Urban Conservation and Spatial Transformations
preserving the fragments or maintaining the 'spatial spirit'

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0   Abstract

It is evident that in the medieval period a relatively stable urban form was shaped and preserved for a considerable period of time until the Industrial Age, both in Western medieval and Eastern Islamic examples. From this period cities have witnessed a new type of development, different in size, scale and momentum. large-scale transformation of historic cities under modernisation, soon led to serious concerns about the preservation of historic cities, especially from the second half of this century. By adopting an spatio-analytical methodology based on 'space syntax' theories and techniques,1 this paper investigates the concept of urban conservation through a comparison between the spatial organisation of the traditional city and the transformation of this structure in the way to become the historic core of the today's modern city. This will rely on the analysis of a representative group of cities from two Western and Eastern realm, England and Iran, and the comparative investigation of the old and new historic cores. The analysis shows that the fate of the historic core is strongly dependent on the way its spatial organisation is transformed. When the grid is the subject of massive transformation regardless of the traditional characteristics, the damages to the urban structure make the process of conservation rather difficult; whereas a moderate transformation sympathetic to the original organisation of the city gives a great potential to the core to survive and to be conserved appropriately. From this, the paper develops a new view towards urban conservation that is more concerned about preserving the essence of the old cities, or the 'spatial spirit' of the place, instead of a fruitless effort to rescue the individual buildings or spaces regardless of the urban context within which they can function and survive.

1   Introduction

The process of urban transformation has changed dramatically from the 18th century. Unlike the traditional modifications which were slow, gradual and adaptive, the modern changes have been rapid, large-scale and destructive. Whereas the necessity of preserving the past within the existing urban structure had always been observed in traditional cities, the magnitude and power of the modern format of urban transformation soon led to the situation that the preservation of the urban heritage became a serious issue. Initiated by the developed countries, and followed by the other nations, urban preservation has become one of the controversial subjects of urban studies, especially from the second half of this century.

Although the principle of urban conservation seems to be accepted widely, the interpretations and approaches seem to be diverse. The fundamental questions, such as why to preserve, what to preserve and how to preserve, become complicated

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problems when the bases and theoretical frameworks are unclear. Urban conservation in terms of preserving the monuments and remarkable buildings seems less problematic since there is a widespread understanding that these buildings are respectable pieces of art and history. Besides, they possess a durable structure and aesthetic quality which makes them culturally and economically viable. The major problem arises when the city is to be preserved as a whole, i.e. a complete structure which maintains the components of an old system. The significance of this problem lies within the contradiction between the city as a conveyor of contemporary urban life and the city as a conveyor of the past urban heritage. In fact, this contradiction creates the diversity of approaches to this subject, varying between the two extremes of radical change and absolute retain. It is certainly a difficult task to determine how much of the past should be preserved and how much of it should be compromised to enable the city to cope with the needs of modern life. In this connection, not only the fundamental and theoretical frameworks of urban conservation, but also the practical and analytical methods of approach to the issue seem inadequate. Again, apart from individual buildings, the methods presented for the study, analysis and implementation of urban conservation have remained fairly limited.

In many recent studies,2 the significance of analytico-morphological studies for a thorough understanding of urban behaviour have been demonstrated. This type of study seems even more relevant in the field of urban preservation, since a major concern of conservation is the physical formation of cities. Buildings and spaces inside the historic cores are the important assets which have to be dealt with; in fact, they are the main subjects of the discussion in connection with other (social, cultural and economic) factors. According to this, the present paper aims to establish a new approach to the concept of urban preservation by investigating the fundamental principles of spatial organisation. Conservation in this sense is not about safeguarding the fragments of urban environment; it is more about preserving the major spatial rules -the 'spatial spirit'- which enabled the old city to function and inspires the modern city to adapt itself with the historic core. The paper will argue that the efficient way of urban conservation is through retaining, or more precisely through natural evolution, of 'spatial spirit' of the historic city; whereas inconsiderate transformation of urban grid can lead to deterioration of the spatial organisation and consequently to a condition which makes urban conservation a very difficult task, if not impossible.

The paper uses methods of configurational analysis of the urban grid through a comparison of six Iranian and six English cities to investigate how the spatial structure of the traditional city has responded under the different circumstances, and what the influences of these responses have been on the fabric and the social aspects of the historic centres.3 There are three main reasons which support the selection of these two sets of examples. Firstly, they both belong to two major types of occidental and oriental historic cities, enabling the research to enjoy a wider coverage of the field. The second reason is that both of these city types had experienced a long period of continuous existence in their traditional form before the Modern Age, during which the principles of urbanism had remained fairly unchanged for at least six hundred years. The third reason concerns the difference between the behaviour of these two groups after modernisation. Whereas one group, English cit-

ies, represent one of the most moderate types of change, the other group, Iranian cities, are representative examples of extreme transformation.

The core of research methodology in this paper is based on space syntax, including its theoretical approaches and some of its major analytical techniques, such as axial analysis,4 Space syntax analyses the configurational properties of urban structure by measuring the relationship between each component of urban system and all other components. Meanwhile, it tries to associate the spatial structures to social and behavioural features of architectural or urban systems. Since the theories and techniques of space syntax have been documented in numerous publications, the paper does intend to present a detailed discussion on methodology.5 Only one point needs to be stressed that space syntax in this study has been treated consciously. Conscious in the sense that the analytical techniques have been adapted to the needs of the research, wherever such adaptations were needed, and also other methods of analysis, especially the ones that had a close affinity with the syntactic techniques, were used in conjunction with the syntax methods.

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2. Historic cores of English cities today; implications and problems

One has to distinguish between two different types of urban development in English cities: the old corporation cities and the fast-growing industrial cities. Although the industrial developments also influenced the historic cities, the nature and scale of change in these cities were remarkably different. Since the traditional cities did not on the whole become industrial centres, they did not absorb a radical growth of population. Also, in terms of physical growth, the historic cities retained a normal expansion around the walled area. In general, it can be said that English historic cities have enjoyed a moderate expansion based on the evolution of urban grid. Consequently, in most cases the historic cores of the cities are the centres of civic life and the focal points of urban activity. It is also evident that the important parts of urban heritage have been preserved within the larger context of the historic core and the rest of city, making them commercially and socially viable places for the residents of the city and visitors .

Vehicular accessibility became a widespread problem after the 1930s, especially in the 1950s and 1960s, when motor vehicle became an important means of transport inside and outside cities. The first solutions were 'bypasses' and 'orbital routes', mainly to deal with through traffic. There have also been internal rearrangements of streets and buildings in order to create a network of streets subordinate to the need of people living and working there. Under the reactions of the 1970s and 1980s against such extreme changes, it was widely accepted that: "there are limits to what an historic town can accommodate without losing its character (Thompson & Jacomb 1985:3) ", and the large-scale destruction of streets was abandoned in the old cores. Today, the typical traffic system of historic cores in English cities is based on a wide 'ring road' around the core which is connected to the rest of city and outside by some major roads. Sometimes, these major roads penetrate inside the core, but through traffic is significantly reduced. Pedestrianisation of city centres in the past three decades has become a common task in many historic centres, since it was realised that the historic streets are not only shopping areas but major focal points for recreation and cultural life (Kennedy & Kennedy 1974:11) .

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In spite of the relative success of English historic cities in maintaining their position as the focal point of urban life and heritage, they are not free from problems. The most important problem perhaps is the unbalanced combination of 'living' and 'using' population in the core. Briefly speaking, the traditional city used to be a closed urban system where people lived, worked and interacted with outside and inside. The historic cores today, are mainly places for work and interaction, but not for living. Also, many public buildings, such as churches have lost their functions and remained just as physical artifacts without any life inside. In recent years, some regeneration schemes have been proposed in response to the problem. For instance the scheme of 'living over the shops' is a program to facilitate the re-use of the upper floors of main buildings (Patherick 1995:163) . There are also some plans for converting the vacant historic buildings to new places such as tourist offices, health and sport centres, hotels, etc.

3 Historic cores of Iranian cities today; implications and problems

The process of physical modernisation in Iranian cities started from the beginning of this by a vast programme of road construction through the old fabric of old cities. This process, however, has not penetrated beyond the facades of modern streets inside the old cores. The traditional structure of the old city has been disabled without being accustomed to the modern structure. The winding, compact, and pedestrian routes of the traditional fabric, which were lucky enough not to be destroyed by new roads, remained intact next to the massive streets. Instead, all efforts have been spent on the new developments outside the old city. In spite of the great potential of the old city in that it was the earliest urban nucleus, it has significantly lost ground to the modern city from the early stages of modernisation; an effect which was intensified by any further growth of the city. As a result, the existing historic cores of Iranian cities are confronted with a collection of serious problems.

The most prestigious elements of the traditional architecture and urbanism are located inside the old fabric. Although in many cases the historic buildings have been physically preserved, they have lost their social, functional and spatial roles. There is also no logical relationship between the elements which are separated by modern streets. The major monuments are surrounded by deteriorated and impoverished urban tissues which cannot function in traditional way. On the other hand, the modern elements and land-uses, which are needed for modern urban life, have not been appropriately developed inside the core.

The old city has become an undesirable place for living not only for the younger generations who think that living in the old city is out of fashion, but even for the older inhabitants who still love their old quarters but cannot cope with the conflicting situation of the old areas. Once the prominent residents of the old city desert it, the non-indigenous inhabitants and mainly poor migrants supersede them. This replacement has created negative consequences such as poverty, crime and social non-homogeneity, which itself weakens the hopes of living for remaining inhabitants. This vicious circle has no result but the social and economic degeneration of the old core. Private developers do not tend to invest in the old core, since they do not find the elements of profitability. Even the injection of money by government has minor effects on the complicated situation of the old cores.
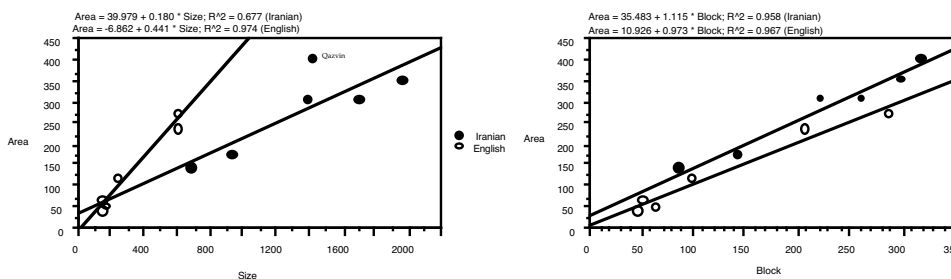
The first concerns about the disastrous fate of Iranian old cores started to rise from three decades ago. This was expressed initially by architects, archaeologists and planners. More effective efforts were adopted in the comprehensive plans of Iranian cities, which started to be produced from the 1960s, though in some city plans the old core was terribly neglected. Through the process of planning for cities, and influenced by the urgent situation of old cores, the necessity of specific plans for the historic cores came into existence, which has resulted in a number of proposals to rejuvenate the cores. Overall, the historic centres of Iranian cities are suffering from an unfortunate decline in their social, economic and especially spatial conditions, which become more complicated when the modern cities grow further.

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4. Organic cities; a review of fundamental concepts in Iranian and English old cities

The phenomenon of change can not be understood without understanding the old and. This leads to a primary need for beginning the study by an investigation of old cities. This study, however, has been addressed in details in another paper (Karimi 1997) . In this section we review the major findings of that study in order to facilitate our further discussion on the issues of change and conservation.

Similar to the most of old cities in the world, historic cities in England and Iran have 'organic' characteristics, that is a non-predetermined, unplanned pattern of urban formation. The paradox of organic cities lies within the irregularity and geometrical disorder of the spatial grid in contrast with the harmony and balance of spatial and socio-economic patterns. How does the apparently disordered structure of the organic city manage to create such a significant balance which admittedly is lacking in many modern urban developments? The answer to this question is that in fact order does exist in organic cities, but the nature of this order is different from the nature of uncomplicated geometrical order.

The first evidence of the organic order can be revealed by the consistent proportions of plan measures.6 In both groups of cities, organic grids conform to a concealed morphological rule which controls the growth of the irregular pattern (Graph 1). The difference between the ratio of the plan factors, however, invokes the possibility of finding different organic genotypes, i.e. the groups of cities that hold similar spatial rules. The syntactic measures, such as the mean connectivity of the grid, also verify this finding. A close ratio of mean connectivity within either groups of English and Iranian cities (3.5 for Iranian and 2.8 for English cities on average) shows that not only organic grids tend to preserve some morphological constants, but these morphological constants change from one urban genotype to another.

Area = 39.979 + 0.180 * Size; R^2 = 0.677 (Iranian)
Area = -6.862 + 0.441 * Size; R^2 = 0.974 (English)

Area = 35.483 + 1.115 * Block; R^2 = 0.958 (Iranian)
Area = 10.926 + 0.973 * Block; R^2 = 0.967 (English)

Graph 1: Scattergrams plotting the area of the cities against their axial size (left), and against the number of urban blocks (right). The significant correlation between the plan factors indicates two things: first, existence of an organic order; second, the differentiation between the various genotypes of cities.

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figure 1: Analysed maps (integration radius n) of one Iranian (Kerman, left) and one English (York, right) old cities before modern transformations.

The analysed maps created by syntactic analysis provide another set of evidence to reinforce the spatial theory of organic cities (Figure 1). The raw axial maps of both Iranian and English cities before analysis express a disordered and irregular shape, but in both cases the maps of global integration (radius n) create a clear structure based on a powerful and compact integration core in the centre of the organic grid. This integration core is usually located in the oldest and most used places in the city, signifying an important spatial and socio-economic locus. The rest of the grid is connected to the core through some major routes that start from outside the city and terminate in the centre. These major routes, which make an organic super-grid, are differentiated from the rest of grid by their greater value of integration, length and smoother angle of incidence. The least integrated parts of the grid are the local residential areas that demonstrate different morphological patterns in the outer parts of the grid around or between the major routes.

Another important contribution to the understanding of organic structures is the relationship between parts and the whole of the urban grid. A detailed inspection of the relevant scattergrams shows that organic cities tend to produce different levels of part-whole relationship (Graph 2). In the centre, where the most intensive part of the internal and external interactions takes place, such as the bazaar and high street, the correlation is strong. This explains how the spatial structure is shaped in response to the activities of urban society. The local/global correlation in a larger central area around the core is lower than the central core, but it is still considerably higher than the residential quarters usually located outside the centre. This means that <u>organic cities maximise the part-whole legibility in the areas which are most likely to be visited by different people from inside and outside, but where this legibility is not needed, or is even undesirable, the correlation between the local and global integration decreases.</u>
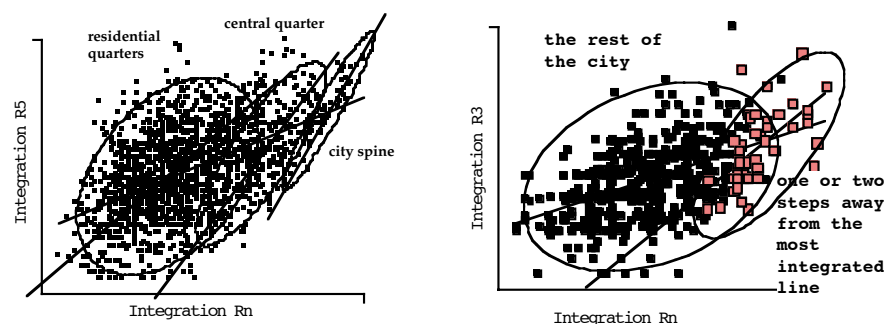
graph 2. A typical scattergram of global integration (RN) against local integration for Iranian and English Old cities

The last important analysis of organic cities is the relationship between the 'elements of the city' and its spatial structure. The elements of the city are the major spaces or buildings which accommodate the main activities of the city. Although these elements have a spatial nature, they are strongly linked with the functional, economic, political, cultural aspects of the society. Therefore, the constitution of urban elements inside the spatial system is able to reveal a better view of the organic city. In terms of urban impact, the urban elements are selected across a diverse range, from the most local elements to the most global ones.

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At first, the superimposition of these elements on the syntactic maps of the cities produces a graphical basis for comparison which itself appears to be rather advantageous (Figures 2-3). These maps unveil an instant harmony between the social significance of an urban element and its location inside the organic urban grid, implying that the socio-functional forces of the organic city are able to orient its major elements toward the positions which are spatially favoured by the society. This can be substantiated by numeric analysis. By calculating the integration value of each element a 'rank order' table is produced which exhibits the hierarchy of urban elements in the organic grid (Table 1). These tables demonstrate a logical order of integration values which can be justified by the 'social weight' of the urban elements. Therefore, <u>the concept of organic order -or more precisely, organic structure- is found not only in the configurational pattern of urban structure, but also in the way that society makes interfaces with the spatial grid through locating its elements and components.</u>
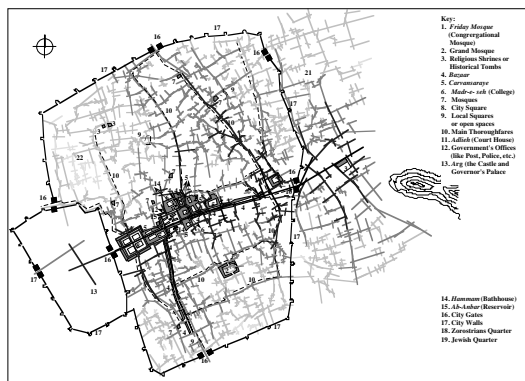
Iranian Old Cities

City Elements	average int. Rn /mean int.
1 Bazaar	1.3837
2 City Square	1.3670
3 Carvansaraye	1.3546
4 Grand Mosque	1.2696
5 Friday mosque	1.2679
6 Colleges	1.2588
7 Govern. Place	1.1970
8 Ruler's Palace	1.1647
9 Local Squares	1.1095
10 Mosques	1.0939
11 Local Bazaars	1.0773
mean integration	1.000
12 Shrines	1.0619
13 Castle, Citadel	1.0358
minimum integration	0.5543
mean integration	1.000
14 Gates or Entrances	0.9723
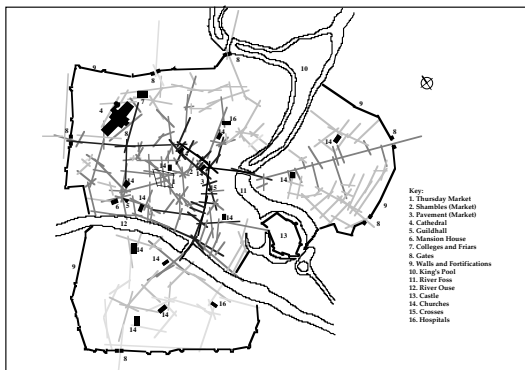
English Old Cities

City Elements	average int. Rn / mean int.
1 High street	1.7609
2 Market/High Cross(es)	1.6015
3 Guildhall, City Hall	1.6003
4 Market Place(s)	1.5371
5 Cathedral Place	1.4144
6 Colleges	1.2588
6 Cathedral	1.1879
7 Churches	1.1438
8 Colleges, Friaries	1.0659
9 Hospitals	1.0254
mean integration	1.000
10 Mosques	1.0939
11 Castles	0.9411
12 Gates	0.9322
minimum integration	0.5543

Figure 2: The main elements of the traditional city superimposed on the global integration map of one of Iranian old cities; The old city of Kerman (before 1800).

Figure 3: The main elements of the traditional city superimposed on the global integration map of one of English old cities; The old city of York (before 1800).

Table 1: A comparison of mean integration (Rn) values of urban elements in Iranian (left) and English (right) old cities. The table is sorted by the average value of integration Rn divided by mean integration of each city (the second column).

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5. Historic core under transformation: a new view towards 'urban conservation'

In this part of the paper we attempt to approach the issue of urban conservation, benefiting from the results of the analysis of the organic and modern cities. The important point in this approach is that although it appreciates the concepts of urban heritage and preservation of the old cities, it has no intention to argue the necessity for urban conservation. In this sense, the research does not investigate why we should preserve the past, leaving this matter to social and ideological debates. It rather investigates what are the major areas of concern if we want to conserve historic cities; or in other words, what are the major principles which may decrease the chance of a successful conservation if they are ignored.

The first step in this direction is taken with an examination of simple morphological factors (table 2).7 This reveals that: firstly, in Iranian cities the today's historic core is more complicated than the old city (more axial lines and blocks), whereas in English cities the existing core is simpler than the historic city; secondly that in Iranian cities the overall rate of change in the plan measures from old to new is less significant than in English examples. This means that although under physical modernisation some extreme morphological changes happened in some parts of the old cores of Iranian cities (the modern streets inside the core), most of the fabric has been left unchanged. Conversely, the morphology of grid in English cities has changed gradually into a simpler and less articulated version, while the different areas of the city have been treated homogeneously. From this result one may superficially conclude that Iranian cities have preserved some principles of their old structure, since some parts of the old fabric have remained intact. Our further analysis, however, will show that this is not the case. This is in fact the first step toward our new understanding of urban conservation. Cities have to change and they do constantly change, but when the changes are inconsistent and unconscious of the plurality of the old structure, they inflict damage on the principal rules which govern the urban structure, in spite of any partial survival of the traditional fabric.

cities	status	axial size K	area A	blocks B	axial density K/A	block axiality K/B	block size A/B
English Cities							
mean	hist. core	215.8	151.8	86	1.4740	2.5210	1.765
mean	old city	317.8	138.12	128	2.317	2.5634	1.050
Iranian Cities							
mean	hist. core	1689.3	322.7	324.3	5.1429	5.0991	0.995
mean	old city	1350.0	283.5	222.3	4.7622	6.0729	1.275

Table 2: The results of plan analysis comparing the today's historic core (hist. core) and the old city as it used to be before the modern changes (old city). The table shows only the mean values calculated for six cities.

In order to identify the above mentioned damage to urban structure, an analysis of syntactic measures can be intensively used (table 3). The syntactic measures show that in spite of the simplification in plan morphology, the values of integration for the traditional city and the present core of English cities are fairly close, especially at the global. Conversely, the measures show that the today's cores in Iranian cities are radically more integrated than the traditional grid. This means modernisation in English historic cores simplifies the grid at the local level, but maintains its global characteristics within the whole structure of the modern city, whereas in the Iranian examples the superimposed grid has a shallow impact on the fabric of the grid at local level, but at the global level it makes the historic core radically different.

cities	status	syntactic values (means)	syntactic values (others)	m. con.	m. int. R3	m. int.
Rr		m. int. Rn	max. depth	max. con.	max Rn	min. Rn Rr
English Cities						

cities	status		m. con.	m. int. R3	m. int. Rr	m. int. Rn	max. depth	max. con.
max Rn	min. Rn	Rr						

English Cities

	mean	hist. core	4.3529	2.4408	1.2417	0.904	13	19
1.1602	0.6772	4.38						
	mean	old city	3.4597	2.028	1.4401	0.965	19	17
1.6572	0.5361	5.7						

Iranian Cities

	mean	hist. core	3.0145	1.8189	1.4767	1.2778	25	62
2.3961	0.5912	5.99						
	mean	old city	2.772	1.602	0.753	0.482	44	11
0.724	0.306	12.86						

m.=mean; con.=connectivity, int.=integration; max.=maximum; min.=minimum

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The comparison between the syntactic maps of the old and new cores adds more insight to the figures and values (Figure 4). Being extremely long and connected, the superimposed lines inside the historic core draw the integration value of the whole system toward themselves. Consequently, the old integration core of the old city becomes more and more segregated. Besides, the distribution of integration in the entire system becomes reversed. For example the pattern of integration in the bazaar complex, which used to be based on an overall increase from outside to the centre, changes to a disorderly distributed version which is determined by the depth from the modern lines (the closer the line is to the new streets, the more integrated that line becomes). By contrast, such dramatic differences between old and new do not exist in English cities since the patterns of global integration in all English new cores persistently follow the pattern of integration in the traditional cities.

The difference between English and Iranian cores at the global level can be also detected at the local level. Modern lines in Iranian cities impose a new local configuration based on the direct distance from new lines, whereas local structures in English historic cores are still focused around the major traditional routes. It is apparent that the evolutionary change of the plan features -such as the reduction of axial lines and block numbers- do not affect the traditional local structures in English cities. Since both local and global configurations have changed moderately and sympathetically, English cities manage to preserve their part-whole structure and traditional pattern of legibility. The destruction of local and global configuration in Iranian cities means that the traditional relationship between these two has also been destroyed. The loss of part-whole structure under the severe modernisation is another spatial principle which this paper conceives as the fundamental obstacle in the way of urban conservation.

Table 3: The results of axial analysis comparing the existing historic core (hist. core) in the context of the whole modern city and the old city (old city) as it used to be before the modern ages. The table shows only the mean values calculated for six cities.
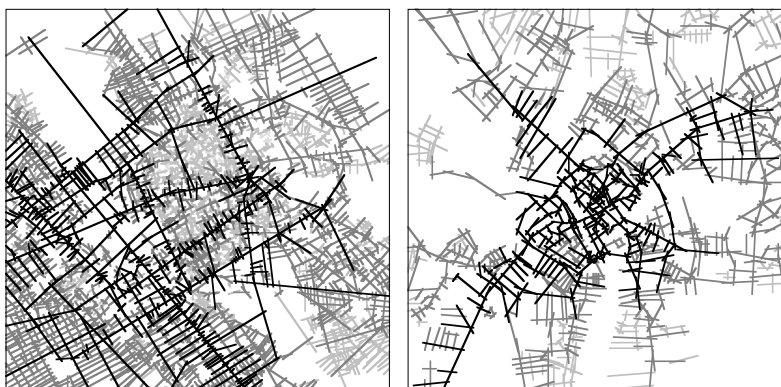

Figure 4: The axial analysis of one Iranian city, Kerman (left), and one English city, York (right), today. The analysis shows that in English example the historic core becomes the most integrated part of the city and the spatial structure remains similar to the old city; whereas in Iranian case the modern streets dominate the structure and destroy the old patterns.

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In its last analysis, the paper attempts to show how the spatial transformation could affect the other aspects of urban life inside the historic core. In this connection, old and modern 'urban elements' are used to demonstrate the difference between the two modes of radical and moderate change. Following the same method for the organic cities, a representative range of modern and old elements within each category have been chosen. As the first step, all selected urban elements have been superimposed on the integration maps (in the context of the whole city) of English (Figure 5) and Iranian cities (Figure 6). Then, these result have been substantiated by the rank tables of urban elements in English historic cores (table 4).

The global integration ranking of urban elements emphasises two important notions in English cities: firstly, the traditional elements, especially the ones with higher commercial and social significance, are still among the most important elements of the modern city; and secondly, the ranking of the old elements in the modern city follows the same order as the ranking of elements in the traditional cities. Quite differently in Iranian cities, the table exhibits clearly how the traditional elements of the old city become secluded after modernisation, but more importantly, it shows that even the traditional rank order of these elements changes remarkably. For instance, the bazaar and caravanserayes, which used to be the most integrated traditional elements, lose their position, but the shrines which used to be less integrated than even the local elements, become the top elements in the traditional group.

Figure 5: the major modern and traditional elements of the city superimposed on the global integration map of the historic core of an Iranian city (Kerman) today.

The analysis demonstrates that in the case of moderate change in English cities, where the principles of traditional urban structure have been preserved, the traditional elements maintain their significance in relation to the spatial structure; but more importantly, it appears that the modern elements follow the same logic of the organic cities in constituting themselves inside the grid. This compatibility creates a balanced mixture of modern and old elements inside the historic core. Conversely, in the case of radical modernisation in Iranian cities, where the spatial structure of the city had been truncated, it is found that the traditional elements after modernisation tend to become more and more secluded; but more importantly, it is shown that the traditional rank order of these elements is also dramatically changed.
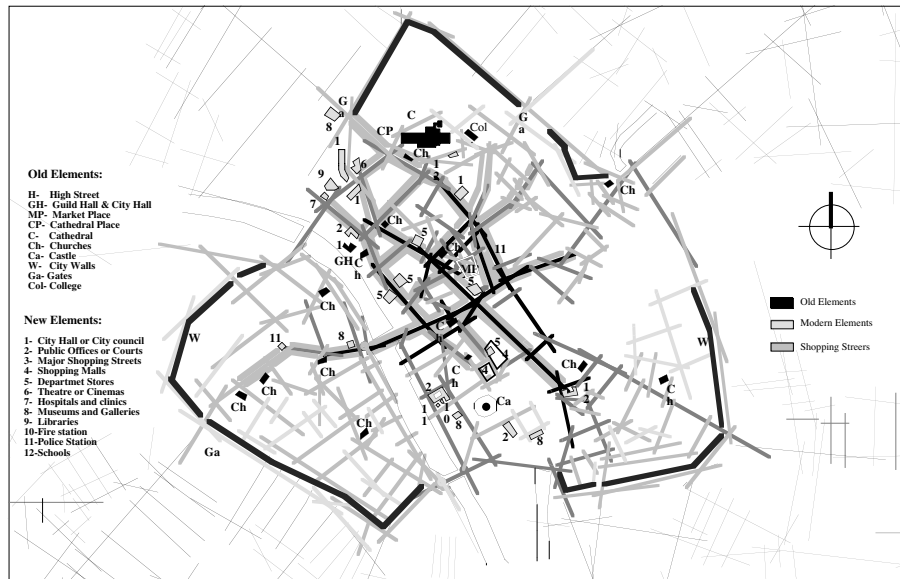
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Iranian cities	average
City Elements	*int.Rn/*
(old and new)	*mean int.*
1 Cinemas	1.775
2 City Hall	1.743
3 Banks	1.732
3 Guild Hall	1.527
4 Shopping Streets	1.713
5 Libraries	1.644
6 Museums	1.594
7 Fire/Police Station	1.577
8 Public Offices	1.570
9 Hospitals	1.552
10 Grand Mosque	1.415
11 Shrines	1.274
12 Friday Mosque	1.233
13 Schools	1.223
13 Public Offices	1.370
14 Bazaar	1.172
15 Carvansaraye	1.151
16 Local Squares/Bazaar.	1.017
17 Mosques	1.007
mean Rn (whole)	1.000
mean Rn (old core)	0.973
minimum Rn	0.450

English cities	average
City Elements	*int.Rn/*
(old and new)	*mean int.*
1 High Street	1.613
2 Market Place	1.528
3 Guild Hall	1.527
4 Dep. Stores	1.513
5 City Hall	1.510
6 Library	1.422
7 Museum	1.413
8 Fire/Police. Station	1.408
9 Theatres, Cinemas	1.394
10 Shopping Streets	1.389
11 Cathedral Place	1.389
12 Hospital	1.372
13 Public Offices	1.370
14 Churches	1.363
15 Castle	1.291
16 School	1.288
mean Rn (old core)	1.273
17 Cathedral	1.250
mean Rn (whole)	1.000
minimum Rn	0.586

Apart from urban elements, there is more evidence to stress the importance of the spatial structure in urban preservation. For instance, retail activity as a prime function of the urban grid, is an important aspect of urban regeneration. Not only is the location of the major retail in the city significant, but also the formation of the urban grid next to the retail centre conveys a lot of implications. The analysis shows that retail activity in English cities remains inside the historic core, whereas in Iranian cities it tends to move outside (Figure 7). More importantly, the centre of retail activity in English cities is located in the centre of the traditional core; consequently, the central parts of the core -which used to be the most important part of the traditional city- become economically viable and this increases the chance of private investment inside the core. On the contrary, the retail activity in Iranian historic core is mostly attracted to modern streets. Therefore, the central areas of the traditional core -i.e. the bazaar complex- lose their significance as potential places

Figure 6: the major modern and traditional elements of the city superimposed on the global integration map of the historic core of an English city (York) today.

Table 4 The rank order of the global integration (Rn) for the old and modern elements of English and Iranian historic cores. The table is sorted by the average value of integration Rn divided by mean integration of each city (the second column). The city elements in bold letters are the traditional elements.
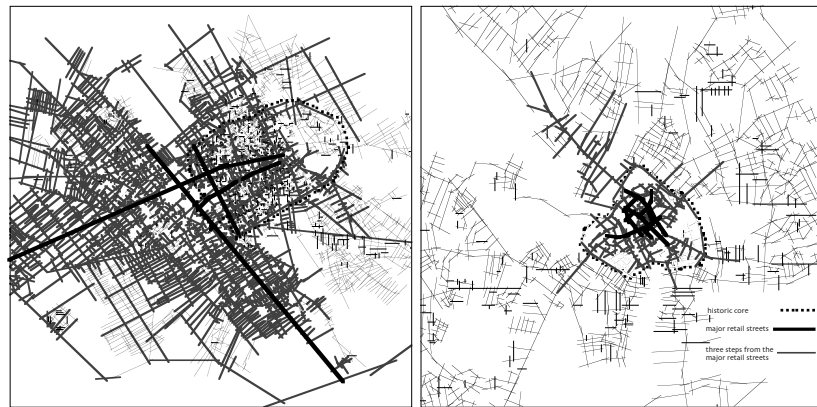
62.12

Figure 7: The major retail streets and the three-step depth from the major retail streets of Kerman and York.

for investment; thus, the expenditure for conservation becomes limited to injections of money from outside. In long term, the commercial decline of the old retail centre plays an important role in the further deterioration of the built environment. Most studies of Iranian historic centres emphasise the shift of the retail centre from the bazaar to modern streets as an important reason for the destruction of the core, especially the bazaar area, both economically and environmentally.8 By contrast, English historic cores are generally successful in attracting the major retail activity and also the people who use the area consistently. In the line with retail activity, other indicators, such as land prices, building construction quality and so on, also confirm that in Iranian cities the historic cores have dramatically declined, whereas in English cases the historic centres have maintained relatively high potentials.

6. Discussion and conclusion

The paper has attempted to present a new approach to the concept of urban conservation by prioritising the issues of urban context and spatial transformation. In the first section it was discussed that the concept of conservation is a new trend, especially when it concerns the urban fabric rather than individual buildings. It was also mentioned that urban conservation in recent decades has been more attracted toward dynamic conservation which aims to preserve the physical characteristics of the old cores as the focal point of history and culture in the modern cities as well as the centre for creating life, activity and socio-economic viability. However, the practical ways of urban preservation as well as the analytical and systematic approaches to the problem were discussed to be limited and undeveloped.

According to this, the paper has sought to provide more insights into the complexities of urban conservation, at least in its spatial respects. Before starting the analytical investigation, the existing conditions of the historic cores in Iranian and English cities were explained to clarify the details of urban conservation in these two city types. The structure of English historic cores, which have not been subjects of extreme urban transformation, appeared to be more adaptable with the old and new mechanisms of life; whereas Iranian cities, which have been modified by radical engineering solutions, seemed to be deprived and disabled in response to the both modern and traditional patterns of urban interaction.

In the first stage of the analytical investigations, the statistical outputs from both plan analysis and syntactic analysis created a clearer explanation of the different patterns of change for the two city types. In Iranian cities, there seems to be a

tendency toward presenting some similarities between the plan measures of the traditional city and the historic cores of modern cities, in spite of the extreme change of the urban structure. But on the other hand, some other measures such as integration and maximum connectivity, reveal a radical change in the configurational characteristics of the urban structure. English cities, by contrast, demonstrate a harmonious change in both morphological and configurational measures, with a greater tendency toward the incremental process of morphological simplification, rather than radical changes. The study of urban structure based on analysed maps and the local-global relationships showed that English historic cores have preserved a great deal of the traditional pattern, such as the centre of integration, the distribution of integration, the differentiation between various parts of the urban system, and the part-whole interrelationship. In contrast, the interference in the spatial structure of Iranian cities was shown to have an outstanding effect on the total organisation of the urban system, changing the whole pattern of the local and global integration and their correlation. The fact that English cities preserved their spatial structure and Iranian cities lost their traditional structure led to the result that conservation is not only about the individual building and places. It is more about the relationship between the spatial components of urban system. The essence of these relationships, the 'spatial spirit', is an invisible power which controls the organisation and utility of the historic core.

In order to see how the transformation of the spatial structure correlates with other changes in the historic core, a detailed discussion on the analysis of urban elements was presented after the spatial investigations. The analysis in English historic cores demonstrates that the relationship between the traditional urban elements and the spatial structure remains similar to the past. Besides, the modern elements of the historic core follow the same logic of the relationship between the spatial structure and the urban elements in the old city. The spatial transformation in Iranian cities, however, truncates not only the hierarchy of traditional urban elements in the historic core, but makes them considerably more secluded in the whole system. Therefore, the modern elements are built according to a new spatial logic, but the old elements and the most of the urban fabric lose their logic of constitution in the urban grid. This argument suggests a new fundamental concept of urban conservation. The elements of the city, which have to be preserved because of various reasons, cannot be conserved appropriately unless they are kept within their traditional context. This conservation, however, does not mean a monolithic preservation of the physical environment. It is more about preserving traditional relationships and hierarchies. The case of English cities shows that even under morphological changes the overall pattern of the spatial organisation -the spatial spirit- can survive, whereas the Iranian experience presents a total loss of spatial spirit, in spite of some morphological stability.

There are other characteristics in the old city, it was discussed, which substantiate the influence of spatial structure on the fate of historic cores. Retail activity, for instance, shows a strong dependence on the integration value of the urban spaces. Therefore, when the traditional structure is preserved, the traditionally important spaces remain economically viable. But when the old structure is destroyed, the preservable spaces lose their economic significance and consequently, lose their viability to be productive.

62.13

62.14

Although the adoption of the traditional pattern of spatial structure is a fundamental step toward conservation, it does not mean that other problems do not occur and new solutions should not be proposed. In the case of English historic cities, for instance, where the preservation of the historic structure provides a good basis for conservation, it also creates a situation where the historic core has to accept heavy duties in the heart of the city. The volume of traffic which has to pass through the historic core because of the grid structure, and the dominance of land-use pattern by commercial and retail activities which discourages people to live in the historic core, are some of these problems. Therefore, what the paper proposes as a foundation for urban conservation is not a rigid and museum-like preservation. A successful conservation has to give way to adaptation and new elements as well. But the important point is how the city can be conserved without being frozen. A very important step in this direction is protecting the unique spatial system of the old cities, or the 'spatial spirit', which creates the relationships among the component and functions of the urban system. As long as the principles of urban structure are maintained, the system can evolve without creating problems. The important lesson from this is that before engaging in any detailed process of conservation, a basic knowledge of the spatial harmony between the past and present is needed, otherwise the past loses it logic, and consequently its viability to be conserved, or the new cannot find its appropriate place to function.

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7   Notes:

1   Space syntax is the set of theories and techniques, developed during the past two decades in the Unit for Architectural Studies (now known as Space Syntax Laboratory), the Bartlett School of Graduate Studies, University College London, by Bill Hillier, Julienne Hanson, their colleagues and students.

2   Including the author's own doctoral research and other studies undertaken at Space Syntax Laboratory, The Bartlett School of Graduate studies.

3   Iranian cities chosen for this study are: Shiraz, Kerman, Qazvin, Hamedan, Kermanshah and Semnan. The English cases are: Norwich, Bristol, York, Hereford, Canterbury and Winchester.

4   Axial analysis models the structure of urban systems by driving a network of axial lines through all convex spaces. These lines are the representative axes of sight and movement. A computer-based analysis determines the relative depth value of each line with respect to all other lines of the system and creates an analysed map which shows the integration of each element in the urban system.

5   The books social logic of space (Hillier & Hanson 1984) , and space is the machine (Hillier 1996) , and many other papers by the authors of these books are some of such references. 6Plan measures are plan properties such as area, block number, length and so on which can be measured directly from the plan. 7In order to avoid large tables, only the mean values for each group of Iranian and English cities have been demonstrated in the table. 8 For instances see (Falamaki 1977) , (Karimi 1993) , (Abbaszadegan & others 1993) , (Clark 1963) , (Clarke & Clark 1969)