A system is an entity which is consisted of at least two elements, the relation between these elements and at least one other element. It's important how the parts interact and fit together. If one element does not work as well as the others, the total system can not perform well, because all the elements are connected to each other, directly or indirectly.

The environment of a system is a set of elements, which are not part of the system. It is interacting with the system and a change in any of the elements of the environment can produce a change in the state of the system. There are different types of systems: a closed system has no environment and no interaction with any element not contained with it. It is completely self-contained compared to an open system, which has an environment and is interacting with it. Furthermore a system can change and modify. This could be caused by the environment of the system or the system itself.

Systems are objective and subjective at the same time. It depends on the observer and his interests how to see a system and its elements. An urban planner would see the city as a whole system and the cities around as the environment. The different components of the city, like streets and buildings are the element of this system. An architect would have a more detailed sight of the city. In his opinion the city generates the environment and a single building is the system. So every system can be seen as part of another and larger system. The house is part of the system city, which is part of the system region, which is part of the system state etc.

‘NETZSTADT’ - Franz Oswald

By having a closer look to the system city the model ‘Netzstadt’ - network city - of the architect and urban planner Franz Oswald and the chemist Peter Baccini comes in mind. This concept describes an urban theory concept and is used in three ways: 1. As a model for understanding spatial, economic and cultural relationships between people, quarters, regions and states, 2. As a method for analyzing a territory and determine its specific quality criteria i. e. as an analyzing and designing tool and 3. as a strategy to mobilize cooperations potential. Oswald and Baccini want to depict contemporary description modes of urban systems and their regulations.

The model of the network city can be splitted in three elements: knots - places with a higher density of people or goods, connections - which are guaranteed by the people between the knots and different scales, which indentify the knots and connections. An example of a network city analization is the ‘Netzstadt Bodensee’, in which the border triangle of Germany, Austria and Switzerland is considered.

Rambla Raval

To take a deeper look at the urban systems and particular at the Rambla Raval as an urban system, we would define the Rambla as a system in the environment El Raval or a bigger environment - Barcelona. The system Rambla interacts with its environment and can change or modify the environment or itself. Before the Rambla was constructed, El Raval was famous for its poverty and crime. Now we can see a decrease of the crime and prostitution, so the system Rambla changed its environment. Furthermore the Rambla is not always the same system. It depends on the time of the day or week. On weekends or in the afternoon, when many tourists and visitors come to the Rambla and stay there for a walk or a coffee, it’s a complete different place compared to the evening or night. Then you might feel a bit insecure, because of the tiny lanes that lead from the Rambla to El Raval and the homeless people sleeping on the floor.

So without the visitors and tourists, that come to the Rambla to do a little sightseeing - for example the Gato del Raval - or go shopping, the place would not be the same and the probems of the Raval district would appear. This illustrates the interaction of the elements of a system. What works not enough is the relation between the residents of the Rambla and its buildings. The Raval is the poorest district in Barcelona. Many of the facades of the buildings on the roadside are in a bad state. But the money to renovate them is missing, because of the low income and the unemployment of the residents. First steps are done by building the Barceló Raval and the office of the labor union.

The goal is to make the Raval more liveable and attractive for people. Some elements of the System Rambla have to be optimized for a better functionality, but in the last 20 years many steps have been implemented and many problems of the neighborhood have been eliminated, so the project is well on track.
Reflecting on urban systems

**SYSTEM RAMBLA RAVAL**

**ARCHICAD STUDENTEN-VERSION**

**RAMBLA CATALUNYA**

- **P E O P L E**
  - homeless people
  - residents
  - tourists
  - immigrants
  - poor people
  - low income
  - unemployment
  - market
  - local food, clothes, many people and nice atmosphere
  - weekends, afternoons: people talking, children crying, ...
  - birds tweeting
  - noise between the neighbors in the streets
  - cars driving, parking around the rambla
  - sightseeing: El Gato de Botero, ...
  - rise of tourism in the past 5 years, 4%

- **S P A C E**
  - benches
  - palm trees, plants
  - cars
  - people walking in the middle of the rambla are separated by trees

- **U N I V E R S I T A T**
  - good connection to Rambla Cataluny, easy to get there
  - decrease of prostitution
  - construction of the Rambla provided more order and cleanliness to the Raval
  - change of the urban and human landscape
  - more safety/life quality through the built of the rambla
  - fewer thefts
  - high density Inhab./ha: 432 (Barcelona 157)
  - increasing rental prices
  - old facades
  - flats
  - groundfloors
  - tourists walking through the rambla, drinking coffee in the cafes on the roadside
  - BUT: food of low gastronomic quality
  - tourists attracted by culture, groundfloors
  - good groundfloor architecture
  - New architecture: Barceló Raval, Labor Union, ...

- **R A M B L A R A V A L**
  - connection universitat - sea
  - good connection to Rambla Cataluny, Metro, Bus stations
  - tourists walking through the rambla, drinking coffee in the cafes on the roadside
  - weekends, afternoons: people talking, children crying, ...
  - good groundfloor architecture

- **B U I L D I N G S**
  - cafés, restaurants
  - shops
  - office
  - BUT: food of low gastronomic quality

- **E L R A V A L**
  - + money

**Goal:** upgrading Raval, more liveable
In El Raval the highest percentage of immigrants can be found (56.8%). The average percentage of immigrants in Barcelona is 22.3%.

The density of inhabitants per hectare is the highest in Ciutat Vella. In El Raval the number is 432 inhab/ha, while the number in whole Barcelona is only 157.

The flats in El Raval were mostly built before 1960 (82.6%). 6.4% of the buildings were built between 1960 and 1980. Thus, there’s a high number of flats and facades that are in a bad state.

In El Raval the population density is very high compared to the rest of Barcelona. This fact can be linked to the percentage of immigrants, which are often unemployed or have a low income in El Raval. So many people are living on little space. During the past 5 years, an increase of the rental prices of the flats can be detected. The money could be used for renovating the flats and facades of the districts, but it’s also problematic for the poor people of El Raval, who could not be able to afford their flat in the near future. (Source: http://www.bcn.cat/estadistica/angles/dades/guiadt01/index.htm)

The tourism in El Raval rised 4% in the last 5 years. This is due to the effort of upgrading the district. The Rambla gets more attractive to tourist, for example by organizing markets or artworks like the Gato de Botero.

There’s a good ground floor architecture at the Rambla Raval. By designing new buildings, for example the Barció Raval, the district gets more attractive for outsiders as well.

The buildings near the Rambla del Raval contain many shops, cafés and restaurants in their ground floors. Above the ground-floor 3-4 storeys of flats are arranged.

The rise of tourism in El Raval shows, that the arrangements for upgrading the district are already working. Tourists have more opportunities to do things at the Rambla Raval than 20 years ago. So far, the development is positive. People like to walk through the Rambla or sitting in the Cafés on the roadside. What could be improved next, is the quality of the gastronomic offer and the state of the buildings.
When observing the Rambla Raval especially the homeless people on the street attracted attention. They were sitting around, laying on the floor or drinking beer.

The benches at the Rambla Raval are designed for one person, to prevent homeless persons sleeping on them.

The Rambla Raval is a large space with many activities. But because of the poor surrounding, not all the nuisances can be kept away.

Unfortunately the idea of detaining the homeless people from sleeping on the benches doesn't work well. The people keep on sitting there while meeting, talking and drinking beer and if they want to sleep, they just lay down on the floor, protected by the plants and palm trees on the Rambla. Sure, the design of the benches is a first step in the right direction, but it's of course no solution of the problem.

The people that stay at the Rambla are from various origins. Some are tourists, having a walk or a coffee, some are homeless, sitting on the benches, some are inhabitants, meeting their neighbors or arguing in the streets.

The cars are a noise disturbance for the people. The palm trees and plants indeed separate the Rambla and the street, but anyway it's a loud place.

People are allowed to drive around the Rambla by car. This is comfortable for the residents, but for the other people (tourists that want to take a rest for example) it's annoying.

Not only the transportations are a reason for noise, the people itself are to blame for loud noises, too. According to the residents of El Raval, neighborhood conflicts often take place. If the cars would be taken out completely off the Rambla, one source of noise is disestablished and people could enjoy their stay at the Rambla even more.