

## URBAN LANDSCAPE PLANNING AND DESIGN FOR THE INTERFACE CONFLICT BETWEEN URBAN DEVELOPMENT AND LANDSCAPE IN HISTORIC CITIES - A CASE STUDY: ISFAHAN CITY IN IRAN

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**Abstract-** Considering the fact that cultural landscape is combinations of history and nature and also that in the course of time they change or sometimes ruin; therefore, the conservation of cultural landscapes should give them a new lease of life. In the historical city of Isfahan, an intertwined natural system, a ceaseless and solid connection between the natural resources and new structures and the heritage of the city that has been built since old ages, produced a cultural landscape. Unfortunately, the development of city with new constructions, high ways and avenues has destructed many of natural and historical elements. In this research we show that to link the past to present and future doesn't mean to copy the old urban landscape planning and design principles and create new environments without understanding the values hid in these principles. One shouldn't learn just to imitate it which it won't have any value. One should touch each principle, understand it, and learn how it is possible to adjust it in modern urban landscape planning system. Within the historic town are the attitudes and activities that connect people and their environment in a world of changing values, economies and social distinction not just the form and physical structure. The conservation of such heritage areas need to be based on an erudite and philosophical understanding of the relevant human interests within the specific geographical and social context and not merely on maintaining the fabric.

**Keywords:** Cultural Landscape, Conservation, Isfahan, Natural System, Planning and Design Principles.

### I. INTRODUCTION

Despite the globalization of the world's economy, the reality of each individual city remains unique and complex. There can be no urban model of reference but only case studies. Any city's future must be anchored in its individual identity. Its 'urban heritage' must be the starting point for the development of urban policy. This heritage and its accumulation - the history of a city, its neighborhoods and its residents - must be studied, recorded and told. Considering the fact that cultural landscapes are combinations of history and nature and

also that in the course of time they change or sometimes ruin; therefore, the conservation of cultural landscapes should give them a new lease of life. Human's interaction in the bed of environment, has formed human settlements into biological complexes. These settlements have often created the cities. Some of these important settlements have undergone many natural incidents such as earthquakes, floods, etc. or human-caused events like wars as in Figure 1 [10, 2, 13].

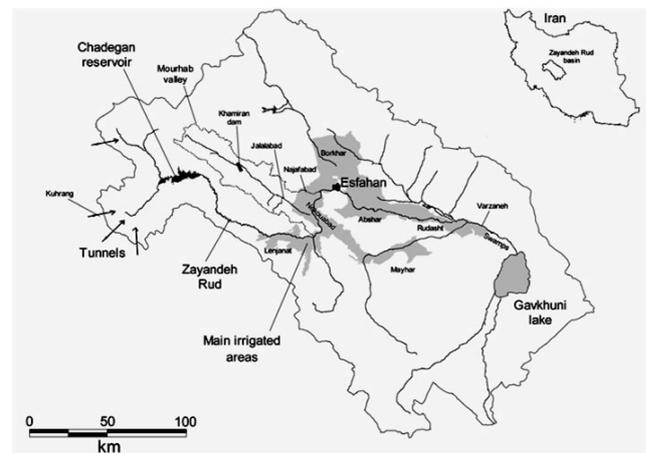


Figure 1. The Zayandeh Roud River basin [17]

Cultural endowments such as traditional architecture, unique streetscapes, and historic sites are increasingly recognized as important economic resources in both developed and developing countries. Cities are often an important focal point for development based on these resources because they provide concentrations of heritage assets, infrastructure services, private sector activity and human resources. Improving the conservation and management of urban heritage is not only important for preserving its historic significance, but also for its potential to increase income-earning opportunities, city livability, and competitiveness [5, 8]. Today's rapidly-urbanizing cities, with uncontrolled growth and informal expansion, pose a significant risk for irreplaceable cultural and natural resources. In these kinds of cities, developers exert pressure to demolish low-rise traditional

buildings and eliminate parks in favor of high-density developments, and municipalities install needed infrastructure in a manner that has unnecessarily negative impacts on traditional cityscapes [1].

In Iran, there are historical cities with thousands years of age like Isfahan; on the other hand, there are cities in the country, like Tehran, which lack such a history. In the historical city of Isfahan, an intertwined natural system, a ceaseless and solid connection between the natural resources and the structure of the city has been built since old ages. In this connected system which has been made in the time of the formation of the first biological cores since 3000 years ago, human's attention to natural environment and its potentials is conspicuous. Considering the importance of water for survival, people of that times, built their first biological complexes near the rivers. In ancient times, the Zayandeh Roud River had two branches in Isfahan Plain, and when they reached the eastern mountains of Isfahan, merging together, the united stream headed towards the Guavkhuni Lagoon.

First settlements have sporadically come to exist in the space between these two rivers. In the next eras, Sassanid era as the most important one, urbanization system in the form of Sharestan which included Kohan Dezh (the towers and the bulwarks of the town), quarters and alleys (bazaar, entrance gates, residential districts of ordinary people and the royal zone) was created in Shahrestan area of Isfahan. Studies show that the development of Isfahan has begun from Shahrestan (Jey) and Yahudieh quarter [6, 11, 13].

The remains of Ashraf Historical Hill in the northern marginal area of the Zayandeh Roud River and besides the Shahrestan Bridge since Sassanid era are the proof documents of these studies. Today, vast areas of this hill have been flattened and the historical remains are destroyed. However, Cultural Heritage Organization is trying to protect the remnants of this historical hill and it must be supported by the city stake holders under the special provisions of policies and acts related to urban planning and urban design. Square, is another significant part of Isfahan. This square and the historical complex surrounding it has been one of the biological complexes of Isfahan city until Islamic era as in Figure 2 [3, 7].

Then in Shah Abbas era (Safavid), Sheikh Bahae, one of the scholars of the era, started a new system in Isfahan city. He built garden-city of Isfahan by designing a connected ecological structure between the river and the constructions. The river with a general direction of east to west and the main axis of Chahar Bagh with a north to south direction, created the basis of this urban system design. The design of the main avenue buildings and secondary axes in the form of checkered network as in Iranian Garden's structure has been the basis of his thought. Many gardens have been built along this network and these gardens like royal palace-gardens have had both fruit and decorative trees. The design of fountains and water axes which have branched from the river and have been connected together by means of the wonderful system of the Madis is an ecological design devised hundred years ago [9, 15].

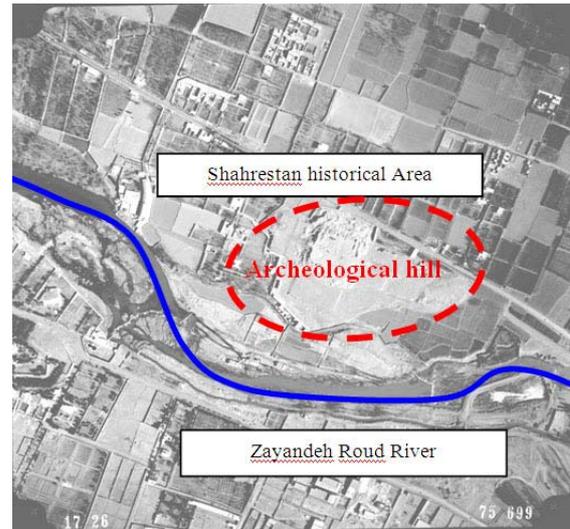


Figure 2. The remnants of archeological landscape of Isfahan along the river

What have remained from this system and the intertwined ecological structure are a number of important historical gardens. The Chahar Bagh area despite the protection of the Municipality and the Cultural Heritage Organization has undergone many changes and even in some part some destruction. This north-to-south direction which in the Safavid era, by passing across the river (Si-o-se-Pol Bridge, Allah-Verdi Khan) and elongating to the mountains in the south of Isfahan, reached Hezar Jarib Garden, and had a significant role in Isfahan city's formation, plays an important role in Isfahan's development as in Figure 3 [6, 16, 18].



Figure 3. Remnant of royal Safavids gardens around the Chahar Bagh axis

## **II. THE ROLE OF RIVER IN DEVELOPING CITY FROM PAST TOWARD FUTURE**

Before the contemporary physical growth of Isfahan, the Zayandeh Roud River was considered as the natural southern border of Isfahan [17]. The access to the south of this river was provided with several bridges over it, which was constructed in different periods. However, the river and its bridges had been never a crucial element in the socio-spatial relations of the urban fabric of Isfahan, since the river was not located inside the city.

The river had run through the middle of the city, and it along with the Chahar Bagh axis had divided the city to four sections. Zayandeh Roud River was utilized throughout the city and had formed Isfahan according to a model of a garden city. Safavids designers had caused sustainability in the green urban spaces by the intelligent use of the Zayandeh Roud water all over the city. However, the significant role of the Zayandeh Roud River and its water in the emergence and evolution of Isfahan during the course of its life should not be overlooked. Zayandeh Roud River has used as a sustainable water resource at the present and past. Important role of river in the Safavids dynasty was:

- Commercial activities that had depended on water had spread all over the city.
- Celebrations were conducted on the Zayandeh Roud River bank.

## **III. CURRENT CONDITION**

The issue of rapid modernization in Iranian cities is based on driving modern avenues through the old fabric of the cities and extending them outside the old cores [14]. The integrated old fabric of cities could not cope with the new means of communication. At that time, the historic structures of cities were in stark contrast with the modern physical needs of their society. The ubiquitous crossed streets turned out to be the salvation of the emerged urban problems of that era. Therefore, the historic urban fabric of cities was torn as under by wide streets which were planned in order to respond to the increasing car usage. Similar urban renewal strategies were experienced by most of the cities of Iran. Also, the rapid social & economic changes of this period had their impact on the Iranian societies as well. In addition, some of the large cities of Iran underwent major bureaucratic reforms during the modernization programs of 1930s [4].

Modern master planning in Iran started in 1950s and 1960s. Before this era, the act of road building was heavily on the agenda in different cities, but those proposals did not follow any predetermined plans. The decisions were rather casual and based on the time and location. The need for master plans started to emerge when cities grew enormously, and when the country was introduced to the achievement of the western planning methodologies. This led to a comprehensive program of producing master plans for all cities. In the beginning of the twentieth century and during the Pahlavi period (1925-79), the cities of Iran encountered significant transformations.

Population growth and rapid urbanization as well as new programs for modernization and industrialization of the country were the most influential factors on the city forms during that era. Isfahan underwent one of its most significant socio-spatial transformations during the Pahlavi period. While the Safavid urban transformation is considered as a successful urban development process in the history of Isfahan, there is strong criticism on the urban renewal programs of the Pahlavi period. The urban growth of Isfahan, akin to many historic cities, was the outcome of a process over centuries. In the beginning of the 20th Century, many road building plans in addition to the Comprehensive Master Plans of the mid-century, transformed the city form of Isfahan. Although these plans were executed as a temporal cure for the illness of the city at that time, they caused many future problems within the physical as well as the social context of the city. The same was felt by other investigations [13].

These master plans had three important outputs: road network, land use and building density or heights. Through the control of these three elements, the master plans attempted to achieve their initial goals. After the first program of road building in Isfahan, a comprehensive plan was produced by E.E. Beaudouin, a French architect and planner who had studied Isfahan as a Roman Scholar and published a special issue of Urbanism on Isfahan, in collaboration with Organic Consultants, an Iranian architectural and planning firm [6].

The plan produced by these planners was outrageously radical. A rectangular grid of roads designed for cars had been superimposed on the older grid without slightest regard to the historic evolution and older patterns of growth. For someone unfamiliar with Isfahan, there is no way to understand anything about the character of the city before this master plan. The only thing that can be vaguely recognized from the Safavid period in the plan is Chahar Bagh Avenue, which stands as important as the other streets in the grid. The great Naghsh-e-Jahan square and the Bazar area appear as two simple polygons. High densities have been suggested for the new street frontages and each rectangular urban block has been given a neighborhood centre, a learning centre and some school.

In reality, Beaudouin and Organics comprehensive plan was not fully implemented. Only some of the major streets proposed by this plan were built and a full rectilinear grid was never achieved in the city. However, this master plan created enough harm to the structure of the city already damaged from the early acts of road building in 1920s and 30s. New streets created by this plan together with the ones created before were enough to influence the whole integrity of the city. In order to measure the effects of the new master plan, axial analysis has been used again to analyze and evaluate the changes. Two maps have been used for the analysis. The first map is the city around 1980 and the second one is the most updated map of the city. The results from both analyses are similar and signify the following results.

- The superimposed modern grid becomes the superstructure of the city and all modern streets become radically more integrated than the rest of the grid.
- The old and Safavid structure of the city vanish dramatically. The old and new squares, and their urban connection loses its significance and neither of the old thoroughfares is recognizable on the map.
- Chahar Bagh Avenue is the only street from the past that retains its strength. The extensions of the street to the north and south have added to the integration value of the street.
- The Safavid developments in the south of the old city also became a very important part of the city. It seemed that the integration core of the city had shifted from the old centre to Chahar Bagh and its surroundings.

A comprehensive development of green spaces was the proposed plan of past planners during Safavid period. In the years, Municipality's policies of Isfahan for the proportion of development plans and master plan have been aimed at conservation of this area and the parallel axes. Also, the Municipality has tried to take the general form of the garden-constructions into consideration in forming the development of the city [18].

But the garden reconstruction must follow the old pattern as shown in Figure 3 to reflect the past landscape culture. Furthermore, the perseverance of the river's natural structure and its buffer zone has been of importance. The development of green areas along the river has been done to prevent construction in the proximity of the river. Unfortunately, the development of constructions and new avenues has destroyed many of Madis and streams. Today, there are only 7 Madis and limited alive Qanats left in Isfahan (Figure 4).

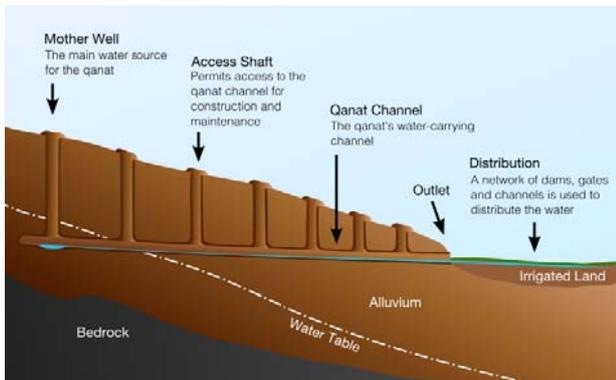


Figure 4. Typical Qanats system

Also, drought phenomenon in Iran and its intense changes in climate have caused the decrease in precipitation and underground water resources and also it has abated the feeding resources of the Zayande Roud River's water (Koohrang Bakhtiari Mountains). Thus in snowfall and winter, the dams on upper parts of the river which fulfill Isfahan's water, are closed and the stream were cut. The river becomes dry and remains so until the next spring. Currently, there are special rules and laws for their protection. In some areas the destruction of the canals or Madis has been controlled in previous decades.

Since it is a costly solution, the old system of continuous greenways along Madis must be reintroduced. The historical remains of the city such as historical bridge- gardens are protected by the conservation and restoring programs of the Cultural Heritage Organization (Figure 5). In order to protect the old trees near the Madis, Municipality pours water into Madis with special machines which keeps this ecological system alive.



Figure 5. Isfahan, Google image retrieved in 2010, highway crosses the ecological structure of Madi



Figure 6. Isfahan, east of the city, 1956, and the Google image retrieved in 2010. Within few decades, the landscape characters of this area have completely changed [18]

#### IV. REMEDIES FOR EXISTING CULTURAL LANDSCAPE

Remedies are suggested for cultural landscape which are distributed by human interventions during modern period having considering the preceding discussions mentioned in the previous about the history and the nature of Isfahan and also noting the results of the analysis and studies on many issues related to urban landscape and developmental aspects of Isfahan. Along with the guidelines of the universal experience and the rules related to historical cities in other countries, the following strategies are suggested to preserve and reconstruct the existing cultural landscape of Isfahan which is disturbed by human interventions are as follows:

The adjacent areas near historical built forms and near its neighboring districts which are developed or to be developed most often create severe destruction to the urban fabric of Isfahan. The disharmony between the newly developed areas in the vicinity of the historical remains, have made the landscape twisted, asymmetric and unpleasant. In addition, this disharmony enters towards the historical area like a negative force and leaves its negative impacts on the neighboring areas of historical built forms and leads to the fragmentation of historical textures which are interconnected in nature.

The development of tourism infrastructure in historical landscape area faces weak management plan. Hence unplanned way of creating the amenities for tourists brought damages to the historical remains. Weak urban planning, design and management laws resulted in merging of historical areas with new urban developments and this has destroyed the cohesion of the landscape [12].

The elements of the cultural landscape are considered and protected as separate units and hence there is no cohesion reflection among them (Figure 6). The following proposed strategies in planning and design will offer the conservation and rehabilitation of cultural landscapes in urban areas:

- It is necessary that the historical area of Isfahan be studied under the comprehensive dimensions of historical-cultural complex and by considering the historical and natural cohesion among its elements such as historical buildings, gardens, Madis, bridges ,etc. also conservation zone needs to be delineated.
- The historical potentials in the city are not the sole historical core of Safavid era. It includes all ancient and historical cores of different rulers of the past. Areas of these kinds must have been planned under separate laws.
- After delineating the zones of historical monuments and its limits, the visual landscape studies should be conducted all over the zone. In these zones, new buildings must obey the height and density rules. It can never be possible to define a united fixed law for the whole zone and its adjacent areas. The laws related to cultural landscape conservation should be enforced according to the position of the area and its placement in the city texture. Although the whole historical and natural elements of landscape are considered as interconnected system, it is necessary to identify the identity of each element independently and the rules and regulations have to be decided properly.
- For the interconnected landscape structures, the managerial plan should be framed for the purpose of landscape conservation processes like rehabilitation, redevelopment and repairing of destructed parts according to the type and nature of damage.
- In case of conservation of natural elements like Madis, Qanats, etc., as these elements and the components of their ecological landscape cannot be considered in isolation, it is necessary to study and conserve their sources and inter related elements. They feed from the river; the natural resource protection of river should be taken into consideration so that the Madis could survive.

- Consideration of the ecological network of the gardens in Isfahan is important. Despite the destruction of many old gardens and fragmentations in natural context of the city, there should be scientific efforts to make out ecological connections between the gardens, rivers, and Madis in the city [5, 8, 9].

The relationship of people with the cultural system of the city by framing the policies for involving people for their cooperation, support and participation for planning & design, developing, implementation etc. under urban landscape conservation processes.

## V. CONCLUSIONS

From the view of sustainability, it is argued that urban heritage conservation is now seen as a fundamental component of environmental sustainability policies. In this sense, conservation will have to ensure that existing built-up areas are used and reused to their best advantage, and recognizes that both the longevity and adaptability of historic buildings, structures and ruins. The term 'conservation' should therefore be understood as keeping the place vital and alive, and not merely just preserving its historical significance or architectural merits. Still from the same view, the socio-cultural, economic, political and technological forces are responsible in shaping and reshaping our built environment. The emerging values and lifestyles of contemporary society are at once universal and pluralistic, individualistic and caring, anarchic and innovative. Nowadays, cross-cultural exchanges become increasingly meaningful and mutually beneficial.

Historic cities of each country are open books to learn from. In fact they are an integral reflection of man's innate aspirations. To learn from the past, it is necessary to respect and understand the philosophy hidden in muddy structure of historic cities. The revitalization of the spatial and architectural quality of this structure is a necessary aid in learning how to form the future cities. Since transformation of European modernization concept to eastern countries, economic justification about urban development has been a deliberate attempt to separate culture from development. Consequently, in modern concept of urban planning, rehabilitation of historic areas has always relied on economic justifications. But in order to achieve appropriate design strategies, the gap between planning and conservation disciplines should be reduced.

The contrast between modernity and cultural values had the most negative effect in historic parts of traditional Isfahan city, which gradually vanished as new developments influenced the entire city. In this city, historic cores have already been destroyed, and have left great monuments isolated and surrounded by new development. But in spite of all economic and social changes, the historic centers were so intrinsic to the national way of life that technological change could not afford to destroy them completely. They are still an alive part of the city and will always remain the cultural representative of the nation. In few words, what is missing in the modern cities is the spirit and cultural identity and the only way to give them the needed spirit

and identity is to understand the realities about the historical city. These realities are cultural values and social way of life, which have shaped the traditional living environments in centuries.

Cultural values are qualities which are essential for building cities and sustaining them over time, but which urban civilization is unable to produce by it. Tradition means the chain of revealed truth, wisdom and knowledge, which is transmitted and renewed generation by generation, thus linking various successive layers of temporal existence to the primordial reality which originated them. Learning from the past should accompany the fact that what we can learn from the past are urban landscape design values, perceiving the quality of form and spaces, but it is not something to be directly transformed into new design system. One should be able to take space organization and principles in a modernized expression of past forms. Choosing appropriate strategies in design of modern urban area will avoid the risk of superficial transfers or dependency of foreign ideologies and eventually generate a meaningful new system of cultural references. Rehabilitation of historic cities is an attempt to keep alive values, which are not measurable with the instruments of quantitatively, oriented modern civilization, but which are essential for people's spiritual, emotional and physical welfare. The conservation of such heritage areas need to be based on an erudite and philosophical understanding of the relevant human interests within the specific geographical and social context and not merely on maintaining the fabric.

#### REFERENCES

- [1] B. Ahmadkhani Maleki, "Traditional Sustainable Solutions in Iranian Desert Architecture to Solve the Energy Problem", International Journal on Technical and Physical Problems of Engineering (IJTPE), Issue 6, Vol. 3, No. 1, pp. 84-91, March 2011.
- [2] A. Assari, T.M. Mahesh, M.R. Emtehani, E. Assari, "Comparative Sustainability of Bazaar in Iranian Traditional Cities: Case Studies in Isfahan and Tabriz", International Journal on Technical and Physical Problems of Engineering (IJTPE), Issue 9, Vol. 3, No. 4, pp. 18-24, December 2011.
- [3] S. Babaie, "Isfahan and its Palaces: Statecraft, Shi'ism and the Architecture of Conviviality in Early Modern Iran", Edinburgh University Press, UK, 2008.
- [4] H. Borjian, "The Pahlavi Period and the Post-Revolution Era", Encyclopedia Iranica, 2007, www.iranicaonline.org .
- [5] M.L. Cadenasso, "Integrative Approaches to Investigating Human-Natural Systems: Baltimore Ecosystem Study", Natures Sciences Societies, No. 14, pp. 1-14, 2006.
- [6] S. Cantacuzino, "Can Isfahan Survive?", Architectural Review , Vol. 159, No. 951, pp. 292-300, 1976.
- [7] Ebne Houghel, "Safarnameh-e Ebne Houghel", Translat. by Jafar Shoaar, Amirkabir Publisher, Tehran, 1987.
- [8] J.G. Fabos, "Introduction and Overview: The Greenway Movement and Uses of Potential Greenways", Landscape and Urban Planning, No. 33, pp. 1-14, 1995.
- [9] P.H. Gobster, J.I. Nassauer, T.C. Daniel, G. Fry, "The Shared Landscape: What Does Aesthetics Have to Do with Ecology?", Landscape Ecology, No. 22, pp. 959-972, 2007.
- [10] J.M. Grove, W.R. Burch, M. Wilson, A.W. Vemuri, "The Mutual Dependence of Social Meanings, Social

Capital, and the Design of Urban Green Infrastructure", Graduate School of Architecture, Planning, and Preservation, pp. 66-77, New York, 2007.

- [11] A. Gudard, "Art of Iran" & M. Habibi, "Maktab Isfahan", Sofeh Journal, No. 23, Tehran, 1997.
- [12] L. Lockhart, "The Fall of the Safavi Dynasty and the Afghan Occupation of Persia", London, 1958.
- [13] K. Karimi, N. Motamed, "The Tale of Two Cities: Urban Planning of the City Isfahan in the Past and Present", 4th International Space Syntax Symposium, pp. 14.1-14.16, Space Syntax Limited, London, UK, 2002.
- [14] K. Karimi, "Urban Conservation and Spatial Transformation; Preserving the Fragments or Maintaining the Spatial Spirit", Urban Design International, No. 5, pp. 221-231, 2000.
- [15] J.I. Nassauer, "Ecological Science and Landscape Design: A Necessary Relationship in Changing Landscapes", Johnson B.R. and K. Hill (Eds.), Ecological Design, Frameworks for Learning, pp. 217-230, Island Press, Washington DC, 2001.
- [16] A.U. Pope, "A Survey of Persian Art from Prehistoric Times to the Present", Manafzadeh Group, Tehran, 1930.
- [17] H. Pourmoghaddas, "Water Quality and Health Issues in the Zayandeh Rud Basin", Research Report Presented to the International Water Management Institute, Iran, 2006.
- [18] M. Sarraf, "Vestiges of Urban Spirit, Isfahan's Urban Fabric through Socio-Spatial Transformations", Stockholm, 2010.

#### BIOGRAPHIES



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