

Transform-mut-ation of Tehran

Discontinuity of Urban Form and Problems of Using Urban Morphology in Planning Practice

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Abstract: Being the capital of Iran for about 240 years, Tehran started from an organic walled town with traditional elements of Iranian cities like bazaar, mahallahs, the castle (Arg) and square (Meidan) with a population of 15000, to a large metropolitan area with no evidence of its past in its developments, with a population of 8 million in 2017, in 730 square kilometres area. During these years the main causes of change in urban form were dimensions of social changes, migration, and the change of lifestyle, the family size, the combination of exogenous modernisation and indigenous modernity, and changes in aesthetic preferences. The cell of city form (traditional type of single-family courtyard house) is going to be eliminated from urban tissue, and new types of residential buildings took its place. This article first reviews this process of change, and the elimination of single-family house type in Tehran, and emergence of its newer alternatives, in the context of social changes and mutation of urban form, and therefore based on recent research on use of urban morphology in planning and the place of contemporary forms in urban morphology, shows a problematic situation which the connection of the city form to its past is under threat. The article explains how this situation affects possible incremental process of morphological change and finally develops and evaluates procedural morphological solutions to retrieve the continuity of the form of the city (and cities with similar process of change) according to its new social condition.

1. Introduction

Tehran as Capital of Iran experiences changes during two recent centuries, and transformed form a small castle-town to a “some kind of” Metropolitan region. During all these years Tehran faced modern era and global changes and urban fabric of the city has been responded this changes in different ways, consciously and unconsciously. During these changes many new types of building, space and activity, tower buildings, boulevards, highways, and hypermarkets, chain shops, contemporary recreational complexes, and airports, injected the city fabric.

But despite these major changes in the city, urban form has been changed by changes in the fundamental cell of it, the traditional type of single family residential building. The changes happened for different reasons such as the emergence of automobile in the city, a forced urban

plan with different type of single family residential buildings, housing expansions during and after the 8 years' war with Iraq, and the flow of the capital to the construction industry during more than two recent decades.

Here is believed that reviewing the "destiny" of the traditional cell type and identifying the alternatives can develop a basement for estimating possibilities to retrieve a sense of continuity of urban form, in morphological terms and also theoretically. Here, also, this review shows a challenge in urban planning and design practice to retrieve the "utopian" continuity considered by urban morphology.

2. Methodology

The study starts with traditional single family residential type and relying on historical description of changes in urban fabric shows the reflection of these changes in transformation of types or generation of new ones. Here, there was a methodological problem in the study. First, there is no comprehensive study on the city available in classic morphological approaches, in historio-geographical approach by defining morphological regions, or in process typological approach by identifying historical development of building types (Oliveira, 2016). Second, the scale of the city today with 730 km² does not let us to do an extensive study at least in a middle range time period. So this article tries to use an interpretive approach facing building type, their chronological changes and different mutations, and their role in defining different morphological zones in the city. This interpretation includes the notion of plan-unit (Conzen, 1960) and operational history (Muratori, 1960).

2.1. *Tehran, political evolutions and the growth of city during different periods*

As many eastern cities, Tehran faced changes forced by foreign relationships between the country and West world. Western, cities experiencing industrial revolution, changed from classical cities to early modern ones. These changes forced southern cities to adapt themselves with universal transformations, and Tehran was one of them. During 18th century, Tehran was a small Safavid town with a castle and within its walls. As many traditional Iranian cities Tehran included the castle (Arg), an square (Sabz-e-Meidan) at the southern border of castle, Bazaar which began from the square and ended to one of gates (Southern Gate) and the area between this structure and walls was filled by neighborhoods (Mahalleh). Four gates led people enter and exit the town. Streets and alleys were curvy and like all other towns in Iran. At this time, during Ghajar period (at the end of 18th century) the capital moved from Isfahan to Tehran (Habibi, 2006).

In this time the weakness of Iranian economy led to acceptance of foreign presence in politics of country. England and Russia was pioneers of controlling Iranian economy (Ashraf, 1980). Silk weaving sites became field of opium, and internal factories closed one after another. By replacing Ghajar kings one after another, a need to change grew up. The town became a place for meetings and visits of foreigners and the old construct was not responsible for that. The king, Naser-al-din-shah, ordered a great change in town. The walls demolished, Mahallehs multiplied, Straight streets built, and pure traditional building was replaced by eclectic ones. These changes happened at the end of 19th century, at the beginning of modern era in other places of the world.

Beginning of east-west challenge had parallel change in kingdom Regime of Iran. Ghajar kingdom was changed by Pahlavi kingdom at 1920. Industrial and capital changes all over

the world made a big tide which took Iran with itself like many other countries. Foreign actors in internal political environment were still great factors of change in Iran. Facing World War I, collapse of Ottoman Empire, birth of USSR facing capitalistic approach of western countries, developed a situation for Iran which led to exogenous changes, instead of endogenous development (Katuzian, 1992).

Iran faced a universal concept, modernity. The role of the king, Reza shah, is similar to Ataturk in turkey, to make a process of modernization in country. Nationalizing resources, industrializing processes and nationalizing oil extraction, were a symbol of moving form a kingdom to a national government. The straight influence of this modernization on urban fabric is made by the concept of Rejuvenation and westernization of cities (Habibi, 2006). Based on two main principle of effectiveness and efficiency of modern city (Choay, 1965) Iranian urban old fabric caused a surgery by insertion of long straight streets.

These conditions continued during the next Pahlavi king's sovereignty. After World War II Iran became more dependant to universal capitalism. Iran became a country with a single product economy, which had to sell oil instead of whatever it needs. Formation of national income from selling oil encouraged the government to use planning tools for the country (Habibi, 2006). 5-year periodical National Programs and city plans based on Rational Comprehensive Planning Process (RCPP) concept were the main tools of urban planning.

As the first influence of modern planning tools for the country, many modern types inserted the urban fabric. Modern public buildings, building towers, boulevards, and highways are samples of this change. Tehran grew rapidly and this growth under new planning tool needed a fast type which the 60% north standing bulk, a new type, was a good gadget for this rapid growth. The new type became a general code not only for cities like Tehran or other large cities but also for all small towns and counties all over the territory. In this period we can see the birth of large residential complexes with more than 10 concrete towers. The city spread out from all sides.

in 1979 Islamic revolution the regime changed form a parliamentary kingdom to an elective but value oriented system. During the first decade of revolutionary system, and during the war between Iran and Iraq (the western neighborhood country) many cities demolished. After that a new flow of capitalism could be seen not as an endogenous phenomenon, but as an internal economical structure (Kamrava, 2007). Value oriented figure of the system led to a delay of decision making for many part of governmental hierarchical levels like city planning, so the government continued in administrative organizations of Pahlavi Regime, and continued the 5-year periodical National Programs model and comprehensive planning of cities.

During this period the country faced the global changes of world. During these changes many older concepts of Pahlavi city planning have been continued in Iranian cities as well as Tehran. The growth of new Iranian capitalism led to birth of new types. Malls and hypermarkets are results of this new condition. The Pahlavi type of 60 % north standing bulk embedded in urban growth process as the only choice. Neither administrative in-charges nor individual architects find a way out of this unwanted continuity of this type. After all these changes Tehran became a place for contemporary types choking its traditional urban patterns. The city became a Gigant with unbalanced organs and due to an adaptation of the concept, considered as a metropolis.

2.2. *Transformutation of Tehran: transition, transformation and mutation of urban form*

Here, to describe the change process of residential building type in Tehran, a parallel change processes in urban tissue and residential types are explained. This explanation starts with 1) traditional situation of the pre-Ghajar period; and goes to 2) Ghajar period; 3) First Pahlavi period; 4) second Pahlavi period; 5) after revolution period, and finishes 6) contemporary time. The change process of residential building type is illustrated in figure 1.

1) Tehran as a major town started with classic configuration and types. During several years all constructions of the town were based on Iranian building traditions. By becoming a capital the first actions of changes happened. But all of these actions were totally based on building traditions. Traditionally Iranian houses had a courtyard and the building had no openings to alleys (Figure 1a). The alleys were maze-like strings combined to each other making a traditional hierarchical network system

2) During the Ghajar period, as many new elements inserted the urban fabric, changes smoothly started to reorganize the city. The most obvious example of these changes was the birth of straight streets which was a hybrid of European axial streets and Iranian recreational axes like Chaharbagh in Isfahan. As an icon, Ghajar Tehran is written as Thehran these days which deals with classical calligraphy. The first changes in Tehran during the Ghajar period did not change the traditions. Basically, the structure of Tehran is based on a school of town making from Safavid Era. Metaphorically Tehran remained Thehran by changes in Ghajar period. The courtyard type smoothly diversified to two-sided or three-sided building with a courtyard in the middle. This change in building type can be seen as a redefinition of traditional types in a new period of time (Figure 1b).

3) During the first Pahlavi period, in simultaneity with the emergence of early modernism worldwide early modern era, changes became more massive. The role of automobiles was undeniable. The traditional footprint pattern changed to let automobiles enter the private open space of the plots. So the traditional residential type changed to disjointed buildings with a yard. The configuration of special buildings followed the modern patterns (Figure 1c). Changes of Tehran (or Thehran) in these period were surgeries in structure, but the overall configuration of the structure has definite roots in the past also these roots were injured partially. This change can be considered as a transition of "Thehran" to the modern era and removing traditional aspects of building form town. In this time "Thehran" transitioned to "Tehran" as a symbol of transition from traditional habits to early modern ones.

4) After the revolution, the planning codes ruled on Tehran partially and Tehran faced the lack of clear administrative guidelines for a long time. Based on new conditions of building industry, new regions built and old regions changed based on 60% north standing cube code (Figure 1e). The buildings become elevated in this code to 5 or 6 stories. Here the difference was the role of Islamic concepts like forbidding overlook. 60% north standing cube was a genetic code which ruled the whole city and mutated it to a new organism which most of the old cells were changed. In this time many people had a car(s) and the street became an undefined space which can be considered a something between street (with land uses both sides) and highway (with wide bands). Based on global marketing forces malls and hypermarkets has been built as a new monumental building. The city is no more Thehran. It is neither itself (Tehran with its traditional roots) nor a transformed one (Transformehran). It is a new gigantic mutant creature can be called TransformuTehran.

5) In recent years the city has been extended to its natural limits. Although the local government tries to stop it, the city is growing in height. The towers are emerging one after another.

The malls and recreational complexes can be seen in many places in the city. The residential plot is a subject of change still. The cube type is growing in size by aggregation of plots and elevation of the building. Although the code still includes the presence of the yard, the yard is no more useful as it becomes a ramp for parking in). The practical forces, and not the code itself, tried to change this type by the elimination of the yard walls half (Figure a6). Although these walls were solid before, they are mostly transparent or eliminated in some cases right now. The new residential plot is going to change the relation of the plot with streets.

2.3. Analysis: Tehran, morphological regions and operational history

Morphological regions of diverse urban form

By knowing morphological regions as boundaries with internal homogeneity of urban form (based on different elements such as plots and buildings (Conzen, 1960), urban tissue of Tehran can be divided to different morphological regions, as well as other cities. Such analysis in Tehran shows diverse and mixed fabrics in many parts of the city.

Figure 2 illustrates the diversity of urban tissue in a part of central Tehran named Iran Mahalleh. This mahalleh is placed in Ghajar developments of Tehran. The figure 3 shows regions defined by types described above (as the root types which have been raised during different periods of the city). Tehran in many parts experiences such diversity of the urban form. This diversity raises from factors such as 1) regions defined by limited number of plots of even one single plot; 2) Proximity of different regions with wide range of historical classification; 3) the presence of single type inside an extensive region defined by another type (Figure 3)

Here such diversity is seen, metaphorically, as amalgamations of stones and sands known as agglomeration. This article tends to name this kind of tissues as agglomerated urban tissues.

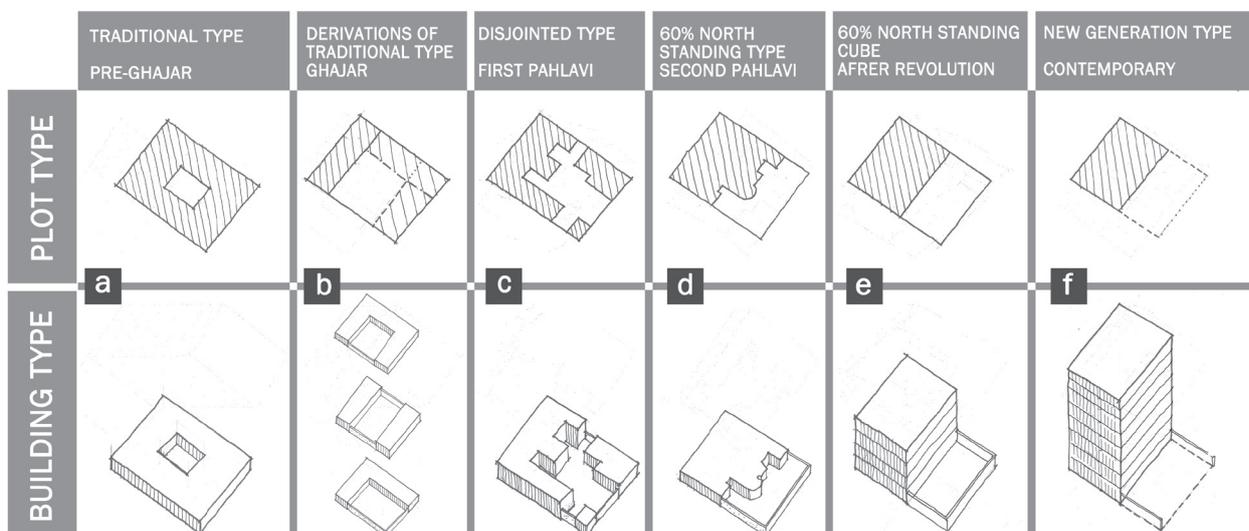


Figure 1. trasmission, transformation and mutation of residential building type in Tehran.



Figure 2. *Morphological regions in a Iran mahalleh of Tehran.*

3. Operational history and transformutation of the urban form

This article believes that the concept of operational history can describe the condition of discontinuity, named here as transformutation of urban form. The concept of operational history implies on: 1) considering building type as a priori to a culture, variable in type and space; 2) building history is a sequence of spontaneous construction; 3) The history of architecture is a sequence of designed constructional phenomena (Cataldi 1998).

Figure 4, illustrating the transformutation of residential building type in Tehran, shows 1) how singular Elements of a building type (the courtyard and surrounding buildings separated by modernization of the urban form with a struggle to save their presence in the type at least in a different existence, in relation to each other; 2) How a type being mutated, by disjointing its configuration in the format of a new type, which the relationship between its elements does not exist anymore, but the elements themselves still exist completely in a new configuration; and 3) how a type is eliminated completely as a generative type in urban form in a way which, no derivation and even no mutation of it can be seen in a completely new type, a type that can be considered as a new generative type.

4. Discussion/Conclusion

The expansion of the modern type through vast constructions can mutate the urban form as a whole. This situation makes the planning system face with an enormous challenge in dealing with the concepts of heritage, integrity and, more important than these two, continuity.

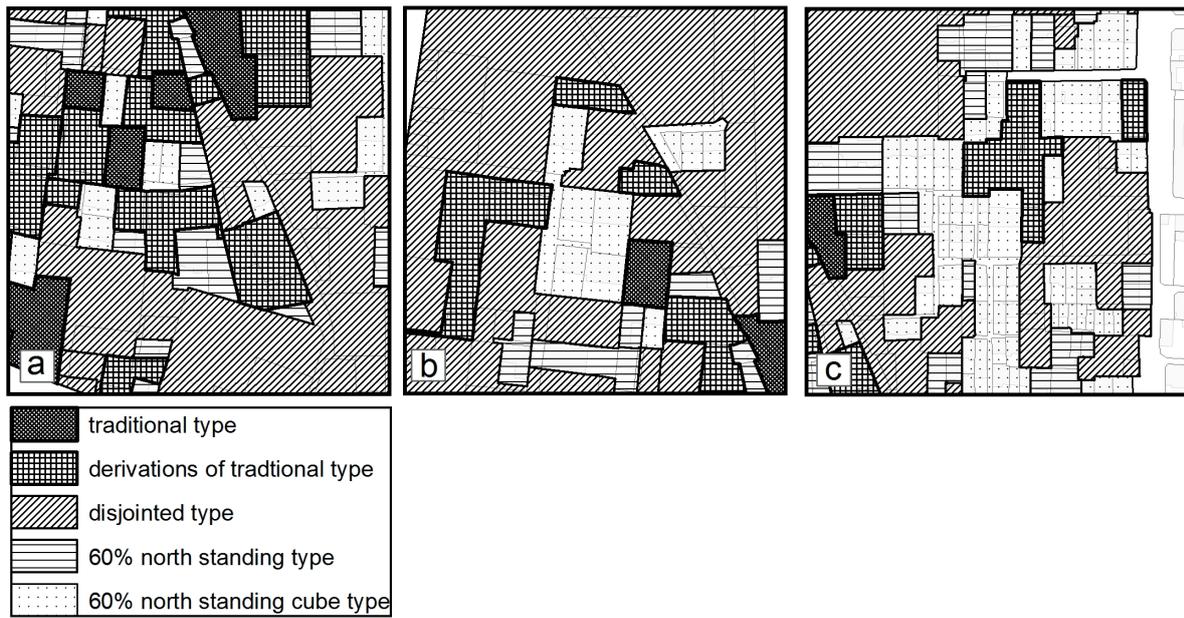


Figure 3. Dispersion of different types in relation to each other.

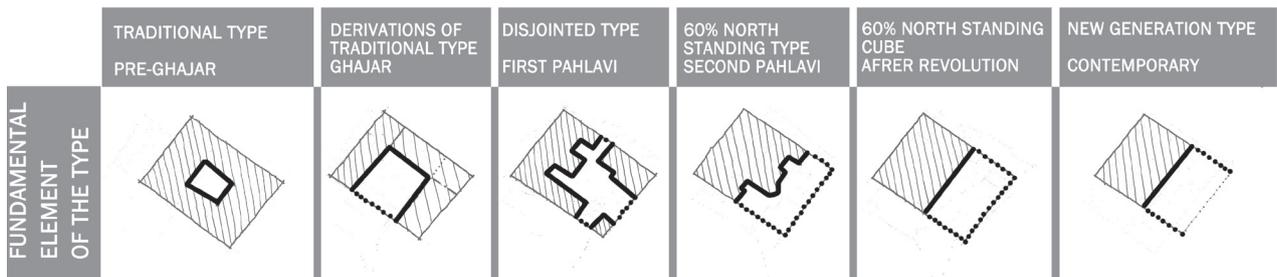


Figure 4. Transition, transformation and elimination of elements of residential building types.

To deal with heritage, it seems that traditional type cannot be seen as a generative type in contemporary construction, even in historical parts of a city. To deal with integrity, it is not obvious that which type(s) should be considered as generative type(s) to respond to the intense diversity of the urban form. To deal with continuity the linkage between the traditional types and the contemporary construction is totally broken in scale, form, and basic functions (such as the volume of residency, the need for parking, the role and function of the courtyard and so on). It seems that the planning system should face these challenges by a new framework in the coding system. Such a framework must clarify: 1) how old types should be retrieved; 2) how new derivations of traditional forms must be created; 3) how more recent types must be saved and extended, and iv) how the new type can be used according to goals of the planning system.

This framework also must be able to define where each type should be used, and how the mixture of different types can be solved. The framework should even define the process of morphological change towards a more continual, integrative and heritage oriented process.

References

- Ashraf A. (1980), *Mavane-e roshde- sarmayedari dar iran (Barriers for Growth of Capitalism in Iran)*, Tehran.
- Choay F. (1965), *L'urbanisme. Utopies et relités*, Le Seuil, Paris.
- Habibi S.M. (2006), *Az Shar ta Shahr (de la Cite a la Ville)*, Tehran University press, Tehran.
- Kamrava M.A. (2007), *Moghadame-ie bar Shahr-sazi-e Moaser dar Iran (An Intro to Contemporary Urbanism in Iran)*, University of Tehran Pub, Tehran.
- Katuzian M.A. (1992), *Eqtesad-e siasi dar iran (Political Economy in Iran)*, Markaz Pub, Tehran.
- Oliveira V. (2016), *Urban morphology: an introduction to the study of the physical form of cities*, Springer.
- Conzen M.R.G. (1960), *Alnwick, Northumberland: a study in town-plan analysis*, in *Transactions and Papers*, Institute of British Geographers, (27), pp. 111-122.
- Petruccioli A. (1998), *Exoteric, polytheistic fundamentalist typology. Typological processes and design theory*, Aga Khan Program for Islamic architecture, Harvard University and Massachusetts Institute of Technology, Cambridge.
- Cataldi G. (1998), *Designing in stages: theory and design in the typological concept of the Italian school of Saverio Muratori*, in *Typological process and design theory*, pp. 35-54.
- Madanipour A. (1998), *Tehran: the making of a metropolis*, Academy Press.
- Madanipour A. (2006), *Urban planning and development in Tehran*, in *Cities*, 23(6), pp. 433-438.
- Cataldi G. (2003), *From Muratori to Caniggia: The Origins and Development of the*, in *Urban morphology*, 7(1), pp. 19-34.