CASE STUDY OF ANTWERP: The Connection of Old Port and Central Station

Sherlia

Candidate of Master of Architectural Planning, Dongguk University, Seoul
sherlia.fauzi@gmail.com

ABSTRACT

Old port, once a center of old development until it shifted to central station as the center of new development. Now, station means a node that helps generating the new or modern development of its neighborhood. Then it raises questions of the connection between old port and central station. This study defines this connection of the port and the central station from the perspectives of urban design elements. It presents a case study of Antwerp by examining visual corridor, programmatic use, and pedestrian linkage that would critically determine the quality of connection. These elements are analyzed from the perspective of locations and functions to develop an evaluation method for the quality of connection of city center (station) with the waterfront (port). The results would offer a set of urban design suggestions for the port cities based on the length of the connection that could improve the quality of old port - central station connection. While these checklists and principles may vary depending on local circumstances, they can be useful starting points for initializing design process.

KEYWORDS: Old Port, Central Station, Connection, Visual Corridor, Programmatic Use, Pedestrian Linkage, Policy Suggestion

1. Introduction

This paper aims to analyze the connection of old port and central station in Antwerp. In this study, the connectivity of old port to central station is defined as a quality or an ability to exchange people between the two destinations by means of mental, visual, and physical connections. Such connectivity is assumed to perform as a function of visual corridor, programmatic use, and pedestrian linkage that are likely to attract people to the old port from central station and vice versa along a central path/route. Such elements are analyzed from the perspective of locations and functions to develop an evaluation method for connectivity - the quality of connection of city center (station) with the waterfront (port).

In the past, the old port was the center of the development. The old port generated the growth of the city. Then the city grew and expanded, exploring not only the waterfront but also the inland especially when railroad was introduced. Then the port and the city grew separately. The development in the old port was neglected in favor of the new development, thus redevelopment was carried out in old port (waterfront) to revive the area. Having strategies for redeveloping the old port (waterfront) as a project, the planners and policy-maker should also think about its likely long term influence that may establish the connection between the old port and the central station. Repairing the connection by improving the connectivity can also be a way of not only to repair the old port itself, but also to revive the city center in general.

Today, many waterfront cities in the world are being redeveloped. The waterfront in the old port area is revived. It is important to remember that there should be relation and connection between the old development (old port) and the new development (station). Reviving the waterfront without considering its relation and connection to the city will negate all the efforts. Thus the connection is as important as the node (waterfront).

1.2. Previous Studies

First, the study of port cities usually discusses about the relationship of the port and the city as such what Hoyle did. He generated the interface of port-city and its spatial models into six stages of development (Hoyle, 2000). The concept generated by Hoyle explains the transformation of port cities while also reveal the relationship between port and city. He also emphasizes the waterfront redevelopment. But he doesn’t explain the city specifically such as the specific node of the city whether it is the new center or not, the location of the city center, and doesn’t relate the city center with the station.

Second, another study of port city focuses on waterfront redevelopment (Merckx et al., 2004). The authors extend and upgrade the model of Hoyle then apply the upgraded model to a waterfront redevelopment project in Antwerp. The authors link the waterfront redevelopment with stakeholders relationship management, attempting to find the relationship between the project and the stakeholders. This study only focuses on the waterfront without mentioning the city though the study also gives the application in Antwerp.

The previous studies clearly talk about port-city interface and waterfront redevelopment without relating and mentioning the city specifically. There are also differences on how these authors view the port and city; they don’t see port as the old center of development and station as the new center of development. Thus the approach is different as this study specifies both the nodes of old and new city center in Antwerp case then defines the connection between the two nodes attempting to find methods to evaluate the connectivity in order to improve it.
1.3. Research Methods

The connection between the port and the station is defined by the elements of visual corridor, programmatic use, and pedestrian linkage. Visual corridor is a focused visual thoroughfare within a view shed that provide a directional connection toward the station and generate the sense of physical proximity between the port and the station. It represents the symbolic and visual landmarks in the connection and also explains the details of the path (streets). This visual corridor gives the sense of direction and distance between the port and the station.

Programmatic use is a spatial arrangement for better coherence and functionality of a variety of compatible and conflicting buildings and land uses along the central streets. While having retail and commercial uses on the ground level as a guide for continuous pedestrian movement, public uses function critically that create the sense of local identity. Such uses should be served directly by nearby public transportation and parking spaces.

Pedestrian linkage is a patterned pedestrianized circulation system for better pedestrian accessibility and pedestrian movement. The patterned is performed by the local residents as well as visitors who pass back and forth between the port and the station within a pedestrian shed of 10-minutes pedestrian walking distance (800 meters).

Performance of locations and functions of these elements are examined and analyzed to provide a set of criteria for the good, the bad, and the peculiar characteristics that will help in creating the design guidelines and policy implications based on these elements. The design guidelines consist of these elements while the policy implications are based on the distances between the port and the station.

1.4. Data Source and Limitation

The data is collected from Google Maps to provide the locations and functions of the elements observed and to provide the details of the streets. Website is also helpful such as a viewoncities.com that provides the important-historical list of buildings in Antwerp and also the built year. For the passage counting of the pedestrians who pass the streets, the data is collected from the publication of 'City of Antwerp, City of Retail' by City of Antwerp Agency for Employment and Economic Development Retail Section.

The limitation is in the data of passage counting, the area of old city and old port is not covered thus it is only covers the central station and Meir area.

2. Case of Antwerp

Antwerp is chosen as a case study because spatially, Antwerp represents a port city exactly. The city grew because the port generated the activities then created the city that surrounded the port. Then the center shifted to central station. The location of central station as the new center of development influences the direction of the city growth, thus expanding then creating the new city's spatial structure.

Therefore Antwerp is a good representative of studying the connection between old port and central station.

2.1. Old Development of Antwerp centered on Port

The old development of Antwerp centered on port started at around the year 850 as a real medieval Water Town in the estuary of Scheldt River. It developed within a sequence of three concentric ramps. The first came in the year of 950 when Antwerp was shown as a "Wharf" that located in front of the medieval castle and a small settlement protected by the moat. Then the second came in the year of 1200 with the southern boundary further shifting to the south, accompanied by the expansion of northward direction in the year of 1250 encircled by the stone walls on the town and fortified walls on the waterfront.

Antwerp kept expanding towards east direction in the 15th to 16th century until the growth was limited by Spanish Wall that was built in the 16th century (Muylle, 2013).

In 16th century, the core activities were trading. The important buildings at the time were the Church of Our Lady built in 1352 that vital in art scene because the Church controlled and set the art market (Ewing, 1990), City Hall built around 1561-1565 functioned as government building, and Grote Markt as the market and also the square for the people at the time.

Plantin Printing established in the year of 1576 was also important at the time; it was famous for having the best quality printing in Europe. All these important buildings that mostly commercial were located near the port within the area of second rampart. Harbor area expanded and located in the north while residential area was located in the south area.

The city declined after the 16th century because of political reason thus the city didn’t have significant expansion that changed its spatial structure until the year of 1840, when railroad was introduced (see Table 1).

2.2. Modern Development Antwerp centered on Station

The modern development of Antwerp centered on station. Around 1840s the Spanish Wall was demolished to give way to railroad. The size of Antwerp was getting bigger as the exploration of inland became possible because of railroad. Then Central Station was built in 1895. This marked the modern development of Antwerp, shifted the city center from port to the central station.

Thus the form of Antwerp’s modern spatial structure is radial as can be seen in Table 1. The new city center was important as it functioned as transit stop that connected the city to other cities and countries.

The area was also becoming more important as it is close to public facilities such as Antwerp’s Zoo and Stadspark (city park); and commercial area such as diamandkwarter (diamond’s quarter) that is famous for its diamond trading.

Table 1. Antwerp's spatial structures

Old Development of Antwerp centered on Port

Modern Development Antwerp centered on Station

2.3. Emerging Issue of Distance between Port and Station and Direction of City Growth

Indeed, the new development in the city is inevitable as the city keeps growing and expanding. Furthermore, the location of the new development and direction of the city growth is becoming an issue as distances that formed can be different in cities depend in its topography. The most ideal distance is within walking distance of around 400-500 meters. If the distance formed beyond 500 meters, then public transportation and another transportation mode have to be incorporated in the connection. Therefore, designers increasingly face the challenge of defining the connection between the port and the station.

The direction of city growth also influences the relationship of the old and new development. When the direction is directed back to the old development, the old and new development will relate to each other. When the direction is away from the old development, the new development will disconnect to the old development. Therefore, it is important to direct the direction back to the old development to create the connection then improve its quality.

3. Definition of Connection of Port and Station

This paper presents the study of the connection of old port and central station in Antwerp thoroughly.

3.1. Visual Corridor

This study presents the visual corridor in the connection of old port and central station in Antwerp by explaining the streets and defining the symbolic and visual landmarks that accompany. These elements give the sense of direction and distance between the port and the station. Central station is connected to old port through several streets: from De Keyserlei to Erneart van Dijckkaai. The total length of connection is approximately 1.7 kilometers. Each street has different length and width, with Meir accounted as the longest street as can be seen in Table 2.

The widths of the streets are also varied, from central station until Meir, the widths are quite wide, but as the streets approaching old port, the widths are getting narrower. It also applies to the form of the streets, being quite linear or straight near central station while being curvy when approaching old port. In addition, the streets are being flat.

Because the distance formed between the old port and central station is quite long, naturally the visual corridor is segmented. From central station to Meir, because the shape of the street is quite straight, the view is continuous to Meir specifically until Leysstraat. In the crossing between De Keyserlei and Leysstraat, Vlaamse Opera that located in the north direction is visible. From Meir to old city, the view stops in Schoenmarkt because the shape of the street is rather curvy and Boerentoren stands tall in this street. In Meir, the buildings have styles which are historical built in the 19th century to early of 20th century. There are several landmarks such as Stadfeestzaal, Rubenshuis, Paleis op de Meir, and Stock Exchange. In old city to old port, because the shape of the streets are organic resulted from the medieval city planning, the view is not continuous starting from Groenplaats to the Church of Our Lady continue to Suikerrui where Grote Markt lies that surrounds the City Hall and Guild House. From Suikerrui, the view is continuous to the quays though Het Steen is still invisible. From the junction between Suikerrui and Ernest van Dijckkaai then Het Steen is visible.

3.2. Programmatic Use

The spatial arrangement of buildings along the central streets in Antwerp is defined. For retail/commercial, mostly all the ground floors of buildings along the central streets have commercial functions which also act as a guide for continuous pedestrian movement. In Central station area, the commercials are restaurants and hotels to accommodate the visitors. There are also retails that are for local. While in Meir, as it is a shopping street, the retails are international and famous brands to enhance the experience of shoppers. In old city, the commercials are mostly in form of cafés and restaurants.

Near the nodes, mostly the buildings function as public uses that critically create the sense of local identity. Near central station, there are zoo, square, museum, school, and opera house. In Meir, there are schools, library, church, museums, and palace. In old city and old port there are school, churches, city hall, and squares.

Public uses and commercial in the connection provide activities that attract people to come. Then it is important to define the accessibility of the connection especially the public transportation. In the path of this connection, the public transportation being observed is tram. Therefore, tram stops in the connection are defined. In central station, the tram stops are located in Koningin Astridplein (the square next to Central Station) and in Pelikaanstraat. There are also tram stops in Franklin de Rooseveltplaats and Tenniers Station that located near opera house. Then there is tram stop in Leysstraat to access both opera house and Meir. In Meir, the tram stops are located in the end of Meir Street, which is also near Meirbrug. Meir can also be accessed from the secondary roads in the connection: Lange Nieuwstraat, Sint-Jacobsmarkt, Kipdorp, and Oudaan. In old city, the tram stops are located near Groenplaats. In addition, it also can be accessed from the secondary roads of Nationalestraat, Korte Nieuwstraat, and Wolstraat.

The study also observes the location of parking spaces in the Station-Port connection. The locations of parking spaces in the Station-Port connection in Antwerp are in the secondary roads of the Station-Port connection, being more dispersed than public transportation, covering the areas that are not reached by the latter. Especially in old port where there is no tram stop near the area, therefore parking spaces open the accessibility of the area. These public transportation and parking spaces serve the public uses function in the connection.
<table>
<thead>
<tr>
<th>No.</th>
<th>Street’s Name; Length; Width</th>
<th>Landmarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>De Keyserlei</strong>; 315 m; 35 m</td>
<td>Central Station (1895)</td>
</tr>
<tr>
<td>2.</td>
<td><strong>Frankrijklei (crossed)</strong>; 35 m; 35 m</td>
<td>Vlaamse Opera (1907)</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Leysstraat</strong>; 150 m; 21 m</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Meir</strong>; 500 m; 20 m – 40 m</td>
<td>Stadsfeestzaal (1908)* Rubenshuis (17th century)** Paleis op de Meir (mid-18th century)*** Stock Exchange (19th century)****</td>
</tr>
</tbody>
</table>
3.3. Pedestrianized Linkage

The patterned pedestrianized circulation system in Antwerp can be seen in Table 3. Based on passage counting in Antwerp center, though the data is lacking on old city and old port, Meir shopping street has the biggest traffic of pedestrians passing the street.

The streets that have the second biggest traffic of pedestrians are De Keyserlei from central station to Leysstraat, a part of Wapper that heads to Rubenshuis, secondary roads of shopping street in Huidevettersstraat that starts from Meirbrug, and the path of Schoenmarkt and Groenplaats.

The third biggest traffic of pedestrians is in the Schuttershofstraat that consists of commercial and from Meirbrug to the Church of Our Lady passing Eiermarkt and Melkmarkt. The fourth biggest traffic of pedestrian serves the smaller role of secondary roads such as Koningin Astridplein connecting central station to the square, Jezusstraat if the users accessing Meir come from Jezusstraat Antwerpen tram stop, Kolveniersstraat that connects Meir to secondary roads, and the streets of Nationalestraat and Kammenstraat that can be accessed from Groenplaats.

While the least traffic of pedestrians are in the secondary roads that accessed from De Keyserlei such as Statiestraat, Breydelstraat, Pelikaanstraat, Appelmannstraat, Vestingstraat, and Quellinstraat; Franklijklei that goes towards Vlaamse Opera; Hopland where the two parking spaces located in the secondary roads of Meir; and Sint-Katelijnevest that connects the tram stops of Meirbrug and Sint Katelijne.

Table 3. The elements that define the connection of port and station in Antwerp
3.4. Obstacles to Connection of Port and Station

The study finds the obstacles in the connection of port and station based from Antwerp study case. The long distance of the connection of port and station is being an obstacle. Because the connection is quite long, it is naturally divided into segments. Thus each segment has its own distance and different from others (not in the same intervals). Furthermore, in the key elements that define the connection, there are still lacking in some elements such as node that there is no definite node in between Rubenshuis and the Church of Our Lady; and tram stops that are lacking in the quays of old port and Rubenshuis.

The disconnected view between Meir and old port is also an obstacle as it resulted from the width and the shape of the streets in old city that are narrow and curvy.

4. Evaluation of Connection of Port and Station of Antwerp

The connection should be designed to function as public open spaces heavily used by both citizens and visitors for daily activities. Accordingly, Performance of locations and functions of the elements of visual corridor, programmatic use and pedestrian linkage in Antwerp are examined and analyzed to provide a set of criteria for the good, the bad, and the peculiar characteristics that will help in creating the design guidelines and policy implications based on these elements.

4.1. Visual Corridor

The landmarks are important as they can be nodes in between the main nodes (old port and central station). Therefore, its locations are important. In central station, the locations of the landmarks are good, as central station in the start of the segment and Vlaamse Opera in the end of the segment. In Meir, Vlaamse Opera represents the landmark in the start of the segment, Rubenshuis in middle of the segment, but there is no strong landmark that located in the end of the segment.

This lacking of landmark as node is critical as it is also function as connector between Meir and old city. Thus the connection between Meir and old city-port is weak. While in old city, there are many landmarks which benefit the segment, and the one functions as node can be the Groenplaats, the Church of Our Lady, Grotemark, or City Hall. Eventually the landmark as node ends in Het Steen of old port. The good point of the visual corridor in the connection of central station and port in Antwerp is the Meir and old city area has a continuous visual corridor of historical buildings thus its identity is strong.

But, the length and form of the streets are different according to the segments; the streets in old city area are narrow in widths and curvy. The differences can perceive an image that the connection is not in a unity.

4.2. Programmatic Use

The landmarks mentioned in the previous sub point function as public uses such as Central station as transit hubs, Vlaamse Opera as theater hall, Rubenshuis as museum, Groenplaats as square, the Church as religious place, Grote Markt as square, City Hall for government activities, and Het Steen which in the past functioned as museum now turned into cultural and education building.

These are important, as public uses attract people to visit the buildings thus creating nodes that will stay lively. The nodes of public uses are connected with commercial buildings along the connection. The commercial strips in Meir shopping street assure the connection to be lively. In terms of public transportation, the locations of the tram stops are close to the landmarks of the Station-Port connection.

But currently there is no tram stop in the old port. However, the City already produced a Strategic Plan that would carry out an action of adding tram stops near old port area, so the area would be accessible.¹ Parking spaces provided in the connection that located in the secondary roads open the accessibility of the area.

4.3. Pedestrianized Linkage

Some of the streets in the connection are pedestrian friendly such as Meir and the streets in old city thus almost forming a continuous pedestrian route from central station to old port if only the connection is not broken by the cars penetrated in Frankrijklei, Meirbrug, Schoenmarkt, Suikerrui, and Ernest van Dijckkaai. In creating a pedestrian friendly street, the City already set a right footstep by turning De Keyserlei - as main axis road to Meir - into pedestrian friendlier.² From the passage counting, Meir is the strongest magnet that generates people to come to city center. It means that commercial function can be an applicable function to the buildings along the path in the central roads, to revive the connection between the two nodes of old port and central station.

5. Lesson from the Antwerp Case

5.1. Design Elements

The study derives the design principles for the connection from the results of visual corridor, programmatic use, and pedestrian linkage that have been examined. Table 4 shows the design principles for the connection in each segment in terms of location, program, and design features. The results offer a set of urban design principles for the connection of station and port that would critically improve the quality of the station-port relationship. These urban design strategies may be flexible depending on circumstances, context and topography of the cities. These checklists can be useful starting points for the related actors such as architects, landscape architects, and urban designers in building connective structures between central station and port.
### Table 4. The node design checklist

<table>
<thead>
<tr>
<th>Central Station</th>
<th>Views</th>
<th>Design Checklists</th>
</tr>
</thead>
</table>
| **Plan**        | ![Central Station Plan](image1) | **Location:**  
- Main public transportation node  
- Symbolic center of new development area  

**Program:**  
- Main gateway to the connection  
- Commercial facilities related to the users of the central station  
- Ground level utilized for commercial use  

**Design Features:**  
- Pedestrian friendly streets (wide streets)  
- Lighting for safety and night use  
- Trees for shading  

<table>
<thead>
<tr>
<th>Meir</th>
<th>Views</th>
<th>Design Checklists</th>
</tr>
</thead>
</table>
| **Plan**        | ![Meir Plan](image2) | **Location:**  
- Shopping street in the middle of the connection that connects the two main nodes of central station and old port  

**Program:**  
- Commercial facilities that enhance the shopping experience that attract global visitors  

**Design Features:**  
- Maintain the appearances of old buildings while the inner function is commercial  
- Pedestrian friendly streets (wide streets)  
- Lighting and seating incorporated  
- Trees for shading  
- Squares for gathering complete with the amenities  
- Each square has a statue as focal point (work of art)  

---

5.2. Policy Implication

The policy implications developed from the elements derived from design elements such as node, commercial, public transportation, parking spaces, and pedestrian linkage then synchronized to the possible distances between the port and the station as can be seen in Table 5.

Distances of the connection influence the number of nodes. The longer the distance formed, the bigger the number of nodes. Therefore, the connection should have nodes at regular intervals, because nodes provide activities and attract visitors. The nodes should function as public use such as transit, education, cultural, religious or commercial - as these all are public environment open to the local users and visitors. Furthermore, the location of the nodes should be near public transport to ease the mobility of the users and increase the value of the nodes.

In between the nodes, the path of connection is formed. This path should be retail/commercial to provide activities and strengthen the connection and also should be planned to function as pedestrian passages that limit automotive traffic. In addition, it is important to link the connection and parking spaces that are located in the secondary roads so that visitors have many transportation mode options to choose.

From landscape architecture perspective, a good landscape design in the connection is also improving the quality of the connection. This policy implication will have the related actors to successfully improve the quality of old port-central station connection.
Table 5. The plans of policy implications

<table>
<thead>
<tr>
<th>Plans</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>* 500 m *</td>
<td></td>
</tr>
<tr>
<td>⬤ Node ⬤</td>
<td></td>
</tr>
<tr>
<td>⬤ Parking Spaces ⬤</td>
<td></td>
</tr>
<tr>
<td>⬤ Main Roads ⬤</td>
<td></td>
</tr>
<tr>
<td>⬤ Secondary Roads ⬤</td>
<td></td>
</tr>
<tr>
<td>⬤ Predetermined ⬤</td>
<td></td>
</tr>
<tr>
<td>⬤ Node - Public Uses ⬤</td>
<td></td>
</tr>
<tr>
<td>⬤ Commercial ⬤</td>
<td></td>
</tr>
</tbody>
</table>

| 1000 m |
| ⬤ Node ⬤ |

| 1500 m |
| ⬤ Node ⬤ |

| 2000 m |
| ⬤ Node ⬤ |

References


Footnotes:
*http://www.yourpik.com/nl/antwerpen/locations/stadshuis1900;
**http://ifcla2014.com/2014/01/visit-antwerp/;
***http://crastalk.com/2012/07/five-abandoned-places-17/;
****http://www.panoramio.com/photo/14984846;
7. https://maps.google.com/
10. Marc Muylle. (2013). The relevance of 16th century urban planning efforts for the present day urban development of the City of Antwerp. University of Antwerp - Artesis University College.
12. www.aviewoncities.com
   http://en.wikipedia.org/wiki/Antwerp
   http://en.wikipedia.org/wiki/Nyhavn
   http://en.wikipedia.org/wiki/Islands_Brygge