Activating The Mechanisms of Spatial Organization in Integration Traditional and Modern Districts in Baghdad City

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Abstract: The modern growth of Baghdad city has affected many traditional parts, which are neglected due to multiple factors. Such as the change of urban planning, and making new buildings regardless of the traditional city. The research showed that Baghdad’s historical center had grown through four stages since its establishment, during that time city’s structure have been changed. Such as the change of main paths that became parallel to the river instead of being perpendicular to it, besides the change in the use of many traditional buildings. These factors led to the problem of losing city’s identity. So, research problem is “the need to integrate the original traditional parts with the modern parts of Baghdad city”. The research assumes the capability of spatial organization principles to achieve this integration. This will be verified by analyzing the development proposal of “Jadeed Hassn Pasha” district as a case study, according to the principles of urban theorists such as: Lynch, Rossi, Salingaros, etc., in order to accomplish the research aim of exploring the most effective principle that could be used to maintain city’s identity. The research has reached to a preliminary result that all of integration principles are important, but it depends on each district to concentrate on each principle.

1.Introduction
Many studies have talked over Baghdad, its history, its urban structure, and its urban planning in order to find an appropriate integration between city’s parts. Some studies concentrated on Rusafa, such as (Sana S. Abbas and Sahar Hilal, 2013) study that describes the historical paths during Rusafa’s growth [1], (Altalib, et.al, 2017) study which shows the importance of urban space in vitalizing the city [2], and (Alhankawi, and Omer A. Khalaf, 2014) study that analyzes urban formation criteria of riverside skyline[3]. However, those studies did not analyze development process comprehensively to achieve integration. This paper studies the stages of historical Baghdad center in Rusafa. Its growth and the changes that accompanied it. As there are multiple proposed projects of development through the history of Baghdad, they have been implemented partially, and the separation between historical center and modern parts increased. Besides the destruction of multiple parts of Baghdad’s heritage. This paper will look over the projects of Rusafa’s urban development through history, reaching to analyze the latest development proposal to show the good and bad aspects of it, in order to help architects, planners, and the government to implement the best aspects. This analysis will depend on the assessment of urban design elements that is derived from the spatial organization mechanisms that are defined by the studies of urban theorists like Kevin Lynch, 1960, and others.

2. Rusafa’s Historical Overview

2.1. Rusafa in Abbasid Caliphate Mandate
In the establishment time of round Baghdad city in Karkh (western bank of Tigris river) by the Abbasid Khalifa Al-Mansour in about 151 HJ, Khalifa Al-Mahdi (Al-Mansour’s son) had camped in the eastern
side with his army. When he started to build houses for him and his soldiers in a collocated way, which had given Rusafa its unique name [4]. Besides building a mosque, a palace, and a bridge to connect Rusafa with the round city in Karkh [5], which is the location of Alshuhada’a Bridge in nowadays.

During the period of Abbasid khalifa Almaamoon, Rusafa was developed because he left the round city and settled in Alhasani Palace in Rusafa which was the center of large sectors, which are the traditional residential parts of nowadays [6].

After Alma’amoon, the capital was moved to Samarra’a city, till the period of Almutadhid who returned to Baghdad (Rusafa) and built a large semi-circular wall surrounding multiple palaces, religious schools, and mosques (Dar al Khilafa) in 892 AD [7],[8]. This was the center of city’s expansion to markets (Alrayhaneen the Shorjah of nowadays), hospitals, and houses. As shown on Figure 5.

In the last years of abbasid period, in about 1094 AD (in Almustadhir and Al mustarshid time), a large wall was built around Rusafa, due to the weakness of Abbasid Caliphate in that time. The wall had four main gates, that are shown in Figure 6 : Alsultan Gate (Bab Almuadham) to the North, Bab Al Dhufrya (The Middle Gate)(Still exist till now as Alwastani Gate), Al Tullasam Gate (till 1917 when it was exploded by Ottomans), Bab Al Basalya (Kilwatha Gate or Al Sharqi Gate) (till the 1930th when it was destroyed by Baghdad’s mayoralty to develop Altahrir square) [9]. Among the remnants of Abbasid architecture, comes Al-mustansiriyah school, Abbasid Palace, and the Minaret of Khulafa mosque as the most significant landmarks [10].

2.2. Rusafa in Ottomans time

In 1869, during Midhat pasha time, the great walls of Rusafa were destroyed to build (Qushla Building) as the center of Ottomans’ government and military [11]. This place, which is shown in Figure 7, had become the center of Ottomans government, as it contains the castle (alqala’a), police station, Post Office, courts, municipal, mosques, military school, markets, and the open space of (Maidan), which was a civic center where the celebrations where held [12].

2.3. Rusafa in 20th Century

After the destruction of Rusafa’s Great wall, urban context was expanded, and modernity reached Iraq, which leads to open AlRashid St. by Khalil Pasha which had his name at the beginning (Jada Khalil Pasha), in about 1908, and it was completed in 1916 AD, is shown in Figure 8. This street is parallel to Tigris river, in the contrary of other traditional paths that are perpendicular to the river, in spite of the destruction and cutting of traditional urban pattern, this street was considered an important trade rout, and has a unique building style till now [13].

In 1936, after the end of British Mandate, there was a Master Plan proposal to develop Baghdad, this master plan proposed cutting the traditional context of Rusafa with two wide streets, Alkifah St., and Shaikh Omar St., that were parallel to Al-Rashid St. they were followed by the planning of Khulafa St. (Queen Alia or Jamhooria st.) in 1954, as shown in Figure 9, that caused the destruction of about 32 Ha of traditional urban context [14].

Several masterplans were proposed for Baghdad by foreign companies, such as the British Minoprio in 1954-1956, shown in Figure 10, and the Greek Doxiades in 1959, shown in Figure 11, but they ignored the traditional characteristics of the city with gridiron planning [15].

In 1984 there was an important study presented by the Japanese company (J.C.P), in Figure 12. This study presented conservation and redevelopment proposals for Rusafa’s historical center. But they were not completely implemented [16].

Since (J.C.P) study, many proposals were presented by academics, architects, planners, and companies for Rusafa. One of them is 21st century revival proposal for Baghdad Historic City Center (BHCC) by the Iraqi architect Taghlub Alwaily, in Figure 13, which is presented in published books [17]. This study has a great interest in heritage and historical aspects as shown in Figure 14, as it tries to develop Baghdad’s historical center in Rusafa, along Rasheed street region till Tigris riverbank.
3. Spatial organization and Integration
Many urban studies have mentioned the characters of the good city. As this research is interested in the topic of integrating traditional and modern parts it will concentrate on the (Integration) concept of spatial organization.

Spatial organization is defined according to [18] as the relationships among city’s elements that introduce a city as a system. For analyzing the city, it is important to study city’s elements, which are the smaller sub-systems.

In the study of Kevin Lynch “The Image of the City”, Lynch defines the good city within the concept of “imageability” which means the perception of city’s elements as a whole [19]. Lynch mentions that the good city does not have a final Image, but it could be perceived through time, because it is related to city’s elements and people’s memory [20]. Besides having a clear image which is connected clearly by its elements, with high continuity through time (History) [21].

So, according to Lynch, integration could be achieved through the design of good elements, which are: Paths, Edges, Districts, Nodes, and Landmarks. That have distinctive characteristics as shown in Table 1.

Paths are the channels where observers move in the city, they are the predominant city elements [22]. Edges are the lines that break city’s continuous parts, they can identify the shape of the city, and the observer can only notice without passing through them [23]. Districts are the two-dimensional areas that have general unifying characteristics, which distinguish them among other parts of city, such as pattern, building types, skyline, or topography [24]. Nodes are the distinctive points (foci) that are penetrable, with special surrounding characteristics [25]. And landmark is a point reference within the city, it is used as a clue in city’s image and structure [26].

Integration concept has been mentioned in the studies of space, where Deprez considers space perceivable in the presence of boundaries, which are either physical, social, or mental. However, these boundaries can act as blocking or enabling mechanisms in the organizational theory [27]. While Salingaros [2000] emphasizes on space’s role in the integration, by depending on [Gehl, 1987] definition of the urban web as “a complex organizing structure that exists primarily in the space between human buildings”. Salingaros classifies this web to (nodes, connections, and hierarchy). Where nodes consist human activities, connections are the paths which connects activities, and hierarchy is the gradation of path’s scale from pedestrian ways to the roads of high capacity [28],[29]. Each part of the urban web has certain characteristics that are mentioned in Table 1.

Integration concept to Aldo Rossi is related to history, as he considers the city an archeological artifact, or a structure (Skeleton) of multiple parts that are related to history [30]. Good city to him is conceived as an inseparable whole [31]. So, he refers to “Total Architecture” concept to accomplish the Integration of city’s structure (Housing, Fixed activities, and circulation). Where the city is an (urban artifact) that has a temporal dimension of primary elements that are connected spatially by circulation [32]. These primary elements are important to Rossi because they are the fixed points (Permanent) in a specific place (Locus) of the city over time. They could be residential districts, or monuments that are either (Pathological) – the nuclei of city’s growth - , or (Propelling) – a record of past in the present- . They are considered as objective means to analyze the city comprehensively, and separable from the society [33]. As shown in Table 1.

| Kevin Lynch | Image ability | Path | a special use or activity | a distinctive spatial characteristic | having special facades | acting like an edge such as a river | a clear directional axis |
|-------------|---------------|------|--------------------------|-------------------------------------|----------------------|----------------------------------|------------------------|

Table 1 The assessment criteria of Integration according to urban theorists. (Reference: Researchers depending on mentioned theories above)
containing a sequence of landmarks or nodes along it has a simple intersection with other paths have a clear and strong connection with other elements in the city

**Edge**
- visual prominence
- continuous form
- impenetrable
- combines city’s parts rather than dividing them
- have directional qualities
- overhead paths such as bridges

**District**
- general unifying characteristics
- contrast from the city
- strong edges
- strong core (Node)

**Node**
- special surrounding characteristics
- Scale
- junctions of paths a transition from one path to another
direction of movement
- concentration of certain features, buildings, or function

**Land mark**
- singular, unique, prominent, significant
- visible from multiple locations of city

| Aldo Rossi | Total Architecture | Primary Elements | Part of man’s memory (Artificial and natural) |
|-----------|--------------------|------------------|--------------------------------------------|
|           |                    |                  | Permanent part in the evolution of city     |
|           |                    |                  | Has historical value despite function (event and meaning) |
|           |                    |                  | Directed towards public good               |
|           |                    |                  | Unique                                      |
|           |                    |                  | Appropriately located                       |
|           |                    |                  | Meaningful and expressive                   |
|           |                    |                  | Has simple structure                        |

| Salingaros | Urban web | Node | Attracts people for a specific activity (row of nodes) |
|------------|-----------|------|-------------------------------------------------------|
|            |           |      | Multiple, different, and balanced nodes                |
|            |           |      | Fractal distribution of nodes rather than regular     |

**Connection**
- Multiple, and irregular paths
- Priority to create pedestrian paths
- Connecting contrasting nodes
- Paths along the edge of a district.

**Hierarchy**
- Length of path (Human scale)
- Short straight paths (small scale) avoid stairs, corners, and levels
- Large scale paths (curved and irregular)
- Coherent substructures create stable web.

In order to analyze the city objectively, this research will depend on the physical, perceptible elements. As it could be seen in Table 1, Each theorist had put some characteristics for the good element to achieve Integration. But Lynch’s theory represents the comprehensive elements of city’s integration, so the paper will depend on them as assessment guideline after adding the different points from other theories to them. Where connections in Salingaros’s theory are paths to Lynch’s, and Hierarchy is one
of paths characteristics. And city’s parts to Rossi are summarized to paths and landmarks. As it is shown in Table 2.

**Table 2** Assessment criteria to measure Integration.
(Reference: Researchers depending on mentioned theories above)

| Element | Characteristic                                                                 | Yes (1) | No (0) |
|---------|--------------------------------------------------------------------------------|---------|--------|
| Paths   | Has a special use or activity                                                  |         |        |
|         | Has a distinctive spatial characteristic                                      |         |        |
|         | Has special facades                                                           |         |        |
|         | Acts like an edge                                                             |         |        |
|         | Has a clear directional axis                                                  |         |        |
|         | Contains a sequence of landmarks                                              |         |        |
|         | Contains a sequence of nodes                                                  |         |        |
|         | Has a simple intersection with other paths                                    |         |        |
|         | Has a clear and strong connection with other elements                         |         |        |
|         | Connects contrasting nodes                                                    |         |        |
|         | Suitable for its scale in shape and length                                    |         |        |
|         | Priority for pedestrians                                                      |         |        |
| Edges   | Has a visual prominence                                                       |         |        |
|         | Has a continuous form                                                          |         |        |
|         | Impenetrable                                                                  |         |        |
|         | Combines city’s parts rather than dividing them                                |         |        |
|         | Has directional qualities                                                      |         |        |
|         | Overheads paths                                                                |         |        |
| Districts| Coherent substructures                                                        |         |        |
|         | Contrast from the city                                                         |         |        |
|         | Has strong edges                                                               |         |        |
|         | Has a strong core (Node)                                                       |         |        |
| Nodes   | Has special surrounding characteristics                                        |         |        |
|         | Has a suitable scale                                                           |         |        |
|         | Acts as a junction of paths                                                    |         |        |
|         | Has an obvious direction of movement                                           |         |        |
|         | Has a concentration of certain features or functions                           |         |        |
|         | Different from other nodes                                                     |         |        |
|         | Fractally distributed from other nodes                                         |         |        |
| Landmarks| A part of man’s memory (Artificial and natural)                                |         |        |
|         | A permanent part in the evolution of the city                                  |         |        |
|         | Has a historical value (event and meaning)                                    |         |        |
|         | Directed towards public good                                                   |         |        |
|         | Unique                                                                        |         |        |
|         | visible from multiple locations of city                                        |         |        |
|         | Appropriately located                                                          |         |        |
|         | Has a simple structure                                                         |         |        |

4. Case Study

4.1. Study Region Limits
The case study of this paper is called Jadeed Hasan Pasha region. It lies in Rusafa, where it is confined between Bab Almudham bridge, and Alshuhada’a Bridge. It is surrounded by alrasheed street from the top and Tigris river from the bottom. As shown in Figure 9.

4.2. Integration Assessment
Before applying the assessment criteria to the development project, the paper will analyse city’s element in the case study through the mentioned historical stages to observe the changes and the importance of each element in the integration. As shown in Tables 3,4,5.

### Table 3 Rusafa in Abbasid Caliphate Mandate (Reference: Researchers depending on Figure 5)

| Element | Characteristics |
|---------|-----------------|
| **Paths** | |
| P1: A historical path that connects one of Rusafa’s gates (Al Sultan gate or Bab Almudham) (N1), with Dar al Khilafa, which is central administrative region. Besides having commercial function of Althulatha’a market in (N3). This path lies beneath Rasheed street in nowadays. |
| P2: A connecting bridge between Rusafa and Karkh, which connects the commercial regions of althulatha’a market with Karkh over Tigris river. This path is located along Almutanabi street of nowadays. |
| P3: A proposed bridge in that time to connect Baghdad’s parts over Tigris’s banks, it lies in the same spot of Alshuhada’a bridge in nowadays. |
| **Edges** | |
| Rusafa’s walls, Dar al khilafa’s walls, and Tigris river are considered the most obvious edges of the region. |
| **Districts** | |
| There are no obvious districts within the region. |
| **Nodes** | |
| N1: (Al Sultan gate or Bab Almudham) |
| N2: The Abbasid Palace, an important node for rusafa’s growth. |
| N3: Althulatha’a market |
| **Landmarks** | |
| (Al Sultan gate or Bab Almudham) (N1), The Abbasid palace (N2), and (P2) are the most obvious artificial landmarks. While Tigris River is the natural landmark. |

### Table 4 Rusafa in Ottomans Mandate (Reference: Researchers depending on Figure 7)

| Element | Characteristics |
|---------|-----------------|
| **Paths** | |
| P1: A historical path that connects one of Rusafa’s gates (Al Sultan gate or Bab Almudham) (N1), with Maidan Square (N3), which is the connection point of three important paths. |
| P2: A part of Rusafa’s historical path which connects Tigris river with Alwastany Gate perpendicularly. |
| P3: It connects Al Qala’a(N2) and Maidan square (N3) with Alqata’a Bridge(P4) (Alshuhada’a Bridge of nowadays), and Saray market of nowadays (N5), alongside the parts of Ottoman’s administrative center, and it is parallel to Tigris river. |
| P4: It connects Al Qala’a(N2) with Alqata’a Bridge(P9) (Alshuhada’a Bridge of nowadays), alongside the parts of Ottoman’s administrative center, and it is parallel to Tigris river. |
| P5: It is the same historical path of Rusafa in the earlier period. |
| P6: It lies in the region of Rasheed street of nowadays. |
| P7: It connects (P5) with (P4) perpendicularly. It lies in Almutanabi street of nowadays. |
P8: It connects (N7), which is Alrusafi quarter of nowadays, with Alsaray market (N8) near Almustansiriyah school.

P9: AlQata’a’ bridge, it lies in the same spot of Alshuhada’a bridge in nowadays.

Edges
Rusafa’s Great walls, Qalaa’s walls, and Tigris river are considered the most obvious edges of the region. It is obvious that Dar alkhilafa’s walls have been demolished.

Districts
Alqala’a appears as a distinctive district within the region, due to its strong walls, and remaining context is perceived as one homogeneous urban fabric.

Nodes
N1: (Alsultan gate or Bab Almudham)
N2: AlQala’a (The Castle), which is the main growth node of Ottoman’s administrative center.
N3: Maidan Square, it contains the connection of important paths, besides Haraj market (Suq Haraj).
N4, N5, N6: lie along (P3) path to emphasis the circulation towards Tigris river perpendicularly.
N7: Lies in Alrusafi quarter spot of nowadays, besides connecting three important paths.
N8: Alsaray market quarter of nowadays.

Landmarks
(Alsultan gate or Bab Almudham) (N1), Qala’a (The Castle) (N2), The Abbasid palace (alsaray), and Alqata’a bridge (P9) are the most obvious artificial landmarks, and Tigris river is the natural Landmark

Table 5 Rusafa in 20th Century (Reference: Researchers depending on Figure 8)

| Element | Characteristics |
|---------|-----------------|
| Paths   | P1: A historical path that connects one of Rusafa’s gates (Alsultan gate or Bab Almudham) (N1), with Maidan Square (N3), which is the connection point of three important paths.  
  P2: A part of Rusafa’s historical path which connects Tigris river with Alwastany Gate perpendicularly.  
  P3: A connection between Althulatha’a market (N4) with Tigris river, in the spot of previous Althulatha’a bridge, which had become a station for transportation in Tigris river (Sharia’a).  
  P4: AlQata’a bridge, it lies in the same spot of Alshuhada’a bridge in nowadays.  
  P5: A connection between Rasheed Street and Saray Quarter (N4), in the spot of previous Althulatha’a bridge, which had become a station for transportation in Tigris river (Sharia’a).  
  P6: A connection between Rasheed street and (P3), besides extending to Tigris river near Qushla building. It lies in the same path of Almutanabi street of nowadays.  
  P7: It connects Rasheed Street and Al-Rusafi square of nowadays with Alsaray market (N5) near Almustansiriyah school. |
| Edges   | Qalaa’s walls, and Tigris river are considered the most obvious edges of the region after the demolition of Rusafa’s great walls. |
| Districts| There are three obvious distinctive districts within the study area: Alqala’a (The castle) due to its strong walls, Ottoman’s administrative center along Tigris’s riverbank due to their massive scale, and the traditional fabric of Jadid Hassan Pasha. |
| Nodes   | N1: (Alsultan gate or Bab Almudham). It is obvious that Rusafa’s great wall had been demolished, and gate’s location turned to be a paths’ connection. |
N2: AlQala’a (The Castle), which is the main growth node of Ottoman’s administrative center.
N3: Maidan Square, it contains the connection of important paths, besides Haraj market (Suq Haraj).
N4: Saray quarter which combines Saray mosque with some of Ottomans’ administrative buildings.
N5: Alsaray market quarter of nowadays.

Landmarks
In this time there are multiple buildings that could be considered as landmarks such as Qala’a (The castle) (N2), The Ottoman’s administrative buildings, some of mosques, and Tigris river as the natural Landmark

5. Results
After applying the assessment criteria to city’s elements in Figure11, and Figure12. The results appeared as shown in Tables 6, 7, 8, 9, and Figures 1, 2, 3, 4 below.

| Characteristics                           | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 |
|------------------------------------------|----|----|----|----|----|----|----|----|----|
| Has a special use or activity            | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 1  | 0  |
| Has a distinctive spatial characteristic | 0  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 0  |
| Has special facades                      | 0  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  |
| Acts like an edge                        | 1  | 1  | 1  | 0  | 0  | 0  | 0  | 1  | 1  |
| Has a clear directional axis             | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 0  |
| Contains a sequence of landmarks         | 0  | 0  | 0  | 1  | 0  | 1  | 1  | 1  | 1  |
| Contains a sequence of nodes             | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 1  |
| Has a simple intersection with other paths| 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 0  |
| Has a clear and strong connection with other elements | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| Connects contrasting nodes               | 0  | 0  | 1  | 1  | 1  | 0  | 1  | 1  | 1  |
| Suitable for its scale in shape and length| 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  |
| Priority for pedestrians                 | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
|                                         | 3  | 7  | 9  | 9  | 6  | 8  | 11 | 12 | 7  |

| Characteristics                       | E  | E  | E  | E  | E5 |
|---------------------------------------|----|----|----|----|----|
| Has a visual prominence               | 1  | 1  | 0  | 1  |    |
| Has a continuous form                 |    |    |    |    |    |
| Impenetrable                          | 1  | 0  | 0  | 0  |    |
| Combines city’s parts rather than dividing them | 0  | 1  | 1  | 1  | 1  |
| Has directional qualities             | 0  | 1  | 1  | 1  | 1  |
| Overheads paths                       | 0  | 0  | 1  | 0  | 1  |
|                                       | 3  | 4  | 5  | 2  | 5  |
Table 8. Nodes Assessment Results [Researchers]

| Characteristics                      | N1 | N2 | N3 | N4 | N5 | N6 | N7 | N8 | N9 | N0 | N1 | N2 |
|--------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Has special surrounding characteristics | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 0  |    |
| Has a suitable scale                 | 0  | 1  | 0  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  |    |
| Acts as a junction of paths          | 0  | 0  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| Has an obvious direction of movement | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 1  | 0  | 1  |
| Has a concentration of certain features or functions | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 0  | 1  |    |
| Different from other nodes           | 1  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  |
| Fractally distributed from other nodes | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |

Total Assessment: 4  5  5  3  5  4  4  5  5  6  5  6

Table 9. Districts Assessment Results [Researchers]

| Characteristics                      | Qala'a | Historica | Jadid Hassan Pasha |
|--------------------------------------|--------|-----------|--------------------|
| Coherent substructures              | 1      | 1         | 1                  |
| Contrast from the city               | 1      | 1         | 0                  |
| Has strong edges                     | 1      | 0         | 0                  |
| Has a strong core (Node)             | 1      | 0         | 0                  |
| Total Assessment                     | 4      | 2         | 1                  |

Figure 1 Paths Assessment Results

Figure 2 Edges Assessment Results
6. Discussion

6.1. Paths Assessment
According to assessment criteria, the paper found that (P8) has got the highest qualities. This is because of its historical value as a connecting path between multiple nodes and landmarks, its clear orientation, and its special facades and function. While (P1) (Bab Almuadham bridge) has got the least degree even though it connects Baghdad’s parts over Tigris River, this is because it doesn’t have priority for pedestrians, landmarks, nodes, or special facades.

The assessment has shown that (P3, P8) were kept in the same way as their historical layout. While (P4, P5, P6, P7) have been oriented clearly to connect Rasheed street with the river. The proposal contained vertical separation of traffic flow by turning the path (P2) (Alshuhada’a Bridge) into a tunnel (underground network) for cars to reach Khulafa’a street, after designing a path and a node for pedestrians above. While (P9) is proposed as a riverbank path and edge that connects river’s transportation stations (Sharia’a).

6.2. Nodes Assessment
In nodes assessment results, both of (N12) (proposed Maidan Market) and (N10) (Rusafi square) have got the highest degree, because they have a concentration of certain function which is commercial activities, besides having other qualities, except the special surroundings. While (N4) (The proposed Fanar) has got the least degree, due to its location on the riverbank away from other activities. Other nodes were slightly different in the assessment because they are acting as junction of paths, and as a development of some existing nodes.

6.3. Edges Assessment
The strongest edges according to assessment criteria are (E3) (Alshuhada’a Bridge) and (Bab Almuadham Bridge), because of their clear form and direction, besides their benefit of combining Baghdad’s part over Tigris river. While the weakest edges are (E1) (Qala’a walls) because it separates city’s parts rather than combining them, it doesn’t intersect with paths, and it doesn’t have directional qualities. And (E4) (the historical path), because it doesn’t have a continuous form, or closed walls. Riverbank’s edge (E2) has got a medium degree among other edges.

6.4. Districts Assessment
According to assessment criteria, the paper found that (D 1) (Qala’a district) is the most obvious one due to its strong edges and core, while (D3) is the least distinctive district because of its harmony with the city, and (D2) (Historical district) is slightly different from (D3) because of its larger scale.

6.5. Landmarks Assessment
Landmarks cannot be assessed before their completion due to their special visual characteristics, besides all the landmarks are conservative buildings that could not be changed, except the proposed (Fanar) in (N4). However, most of the conservative buildings have the mentioned characteristics of good landmarks.

7. Conclusions

▪ The proposed project could be considered as a good development for Rusafa because its design elements have achieved high integration qualities, besides the special care of historical value of each element in planning.
▪ Paths and Nodes are the most important elements in integration, especially if they contain a specific function or features, such as the commercial nodes in the proposed project (Maidan and Rusafi squares), that are effective in integrating Rusafa’s parts.
▪ The strongest paths are the links between strong nodes and giving the priority for pedestrians.
▪ Shuhada’a bridge is an important linking path over the historical stages of Baghdad.
▪ Edges depends on each design, because strong edges could separate city’s parts such as Qala’a walls, or they could integrate them such as riverbank.
▪ Specific district layout affects integration because they appear very distinctive among other city’s parts. Such as Qala’a district.
▪ Landmarks are important in city’s memory, but they have the least effect on city’s integration, because they are not recognisable in planning level as much as other elements, unless their scale is huge. Despite their temporal importance of conservation and reuse.
▪ Dar al Khilafa, Qala’a, and Saray are considered as (pathological) landmarks in the past, while they are considered as (propelling) landmarks in nowadays.

8. Recommendations

▪ The assessment criteria of this paper could be used in the future for other development projects, to help in choosing the best proposal.
▪ Paths Hierarchy should be considered carefully in urban development.
▪ Qala’a edges must be considered carefully in the proposed design to prevent isolating it from the context.
▪ Designers should propose strong nodes in the developed areas to integrate new parts with the old ones in cities, with conserving landmarks of high historical value.

Acknowledgments

We would like to express our appreciation to our university (Mustansiriyah University, Baghdad, Iraq) (https://uomustansiriyah.edu.iq/).
Figure 5 Rusafa in the late Abbasid Mandate, with indication of case study limits.
(Jawad, et.al., 2009, 59)
Figure 6 Rusafa in the 17th century by Navernee in 1676 (Jawad, et.al., 2009, 81)

Figure 7 Rusafa in the 18th Century, by Niphur 1766, with indication of case study limits. (Jawad, et.al., 2009, 83)
Figure 8 Rusafa in the 20th Century, after the opening of Rasheed street with indication of case study limits. (Alwaily, 2017, 87)

Figure 9 Rusafa in the 21st Century, with indication of case study limits. (Google Earth Maps)
Figure 10 Minoprio’s proposal for Baghdad
http://modernbaghdad.tumblr.com/post/124148561184/a-master-plan-for-baghdad-by-british-planners

Figure 11 Doxiades’s proposal for Baghdad
http://modernbaghdad.tumblr.com/post/124420079854/proposal-for-a-baghdad-master-plan-doxiadis

Figure 12 J.C.P studies for Rusafa showing the historical paths, and growth stages. (Fethi, 1985)

Figure 13 AlWaily studies for Rusafa (BHCC) showing the limits of case study. (Alwaily, 2017, pp. 76-77)

Figure 14 AlWaily studies for Rusafa (BHCC) showing the historical paths. (Alwaily, 2017, 72)
Figure 15 Case study limits within Rusafa (BHCC) development proposal.
(Alwaily, 2017, 76)

Figure 16 Land use and Landmarks of Case study limits.
(Researchers depending on Alwaily, 2017, 76)
Figure 17 Paths and Nodes of Case study limits.
(Researchers depending on Alwaily, 2017, 76)

Figure 18 Edges and Districts of Case study limits.
(Researchers depending on Alwaily, 2017, 76)

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