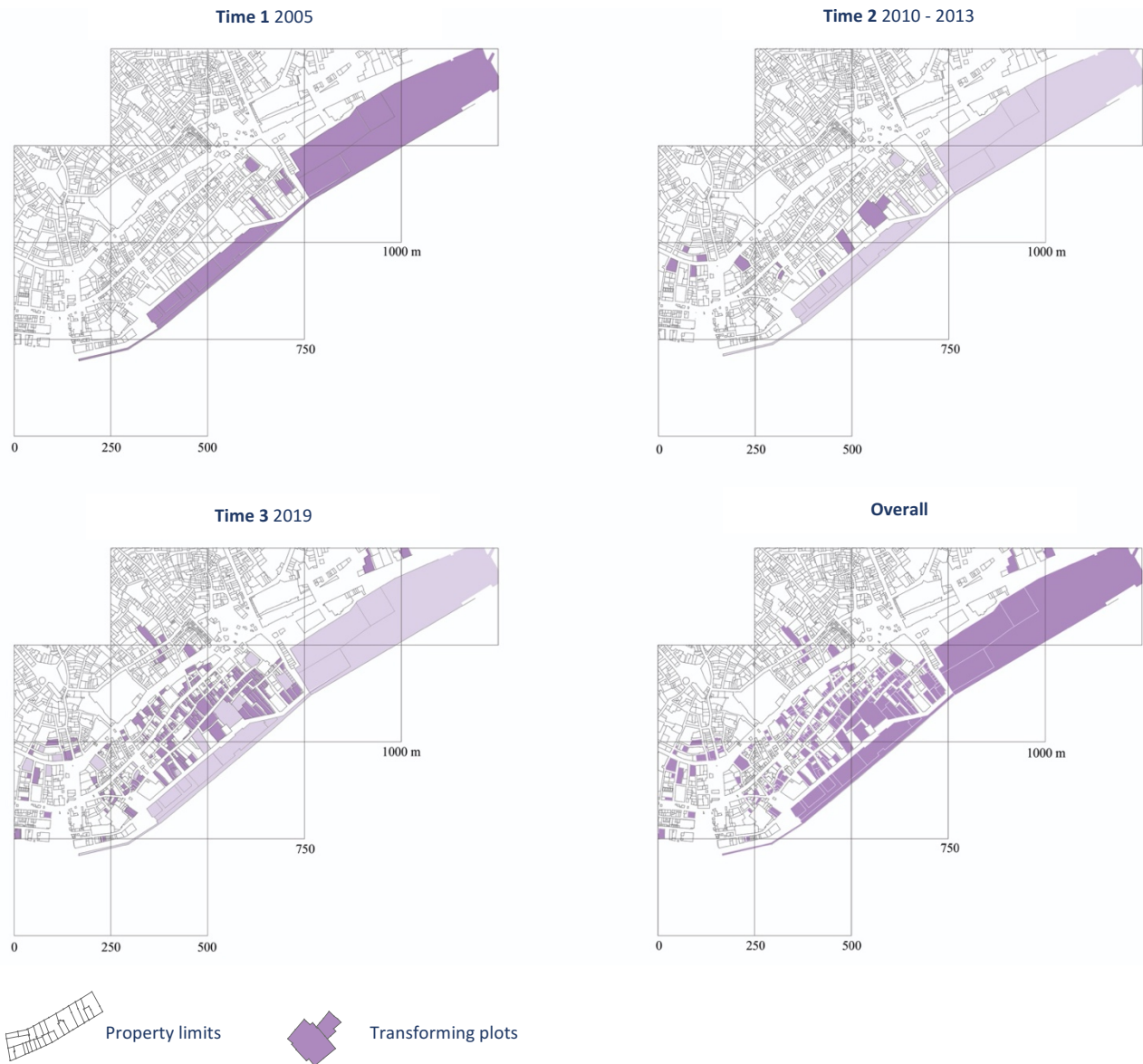


Figure 1. Neighbourhood's transforming plots in sequence.

Table 1. The quartiles of land value change rates between 2006 and 2013 in one out of four neighbourhoods. 0-25 presents the lowest values, 75-100 present the highest values.

| Quartile | Street Name | Quartile | Street Name | Quartile | Street Name |
|----------|------------------------------|----------|------------------------|----------|-------------------|
| 0-25 | Galata şarap iskelesi sokağı | 25-50 | Erişteci sokağı | 50-75 | Halil paşa sokağı |
| 0-25 | Gümrük sokağı | 25-50 | Fransız geçidi sokağı | 50-75 | Karantina sokağı |
| 0-25 | Hamam sokağı | 25-50 | Havyar han içi sokağı | 50-75 | Kölemen sokağı |
| 0-25 | Kemankeş cad. | 25-50 | Karanlık fırın sokağı | 50-75 | Odun meydanı sk. |
| 0-25 | Kemeraltı caddesi | 25-50 | Karatavuk sokağı | 75-100 | Demirciler sokağı |
| 0-25 | Kılıç alipaşa mescidi sok | 25-50 | Kiliç ali paşa caddesi | 75-100 | Döşemeci sokağı |
| 0-25 | Maliye caddesi | 25-50 | Mumhane caddesi | 75-100 | Fransız çıkmazi |

| | | | | | |
|-------|---------------------------|-------|------------------------|--------|-----------------------|
| 0-25 | Mangir sokađı | 25-50 | Rihtim aralıđı | 75-100 | Gece kuşu sokađı |
| 0-25 | Murakip sokađı | 25-50 | Tophane iskele caddesi | 75-100 | Gümüş halka sokađı |
| 0-25 | Necati bey caddesi | 25-50 | Yemişđi hasan sok. | 75-100 | Hoca tahsin sok. |
| 0-25 | Rihtim caddesi | 50-75 | Akçe sokađı | 75-100 | Karaali kaptan sokađı |
| 25-50 | Ali paşa deđirmeni sokađı | 50-75 | Ađađ tulumba sokađı | 75-100 | Yuva sokađı |
| 25-50 | Ali paşa medresesi sokađı | 50-75 | Baş cerrah sokađı | 75-100 | Çelebiler sokađı |
| 25-50 | Denizciler sokađı | 50-75 | Dericiler sokađı | | |

Linking economic and morphological processes

From the construction of such maps, some observations can be laid out. First of all, revealed transformations in urban plots take place in a row, they are sporadic and follow an exponential trend in a limited period. The first plot that goes under redevelopment is a large public land that works as a catalyst for the regeneration of smaller private parcels which are situated in proximity. Second, each existing plot has a different monetary value determined by market trends. The change rate calculated through R is characterized by an overall increase in the prices of single plots. This increase in the land prices, observed for the period in question together with intense parcel transformations, can be a sign of the closing rent gap. Nevertheless, to confirm this, the presence of rising positive externalities related to plot transformations needs to be recognized in the area. As a consequence, when looking into the highest value creation after the first series of transformations, it is noted that the maximum increase in the land value within the neighborhood does not necessarily take place within the plots where the transformations occur. But it is rather present in plots whose initial values were the lowest compared to the rest (Figure 2 and 3). These are the plots facing narrow secondary streets where vehicle transportation is limited. This means that the higher value was created within the most vulnerable plots thanks to initial plot transformations which have contributed to the creation of positive externalities. Finally, documented transformations come with formal implications, nevertheless, they can be observed going into micro-scale. In the tissue of Karakoy, a form of consolidation and densification is revealed (Figure 4). Unification of plots, increase in building heights and volumes are widespread in the area. They can be decoded as spatial indices of the gentrification process and closure of the aforementioned rent - gap.

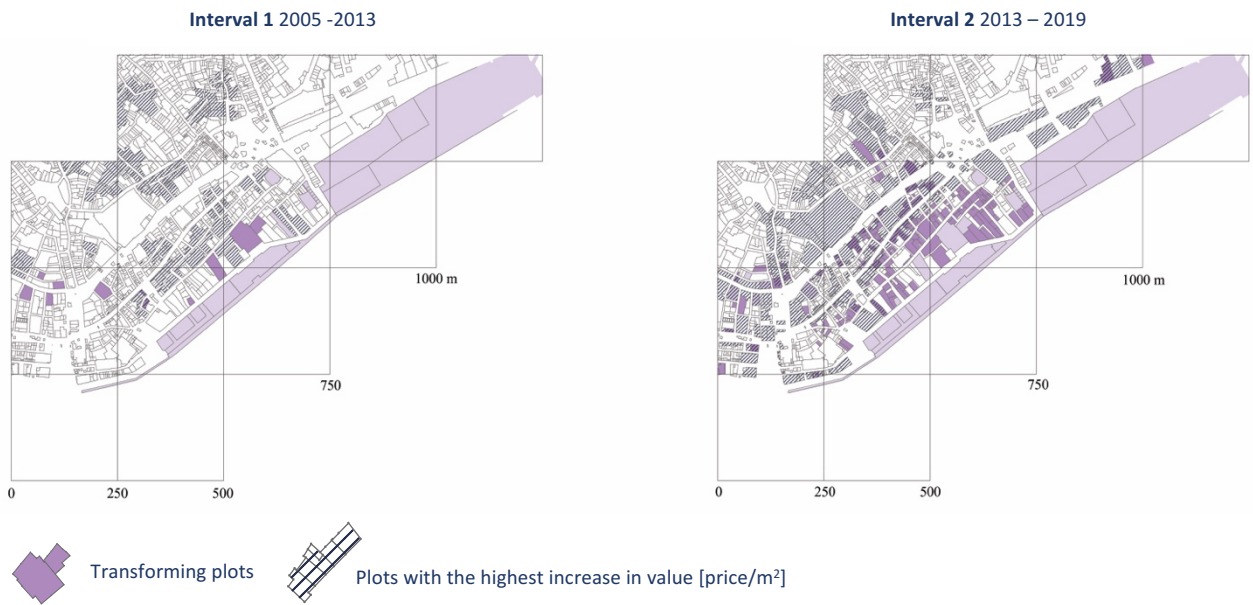


Figure 2. Transforming plots in relation to the plots with the highest increase in their value.

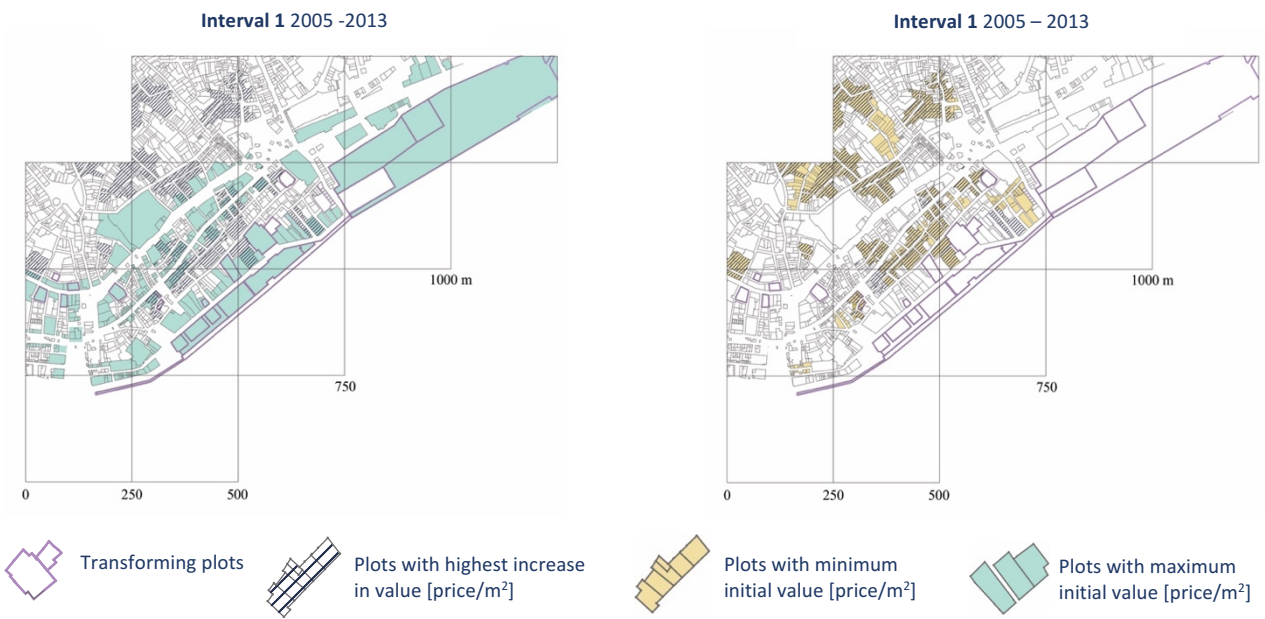
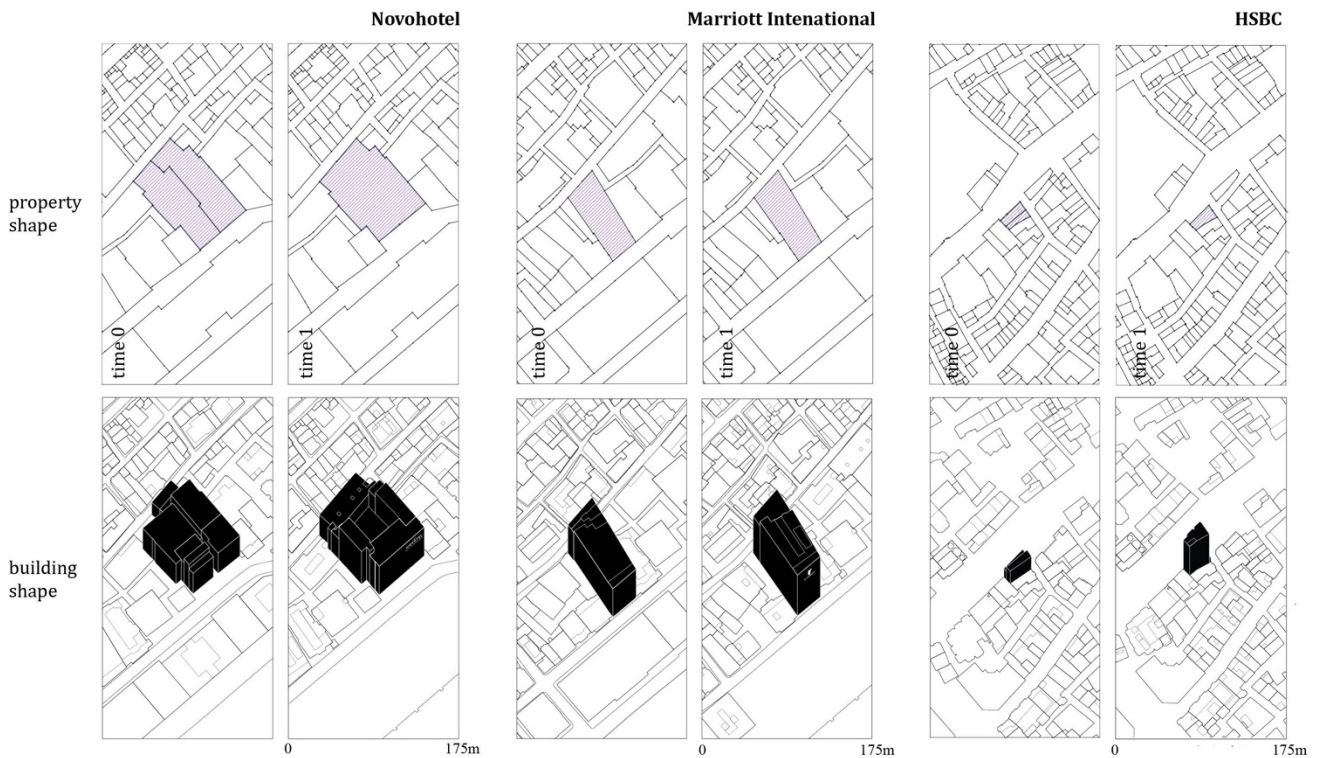


Figure 3. Plots with the highest increase in their value in relation to plots with minimum and maximum initial value



| | | | | | | |
|----------------|---------------------|-------------------------|---------------------|------------------------|---------------------|----------------------|
| property shift | public | private + public | private | private | private | private |
| plot price | x \$/m ² | 4.2x \$/m ² | x \$/m ² | 4.2x \$/m ² | x \$/m ² | 7x \$/m ² |
| FAR | 3,65 % | 5,15 % | 7 % | 9,7 % | 2 % | 7 % |
| n° floors | 5 | 7 | 7 | 10 | 3 | 7 |

Figure 4. Examples transforming plots and buildings at micro-scale

Conclusions

Conzen in his seminal work in Alnwick, when describing the “burgage cycle” has drawn up four phases: an institutive phase, repletive phase, a climax phase, recessive phase. Within the climax phase, the existing plot structure is maximally exploited to a point of saturation (Feliciotti et al. 2018). The gentrification process that has been described in this paper, in which exploitation of maximum and the best use of the land gives rise to consolidation and densification in the plot, is analog to the climax phase. This type of gentrification is likely to occur in neoliberalizing cities, where GINI indices are higher, and transformations are rapid and recent market-led (Lees et al., 2016). Istanbul, Turkey’s business, tourism, and commercial center, is an accurate example: the GINI index is the highest of the country, indicated as 0.443 in 2017 (TUIK, 2017). A similar process can be found in far but analog localities such as; Sao Paulo, Rio de Janeiro, Mumbai, Shanghai, Mexico City, etc. places in which social inequalities are high. The analytical tool proposed above can be used in governance to assess and measure the effects of events and public interventions in such geographies.

In brief, in this paper, urban morphology has been used as a tool for giving spatial understanding to a theory coming from another discipline. It attempted to test a particular notion of urban economics and figure it with

morphological depiction. The use of plot systems has facilitated the visualization of the links between morphological and economical processes at territorial scale, meanwhile, the use of building shapes makes it possible to measure formal effects felt at the human eye. The presented neighborhood is used merely to establish a methodological framework and to demonstrate how morphological and economic data can be linked practically through a hybrid analytical interpretation. To conclude, it is believed that urban morphology can significantly contribute towards trans-disciplinary studies. To pave the way for it, practitioners should acknowledge non-spatial processes and perform cross-cultural comparisons.

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