The tale of two cities:
Urban planning of the city Isfahan in the past and present

14

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Abstract
This paper investigates the grid dynamics of the world-famous Iranian city of Isfahan in the past and present. The study uses the techniques of space syntax to analyse the city during its long history of evolution, but the major focus of the paper is to compare the differences between urban planning and growth of the city in the past and present. The use of space syntax methodology is particularly helpful in understanding the mechanism of transformation in Isfahan, because a major part of it has a spatial nature. The paper analyses the old transformations of the city and explains how the historic developments of the city, in particular the vast growth of the city about 3 hundred years ago, were in harmony with its spatial, as well as social structure. Then it will be demonstrated in details how the 20th century planning solutions have failed to continue the thoughts of the past. The initial acts of road building in the beginning of the previous century, as well as the new comprehensive masterplans drawn for the city during 50s and 60s, are evaluated and their positive and negative sides are investigated. The study will go further to examine the very current debates in the city, including a controversial proposals for creating two more new streets parallel to the central street of the city. The results of the study provide a general knowledge for the city of Isfahan, which are very important for any planning and urban design decision making process in present and future; but more importantly, these results offer a useful source for contemporary urban planning in historic cities with similar characteristics to the city of Isfahan all over the world.

Keywords
spatial structure, master planning, road building, urban transformation

14.1

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1. Introduction

The city of Isfahan is the Iranian cities par excellence. During its hundred years of evolution, the city has become one of the most appreciated cities in the world. The roots of the city can be traced back to at least two millennia ago, but it became the most important city of the country when it was chosen as the capital once in 11-12th century and again in 16-17th centuries. Particularly in the latter period, the city expanded enormously and its great old structure was complemented by massive new urban developments. These developments, which were in harmony with the older establishments of the city, transformed Isfahan to a unique Iranian city.

14.2

The city of Isfahan has been in constant evolution from more than 2000 years ago till now. During this long history, two major transformations can be recognised. The first transformation started about 400 years ago when the city was designated the capital of Iran again (Gaube, 1978). During this period, the city changed to a highly renowned city, combining the splendour of magnificent buildings with the greatness of functioning urban spaces and infrastructure. This type of quality and the vast scale of the city for that age attracted the admiration of any visitor and earned the city the reputation of *half-of–the–world*. Totally different in scale and nature, the second major transformation of the city happened in the more contemporary periods, when the city turned into a modern and industrial city. Starting about 80 years ago, Isfahan, like any other Iranian cities, has been the subject of a major programme of road building and physical reshaping. Followed by these radical initiations, three comprehensive plans for the city have changed Isfahan enormously. Present-day Isfahan is a large, modern city, which has inherited a huge legacy from the past, but is confronted with the problems created by the clashes between its past and present. Although some similar trends can be seen in the both above mentioned mega developments of the city, they hold principal differences. Whereas the 17th century development happened mainly in continuity with the traditional structure of the city, the 20th century changes have been in total conflict with the past. A major network of new streets suitable for vehicular traffic seems to have been the main intention behind all changes in the city. Being the most successful city in the country, Isfahan is not a model for failure, but a more sensitive urban planning approach to transform of the city could have created more advantageous results for the city of Isfahan.

The city is still confronted with master planning proposals, which are more based on the wishes of the national and local planning authorities and urban designers rather than the true needs of the city. The historic fabric of the city is more and more invaded by construction of new roads that undermine the old structure of the residential and commercial quarters. Even in the less problematic areas, new programmes of road building are on the way to satisfy unnecessary needs. For example, the proposal for building two new streets in Chaharbagh-e-Bala area, to the south of the river, is still under debate, and in spite of people and local authorities objections, the persistence of planning authorities and urban planners, has kept the programme alive. The need for evaluating these types of development seems to be as necessary as investigating the overall dynamics of the city of Isfahan.

This paper attempts to address three main issues: first, the characteristics of the 17th Century development of Isfahan; second, the influences of the modern planning decisions and comprehensive master plans of the city; and third, the current

issue of building two new roads in southern Isfahan. The paper uses space syntax methodology to analyse the dynamics of urban grid for these three issues, but the study deliberately avoid a complex methodology to approach its problems, since the use of simple spatial analysis provides enough evidence for the arguments. Axial analysis and measures of spatial integration (global radius, or radius n mainly) are the major tools for investigation. Since the paper is presented for the Fourth Space Syntax Symposium, it does not repeat the fundamentals and techniques of space syntax analysis, assuming that most of the readers are familiar with them. For further references, a large number of books and articles are available to readers[1].

2. Making of the city: Isfahan before the 17th century

The city gained its prominence again from its unique central location in the country. Being located at one the important branches of the Silk Road, this location is one of the most accessible places in the Iranian Plateau. The second advantage of the city was of course Zayandeh-Rood (the Birth-giving River). For a country that most of its cities suffer from shortage of water supplies, forcing them to bring water from tens of miles away by digging chains of interconnected wells (Qanats), a city with a permanent supply of water is an exception. This is why this city has always been so attractive to people and rulers.

According to historical sources, such as traveller's memoirs, the city started from three close locations: The ancient Jay, Yahudieh (Jewish settlement) and Ispahan or Isfahan (Gaube, 1978). These three settlements merged long time ago and created a single city, which has been recognised in its entirety since at least 1400 years ago. The city started its great reputation since it was chosen as the capital of the great Seljuk Empire. Seljuks, who practically ruled a huge chunk of Asia in 12th and 13th Century, turned the city into the most important city of the country. The northern part of the city, which is packed with great buildings and monument dates back to this era.

The structure of the city in this period (Figure 1) was based on a large organic square, called Meydane-Kohneh (or the old square). This organically shaped square was located where the major thoroughfares converged in the centre of the city (Browne 1976b). The main routes leading from outside to inside of the city transform into to the major branches of the grand bazaar, a pattern which has preserved its major characteristics until now. This formation, however, is a bit different from other Iranian historic cities, where no major square is the centre of spatial organisation and the bazaar itself plays this important role. Nevertheless, Isfahan's bazaar remains as one the best examples of the Eastern bazaars, in terms of character, size and architecture.

Figure 1: The map Isfahan in Safavid period (16th Century). The older part of the city, which used to be the limits of the older capital is shown by the dotted boundary
(Source: Browne, K., Cantacuzino, S. and Fagih, N., 1976, "Isfahan: A Special Issue", The Architectural Review, 951, pp. 253-322)

14.4

An axial analysis of the city in this period shows exactly the above-mentioned pattern (Figure 2). In global integration analysis, the old square is clearly the most integrated place in the city, which coincides the geographical centre of the city as well. The high levels of spatial integration extend from the main square through the different branches of the bazaar and reach the gates. The main thoroughfares shape, at the same time, residential quarters around them are joined to each other by some secondary routes. The spatial structure of Iranian old cities has been discussed in details in previous studies (Karimi, 1997, 1998, 2002; Motamed, 2000). The only big difference is that the central square in old Isfahan becomes such an important urban space, whereas in the other cities this is not exactly the case. If the structure of the square itself is analysed, it becomes apparent that it is not hugely different from the other cases. Meynane-Kohneh (old square) is a bazaar itself, surrounded by shops and filled with stalls and non-permanent traders. In fact, in the later periods the old square was filled with rows of shops, transforming it into a bazaar complex instead of a square.

All the glory and significance of Isfahan vanished in 1387, when Tamerlane, sacked the city and left it in the state of ruin. It is certain that the city continued to its existence, but without any doubt it lost a great deal of its urban strength after the severe demolitions. This is maybe the reason that in forthcoming periods of development, the city moved to the south to find more breathing space.

Figure 2: Axial analysis of the old Isfahan before Safavid period, showing the measures of spatial integration (global integration). The darkest line on the map has the most and the lightest line has the least integration value.

3. Transformation of Isfahan during the Safavid period (16th and 17th centuries): the tale of a perfect city

The main transformation of the city starts in 1597, when Shah Abbas, the Safavid king moved the capital of his huge kingdom to Isfahan. With the assistance of his adviser and town planner, Sheihk-Bahayee, he not only made Isfahan worthy of a capital again, he expanded the city far beyond its old borders. A large number of new building and urban spaces were established, but more importantly, a great work of urban master planning occurred in this period. Although the major goal of urban development in Isfahan in that era was to enlarge and modernise the city, the planners of Safavid Isfahan did not decide to build a new city outside the old one. The method of abandoning the old towns and creating new ones has been practised from the ancient periods until now, though not as widely as the other approach, which attempts to work on the old, enhance and develop it further. According to the history, and what can be seen in historic Isfahan, the latter method was the solution chosen for this city in the turn of the 16th century.

The first and most important act of town planning in this period was the creation of a new square: Naghshe-Jahan Square (World View Square). This extraordinary square was an enormous 510 by 165 metres rectangle enclosed by rows of shops and four magnificent monuments (Figure 3). But the most important thing about the square is not its size. The more important point is the very well-thought and well-designed connection of this new urban space with the older structure of the city (Browne, 1976b). The key point in the design of this square is linking it

with the main chain of the grand bazaar, which extends from the Old Square, in a way that it becomes part of the overall structure of the city (Figure 4). Although theSafavid king always wanted to give more significance to his new square, the design of the square never undermined its relationship with the rest of the city.

Figure 3: Naghshe-Jahan Square (The World View Square) as it can be seen today
(Source: authors' own photograph)

14.6

Figure 4: The extension of the old bazaar and creation of Naghshe-Jahan Square in Safavid period in the 17th Century
(Source: Ardalan, N. and Bakhtiar, L., 1975, The Sense of Unity, Chicago, University of Chicago Press)

The second important decision in the development of Isfahan was the creation of a new street, Chaharbagh (or Four Gardens). Unlike most of the old streets in the old Isfahan, this avenue was a wide, straight boulevard with four rows of large trees and a stream in the middle. But unlike most of the Haussmann style boulevards in Paris, *Chaharbagh* was not cut through the fabric of the old city. This boulevard was created as a north-south extension of the old city, continuing to the south, where an extensive complex of *Safavid* gardens was created. The glorious bridge of *Sio-seh-Pol* across the river *Zayandeh-Rood* was used to connect *Chaharbagh* to the south of the river (Honarfar 2002). The intension behind this bridge was to create a city on both side of the river. A parallel bridge further east completed this idea by extending another major thoroughfare of the city to the south. The third undertaking of the plan for renewal of the capital was the creation of a rectilinear grid around the northern Chaharbagh for new residential developments and governmental places. This part of the city was planned to accommodate the new residents needed for the important people of the capital. The fourth endeavour of urban planning in this era was the admirable renovation of the water distribution system of Zayandeh-Rood's through creation and enhancement of a network of little and large streams, called *"madi"* in local dialect. These streams, which were responsible to bring water to where it was needed in the city, had inevitably a clear morphological effect on the structure of the city.

Therefore, the essential structure of Isfahan in the Safavid period can be described by two major axes of development: first, the north-south axis alongside the old backbone of the city, which was formed alongside the main chains of the bazaar and extended through Chaharbagh Avenue to the south of the river; and second, the east-west axis alongside the *Zayandeh-Rood* river and its artificial branches, or *madi's.* Whereas the first axis of development shaped the built environment in Isfahan, the second axis provided the natural element and its influence on the urban life.

Figure 5 demonstrates the axial analysis of Isfahan in Safavid period. The axial analysis of Isfahan in this period stresses the following results:

* The old city retains its overall structure, in spite of the new developments in the south,
* The main bazaar, between the old and new squares, remains as the most important part of the urban structure,
* The old square remains as an important part of the city spine and retains its significance as a focal urban space in the north of the city,
* The new square gains a considerable importance at the southern end of the city spine and acts as the second focal point of the city in the south,
* The new square is not over-emphasised in the plan of the city and does not overshadow the whole structure,
* Chaharbagh Avenue appears as one the most important thoroughfares of the city, but it is still comparable to other thoroughfares, in terms of integration values, and,
* The new rectilinear developments in the Southwest become reasonably integrated, but again they do not overshadow the old structure.

Figure 5: Axial analysis of Isfahan in Safavid period, showing the measures of spatial integration (global integration). The darkest line on the map has the most and the lightest line has the least integration value.

These results, which have been obtained from the axial analysis of the city, create a very clear understanding of the urban planning of the past in Isfahan. Despite the despotic nature of decision-making at that period, and despite the available forces for a total transformation, still the people in charged of the planning decided to integrate old and new and make a city of both. Whereas the new part was supposed to provide grandeur and excellence, the old part was retained for its vitality and energy. The result was a rational planning that achieved to reconciliate two apparent contradictory concepts: preserving and renewing. This is an exemplary achievement, which should have been appreciated and taught from contemporary urban design. Unfortunately, this lesson was totally forgotten when, in a three hundred years later, the town planning of the city was again on the agenda.

4. Modern Master planning in Isfahan: the tale of a new city

The issue of rapid modernisation in Iranian cities, based on driving modern avenues through the old fabric of the cities and extending them outside the old cores, has been addressed in other studies (Karimi, 1997, 1998, 2000, 2002). These studies have shown that this type of intervention in the old cities has created the configurational isolation of the old cores and destruction of its traditional structure, which has lead to full deterioration of the historic centres in the 20th Century. In this paper, however, we concentrate more on modern town planning strategies in Iran, and in particular in Isfahan, in order to compare it to its historic roots.

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 these acts did not follow any predetermined plans. The decisions were rather casual and based on the time and location. The need for masterplans started to emerge when cities grew enormously, and when the country was introduced to the achievement of the Western planning methodologies. This leads to a comprehensive programme of producing masterplans for all cities. Under the country's Third Development Plan (1962-68) master plans had to be commissioned for all major cities. Iranian consultants were to associate with a European or American partner and, in absence of any local equivalent, to adopt the standards and regulations of foreign cities (Cantacuzino, 1976). These masterplans had three important outputs: road network, landuse, and building density or heights. Through the control of these three elements, the masterplans attempted to achieve their initial goals.

After the first programme 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 Urbanisme (no. 10) on Isfahan, in collaboration with Organic Consultants, an Iranian architectural and

planning firm (Cantacuzino, 1976). The plan produced by these planners was outrageously radical (Figure 6). A rectangular grid of roads designed for cars has 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 recognised from the Safavid period in the plan is Chaharbagh Avenue, which stands as important as the other streets in the grid. The great Naghshe-Jahan square and the bazaar area appear as two simple polygons. High densities have are suggested for the new streets frontages and each rectangular urban block has been given a neighbourhood centre, a learning centre and some school.

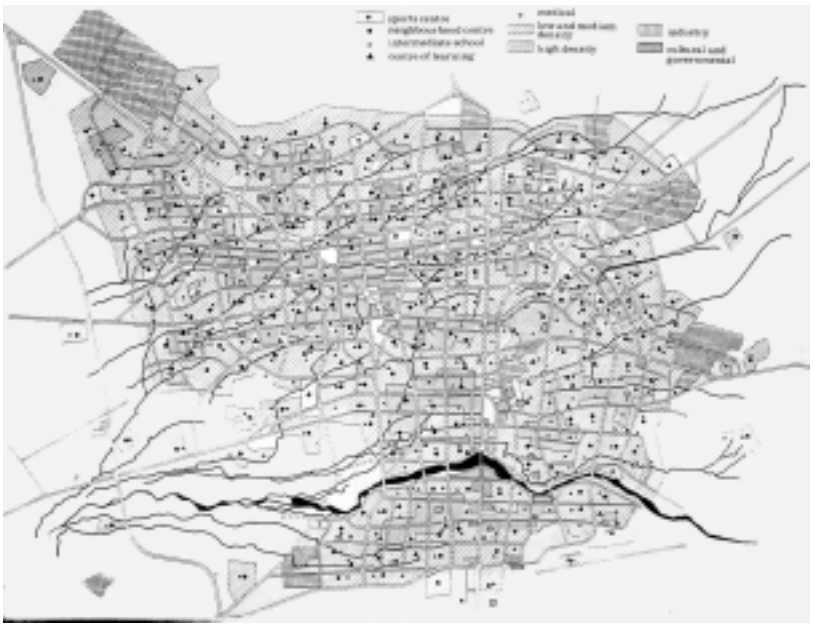

Figure 6: The comprehensive masterplan of Isfahan produced by E. Beaudouin and Organic Consultants
(Source: Cantacuzino, S., 1976, "Can Isfahan survive?", A special issue on Isfahan, The Architectural Review, 951 (v. CLIX), pp. 292-301)

In reality Beaudouin and Organic's plan 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 masterplan 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 analyse and evaluate the changes. Two maps have been used for the analysis. The first map is the city around 1980 (not shown) and the second one is the most updated map of the city (Figure 7). The results form 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 recognisable on the map.

* Chaharbagh 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 become a very important part of the city. It seems that the integration core of the city has shifted from the old centre to Chaharbagh and its surroundings.

14.10

Figure 7: Axial analysis of existing Isfahan (2002), showing the measures of spatial integration (global integration). The darkest line on the map has the most and the lightest line has the least integration value.

The result of the comprehensive plans, as shown by the axial analysis, is the relative destruction of the old structure. Only Chaharbagh Avenue seems to have held its place, however, even this has to be considered with caution. The role of Chaharbagh, which was an extension to the old centre, has dramatically changed. Being highly over-emphasised, this central street shifts all the energy and life of the rest of the city towards itself. This definitely has an expense for the city: an overcrowded and congested Chaharbagh, and a deserted old commercial centre. With further development of the city along its modern street, it seems that even Chaharbagh cannot function as a city centre. The street is two long and the supporting grid only exist in Safavid areas. The urban blocks created by the modern streets are very huge to form any centre. Therefore, as it can be observed in existing Isfahan, the centre of the city is gradually defusing linearly shifting more the significance fro the historic centre.

The story of master planning in Isfahan has continued till now. A new master plan for the city was prepared by Naghshe-Jahan-Pars Consultants about 20 years ago (Figure 8). Working in a very different environment compare to the era of the first masterplan, this master plan has a much more realistic and sensitive look at

different issues. The acceptance of the historic structure of the city and efforts to harmonise with it are positive points of the new master plan (Naghshe-Jahan-Pars, 1989). However, this plan also seems to suffer from the over-ambitious minds of its designers. Continuing the past in this plan is understood as huge extensions of the historic core and other major developments, which if implemented, would isolate the historic centre more than now. The lack of an analytical method of understanding the urban structure seems to be the case in the last master plan of the city.

5. Current issues in Isfahan

The *Safavid* gardens of southern Isfahan began to vanish after the fall of *Safavids*, but they continued to exist up to 80 years ago, when a movement for industrialisation of the country started. Some Industrialists chose the gardens of *Chaharbagh-e-Bala* area (i.e. the extension of the *Chaharbagh* Avenue to the south of the river) for building their textile factory sites. These factories, which replaced some gardens in this area, created themselves a new urban formation in Isfahan and were in use until about 20 years ago (Fagih, 2002), when the textile industry in Isfahan and other Iranian cities totally declined. Losing their importance as industrial centres, these factories with their valuable architecture and large sites have become highly attractive for new residential and commercial developments in southern Isfahan. On the other hand, these sites carry great potentials to be used for the creation of new urban projects which could preserve the factory sites, complement the old structure of Isfahan and make it a much more attractive city.

Figure 8: The comprehensive master plan of Isfahan produced by Naghshe-Jahan-Pars Consultans
(Source: Naghshe-Jahan_Pars Consultants, 1989, "Summary of the report on the comprehensive masterplan of Isfahan", The Ministry of Housing and Urbanism)

In the last comprehensive plan of the city, this potential was recognised and an important urban focal point was proposed to be built in this area by combining the site of old factories and other available sites. This proposal, however, never

materialised, and instead a campaign to transform these sites to residential/commercial developments was initiated by owners or sponsors of the factories or by others who had realised the economic potentials of these sites. Unfortunately, except one or two factory sites, the other ones have been massively reshaped. Most of the valuable industrial buildings were demolished, and some new developments are rising that have no values or contribution to the role that Chaharbagh-e-Bala area can play in Isfahan.

In the new master plan, two streets parallel to Chaharbagh-e-Bala were proposed (Figure 9). The idea behind these streets was to give more strength to this very important urban axis, to take traffic off to the new streets and to transform Chaharbagh into a safe urban heaven. Being very close to the historic Sio-se-pol Bridge, there was no chance of connecting these streets to the other side of the river. Therefore, they remained in the plan as only "helpers" of the Chaharbagh Avenue, and nothing more.

Figure 9: The map of Chaharbaghe-Bala, showing the historic street and two proposed streets paralleled to it
(Source: author's drawing)

Attractive as it might seem in the beginning, this proposal could have significant consequences. Being 30 metre wide and about 2 Kilometre long, a vast programme of land acquisition and compensation rewarding had to be taken by the local authorities. According to Isfahan's Municipality the cost of building these two streets was estimated more than 60 million dollars in 1996 (Isfahan Municipality, 1996), and according to the escalating land prices in the area, they expect twice of the estimated figure, if they want to go ahead with the plan now. Compared to the total budget of the municipality, these figures were huge and not simply feasible. Besides, the plan created an enormous dissatisfaction among the local resident who did not want to lose their properties. In spite of all these problems, the designers of the new road still persistently insist upon the necessities of this road building programme, since they believe the new streets will:

* remove the vehicular traffic from Chaharbagh-e-Bala and make it suitable for pedestrianisation,

* create a better grid support for Chaharbagh-e-Bala, as the main axis of the city centre,

* They are consistent with the historical development of the city,

* Create a powerful modern zone between the new roads and Chaharbagh-e-Bala, which will act as a new city centre

In order to evaluate the necessity and influence of the new roads, axial analysis was used as the tool for investigation. Since one of the major issues was the traffic role of the new roads and Chaharbagh-e-Bala itself, the study tried to develop a model that can explain both vehicular and pedestrian movement in the city. For this purpose, the 1980 axial model of the city was used to investigate the relationship between spatial integration and vehicular traffic. The traffic data gathered for the main streets of the city by the consultants for the 1980 comprehension plan of the city, became the source for this study Naghshe-Jahan_Pars, 1986). The result of the analysis is shown in Diagram 1. The high correlation coefficient value of 0.779 shows a very strong relationship between vehicular movement and spatial integration. If we think about the way the cities like Isfahan operate, this would make a good sense. Since the creation of modern streets, cars have become very important in day-to-day life, and in absence of an efficient public transportation system – such as underground or railway network – cars and buses are the main means of movement. The vehicular and pedestrian movements seem very much replicating each other on the main streets.

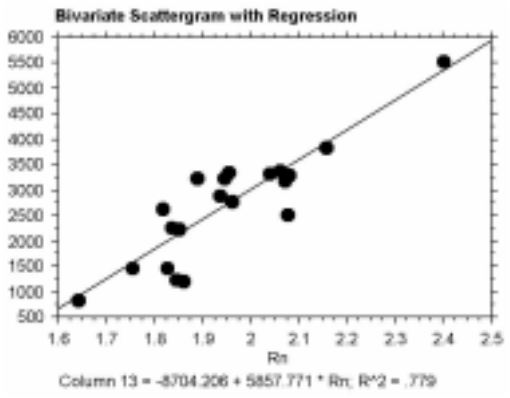

Diagram 1: The scattergram correlating the number of cars per hour with spatial integration in year 1986

Based on the results of the above-mentioned analysis, axial analysis was used to evaluate the building of the two new roads in Chaharbagh-e-Bala area. For this, three models of the city have been compared to each other. The first model is Isfahan as it exist today (Figure 10 left).The second map overlays the two new roads on the map and re-analyses the city (Figure 10 centre). Finally, an experiment has been done with extending the two proposed roads to the north of the river, in order to show how different the scheme can be if there was any chance to bridge over the river (Figure 10 right).

Figure 10: Axial analysis of the Chaharbaghe-Bala area: left: existing; centre: the area with the two proposed streets; right: the area with the two proposed streets extended to the north of the river

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The analysis of existing Isfahan shows that Chaharbagh-e-Bala is not a very integrated line, since it stops at the northern end (Figure 10 left). The analysis shows that the southern part of Chaharbagh is 30 % less integrated than the northern part. By further inspection, it becomes clear that two major roads parallel to Chaharbagh-e-Bala, which are connected to the north by two bridges, are more integrated than Chaharbagh-e-Bala. This means that the vehicular load of Chaharbagh-e-Bala has already been shifted to these two parallel roads, but it also means that Chaharbagh-e-Bala has to compete for other activities as well. Although the street is still connected to the north of the river by the pedestrian bridge, its vehicular disconnection means that many activities, including retail, will move to more integrated streets.

The analysis of the Chaharbagh-e-Bala area after imposing the two new streets is shown in Figure 10 centre. The analysis shows that the integration values of the new streets are very close to each other and slightly lower than Chaharbagh-e-Bala itself. The creation of these two streets also shows almost no effect on the overall integration pattern of the city. This means that with all the expenses and troubles to create the new roads, these two streets are nothing more than two competitor for Chaharbagh-e-Bala without solving the problems that they were supposed to resolve. The vehicular traffic will still be distributed by the parallel streets further west and east, and the whole traffic will be forwarded to the existing bridges again.

Another analysis that extends the new streets to the north of the river, however, shows a different picture (Figure 10 right). Being connected to the strong integration core of the north, the new streets become the focus of the area. They would bear a higher vehicular traffic load than the roads further east and west, and they seem to extend the integration core to the south of the street. As explained before, this option has to be abandoned for heritage reasons, but even if this problem did not exist, by extending the new streets to the north of the river, the historic and highly admired Chaharbagh-e-Bala both would have become far less integrated than the proposed

roads. This means that in long term, the new streets that have higher integration and car access will be much more important than the historic avenue, and there will be a great possibility that Chaharbagh-e-Bala would lose its entire significance.

As it is seen clearly, the new streets cannot do a significant change in vehicular use of the area. They only provide more places for car parks, which can only encourage people to bring their cars to the area. This again goes directly against the initial intension of the planners to make Chaharbagh-e-Bala a car-free street. An important point that lacks in planners vision is to consider other means of transportation. It seems that they have been so occupied with the car as the prime means of moving in the city, that they have forgotten about the other ways of bringing people to Chaharbagh-e-Bala without cutting new streets parallel to it. In fact, local authorities of Isfahan have seriously studied building an underground system, and the first proposed line is a line underneath Chaharbagh Avenue from north to the south of the city. The underground can transport up to 15,000 people per hour, which is much higher than the highest level of pedestrian movement on Chaharbagh (about 5000 p/h) . There are also possibilities to create bus red routes, trams routes and especial taxi routes, to bring people to Chaharbagh-e-Bala without any need to build more roads.

In terms of creating city centre quality around Chaharbagh-e-Bala, the blocks created by the new streets have an average size of 200 by 300 metres, which is not a desirable size for pedestrian scale. It takes almost a kilometre for a pedestrian to turn around one of these urban blocks. Using the existing site and buildings of the old textile factories, for instance, could have been a far better solution for creating the grid quality needed for a city centre. The analysis clearly demonstrated that planners decision still follows the same mentality that created the first programme of road building in Isfahan, followed by mentality behind the masterplans of Isfahan.

6. Conclusion

A comparison between the old master planning of Isfahan in the 17th Century with its 20th century rivals reveals that the old master plan was far better inspired, thought and implemented. The key issue in the old plan was a thorough understanding of the once existing urban mechanism. In spite of all ambitions and needs for a different Isfahan, the old planners managed to preserve the harmony with the older city. This was achieved, the space syntax analysis showed, through two key strategies: continuation (and not interruption) of the old grid; and following the organic lines of natural elements and environment. In contrasts are the modern master plans of the city. Lack of objective understanding of the past, rush for modernising the city as soon as possible, use of alien methods of planning, and confusion of the authorities

and designers are all the reasons for the failure of the modern master plans in Isfahan. The major recommendation of this paper is urging for an effort to a more objective understanding of the cities before any planning or design endeavours. This is not only a lesson for the city of Isfahan, but a general guideline that has to be adopted for all urban designers and planner that are dealing with similar issues elsewhere.

Notes

[1] See for example:

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[2] The movement was measured by the author himself on a normal weekday on Chaharbagh Abbasi in Autumn 2002.

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