

Learning from Rotterdam CS

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Contents

<i>Introduction</i>	<i>p. 5</i>
<i>Rotterdam CS</i>	<i>p. 7</i>
<i>Amsterdam Zuid</i>	<i>p. 13</i>
<i>Comparison</i>	<i>p. 17</i>
<i>Recommendation</i>	<i>p. 19</i>
<i>Conclusion</i>	<i>p. 21</i>
<i>References</i>	<i>p. 23</i>



Fig 1. Cover of the NRC Next from

Learning from Rotterdam CS

Introduction

In 1998, the Dutch government comprised a list of six Nieuwe Sleutelprojecten (New Key Projects) in the Netherlands. These projects would focus on six main train stations that were to be connected to the European high speed train network. The goal of the projects was to not only improve the stations themselves but also invest in the direct urban context of these stations¹.

On March 13th 2014 King Willem Alexander of the Netherlands officially opened the first of these six key projects: the new Rotterdam Central Station. Immediately after some already considered the station to be the best station in the Netherlands² (fig. 1). It was built to act as a gateway to the city to the international visitors who would arrive by Thalys or Hispeed train. At the moment, the station as a public transport hub receives about 110.000 travelers each day. That number is expected to rise to 300.000 people each day by 2025-2030³.

Another station which is part of the six New Key Projects is Amsterdam Zuid. This station, which is at the heart of the Zuidas business district, also functions as an important public transport hub and gets about 30.000 travelers each day. This number is also expected to grow to about 300.000 people by 2030⁴. The station will also become the new international stop for high speed trains arriving in Amsterdam, due to capacity problems at Amsterdam Central Station.

Although the stations are very different in their current situation, with Rotterdam CS being a huge monumental landmark and Amsterdam Zuid appearing to be no more than just a stop for train and metro, they are expected to function in a similar way in the future. Both in terms of visitor numbers and being an international connection. Therefore the question can be asked: *What can Amsterdam Zuid learn from Rotterdam CS?*

In this report, Rotterdam CS is taken as main case study and analyzed; looking at facilities⁵, routing, what the overall qualities are and which aspects could be improved on. Because the new layout of the station is based on experiments done by the NS (Dutch Railway) at Leiden CS and Amsterdam Bijlmer-ArenA, these two stations will also be briefly viewed. We will also look at Amsterdam Zuid, both in its current condition and what the municipality and NS have planned for it. Having looked at both stations separately, the two will then be compared and recommendations will be made on how to make the new Amsterdam Zuid a well-functioning station by today's high standards.

¹ Dekker 2003: 7

² Luijt 2014: 4

³ Ibid

⁴ Projectbureau Zuidasdok 2013: 7

⁵ Facilities being the extra functions such as shops and catering services



Fig 2. Topview of Rotterdam CS



Fig 3. Roof above platform 3 and 4



Fig 4. Panorama view of the main passage at Leiden CS



Fig 5. Panorama view of the main passage at Rotterdam CS

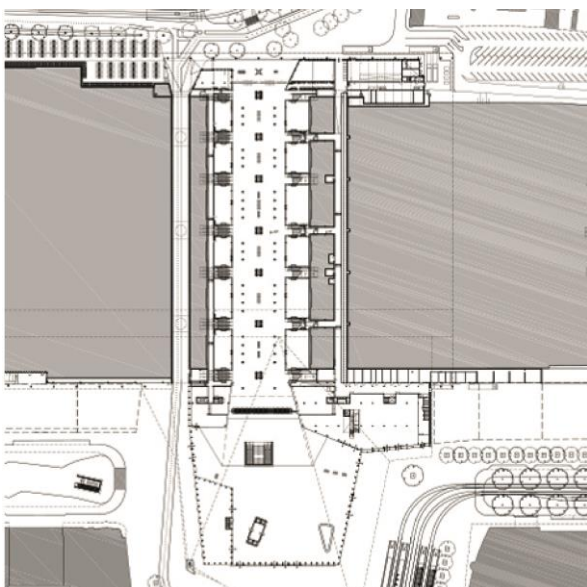


Fig 6. Floorplan of groundlevel of Rotterdam CS

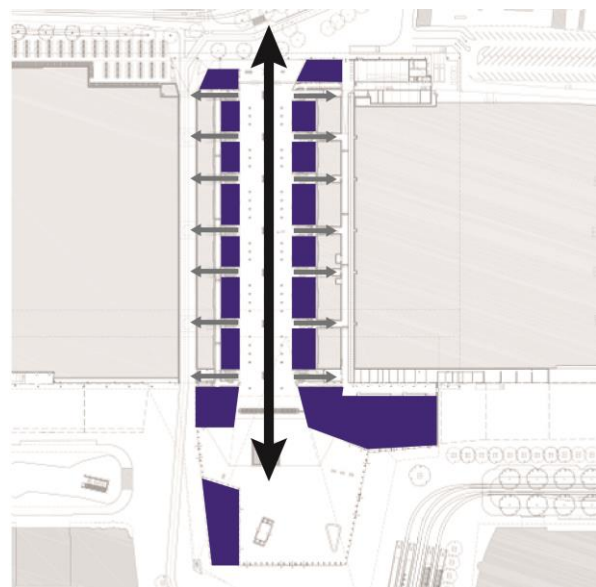


Fig 7. Scheme of the functions in the main passage

Rotterdam CS

Context

The Central Station of Rotterdam is located just north of the city center and forms a connecting element between the high rise filled center and the green 1930s neighborhood Blijdorp (fig. 2). The front of the station and its entrance square is placed between the headquarters of the Nationale Nederlanden (Dutch Insurance) and the Groothandelsgebouw (former trade center).

In January of 2008 demolishing work began on the old station, which was designed by Sybold Ravesteyn in order to replace it with the new station designed by Benthem Crouwel Architects, who also designed the new stations in Delft, Utrecht and The Hague. The replacement of the old station was necessary due to growing number of people who visited and used the station and the passage not being able to cope with this growth⁶.

Design

The design by Benthem Crouwel architects transforms the old station, which was hailed one of the jewels of the Wederopbouw (rebuilding era after the Second World War)⁷, into a new modern cathedral of public transport. The station consists of two parts; at the front there is a large triangular shaped roof which forms the station hall and is clad with shiny metal. The hall itself has a wooden ceiling and functions as an extension of the square in front of the station. The other part is the large glass roof that spans all the rail tracks and platforms and ends in the glass façade at the Blijdorp side of the station, which can be considered to be the backside of the station.

Even though the design is very modern in its use of materials and construction, the basic layout of the station reverts back to the classic layout of the 19th century stations where there was a clear separation between the station building, which formed the architectural face of the station to the city and the station canopy which was the engineering part of the station. Although both parts of Rotterdam Central Station are impressive constructive achievements and the space continues very well, the transition in the roof is quite abrupt (fig. 3).

Functions

The design of the Rotterdam Central Station is based on new core values which are part of a new vision for railway stations called Spoorbeeld (Rail vision)⁸. Although the values themselves are very vague (accessibility, human, characteristic and sustainable), they are based on experiments conducted by NS at Leiden Central Station and Amsterdam Bijlmer-ArenA⁹.

One of the experiments held in Leiden is to add more facilities like shops and cafés to the station (fig. 4). This experiment, which worked very well, is also implemented in Rotterdam. Where the new design of the station also features a new wide passage (fig. 5) with a lot of retail and catering functions (fig. 6 & 7). These new functions turn the stations from places of transition into destinations. They are becoming buildings which are not only used by travelers but also by people who want to go shopping or meet up with friends and grab a bite to eat, making them more public.

In order to make it possible for people to meet at stations, more is needed than just a lot of functions. This becomes clear if we compare the passage in Leiden with the one in Rotterdam. In both passages there are functions on either side and benches in the middle, but there are subtle differences in the way they are arranged.

⁶ www.volkskrant.nl

⁷ Ibid

⁸ www.spoorbeeld.nl

⁹ Ibid



Fig 8. Article in the Metro of March 7th 2014



Fig 9. Row OV-chipcard gates at Rotterdam CS



Fig 10. Bicycle and pedestrian tunnel next to the main passage

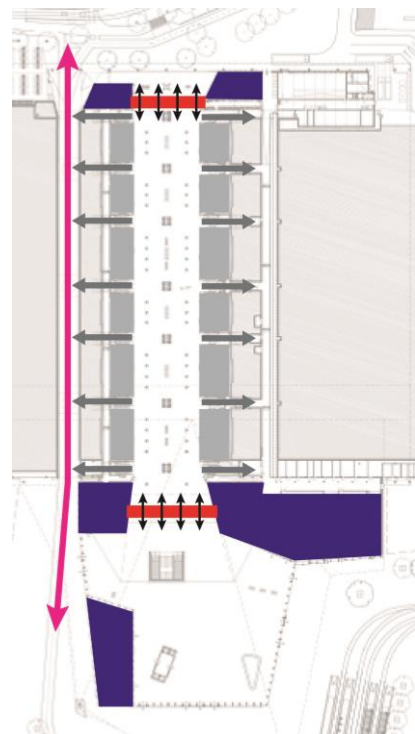


Fig 11. Scheme of the routing

In Leiden the benches are placed facing each other with a table in the middle, whereas they are placed back-to-back in Rotterdam. The effect is that people are actually meeting each other at the station in Leiden because they can sit down and look at each other. The tables also make it much easier for people to sit down and eat their lunch or read a newspaper, making the passage a place to stay. In Rotterdam, the passage is used much more as a waiting room. People aren't really talking to each other and are just watching the people walk by.

OV-Chipcard

Another development which runs parallel to the stations accumulating more functions, is the way we pay for our journey. At the end of the year 2000, the Dutch government decided to improve the safety on stations by investing 0,5 billion euro in the railway company for the development of entrance gates. These gates would not only help to ensure the safety on the stations but also make sure that everyone using the train has paid for their journey. This would in turn help with the safety on board of the trains, because 9 out of 10 incidents of violence against train personnel occurs when the passenger hasn't got a ticket and gets angry when confronted on this by the conductor¹⁰.

After several trials on multiple stations with these gates, the NS has placed them on almost every station in the Netherlands. The gates will be closed on August 2014 (fig. 8), which will also mean the end of the paper train ticket in the Netherlands¹¹.

Routing

Apart from all the problems with the OV-Chipcard itself, the gates where you check in and out to pay for your journey now also will become a problem. Because most stations in the Netherlands, like Rotterdam Central Station, have a passage which goes underneath the tracks, the NS has placed the gates on either side of the passage (fig. 9), sealing of the tunnel and making it and the access points to the platforms only accessible to people with an OV-Chipcard.

Although this scheme makes it very easy to check if people have checked in and out, it also means that all the new functions that are mostly situated on either side of the main passage, will only be used by people who travel. This completely opposes the development of stations becoming more public places for people who don't travel but just want to use the shops or catering functions.

Furthermore, not only will the gates block the new functions, they will also block the access to the other side of the tracks. In most Dutch cities, the railroad tracks are laid on top of a dyke, which cuts through the city fabric, dividing the city into two or more parts. Stations were not only a place where you could ascend the dyke to get on the train, they also were a place where you could get from one part of the city to the other by going underneath the tracks. For example, Leiden Central Station is one of the few connections where pedestrians can very easily get from the city center to the north of Leiden. By closing the gates on either side of the passage people will be forced to go around the station to the nearest car viaduct¹².

In Rotterdam this problem has been solved by keeping the old secondary tunnel which runs parallel to the main passage (fig. 11). This tunnel, which is a lot smaller and lower than the main passage, but still a lot nicer than the average tunnel, is only used by cyclists and the occasional pedestrian (fig. 10). The use will probably increase after the gates at Rotterdam CS are closed. However unlike Rotterdam, where there already were two tunnels to begin with, the gates will cause a problem in most cities. Cities like Leiden, where there is only one tunnel and a secondary tunnel will have to be made.

¹⁰ Eg 2014: 1

¹¹ Ibid

¹² www.nos.nl

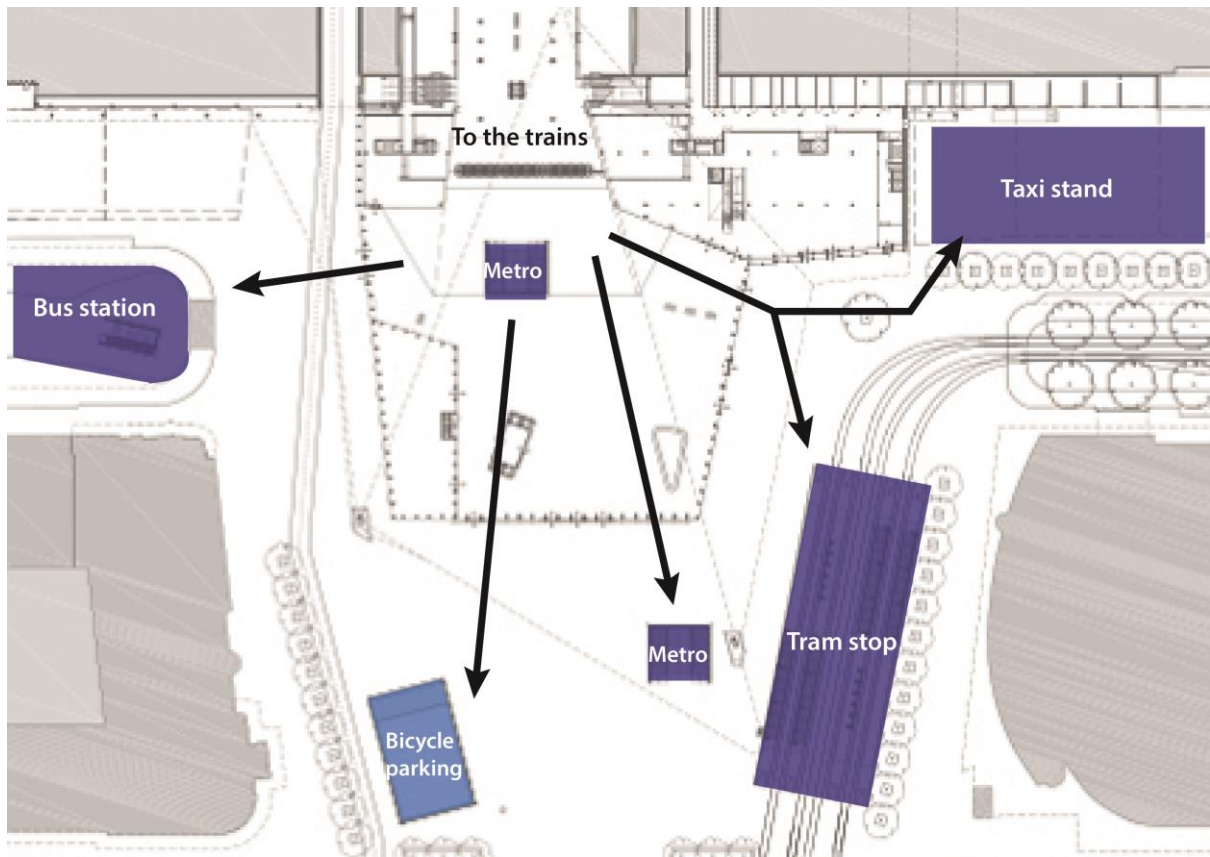


Fig 12. The main hall giving access to the other forms of (public) transport



Fig 13. An exhibition of National Geographic in the main hall of the Rotterdam CS station.

Central hall and square

Something that does work very well in Rotterdam is the central hall at the end of the passage at the city center end. Not only does the hall give access to all the other means of public transport (fig. 12), it also works well as a space to use for temporary functions. Like an photo exhibition celebrating the anniversary of the National Geographic magazine (fig. 13).

The central hall almost feels like a square when you're in it, this feeling is created by both the roof and the floor of the hall. By placing the same kind of stone tiles on the entrance square as well as the entrance hall, there is a feeling of continuation of exterior to interior space. The minimal interruption of the huge glass façade aides in the creation of this feeling. Another element which is important, is the fact that the roof has only two point where it touches the floor. Not only does this give a very open view it also gives the idea of an almost free floating roof.

By adding interior elements such as chairs, tables and various large screens where people can see commercials and what is going on in the Rotterdam harbor, the space feels a lot like an interior. This is probably why the people of city refer to it as their living room¹³.

¹³ Luijt 2014: 4

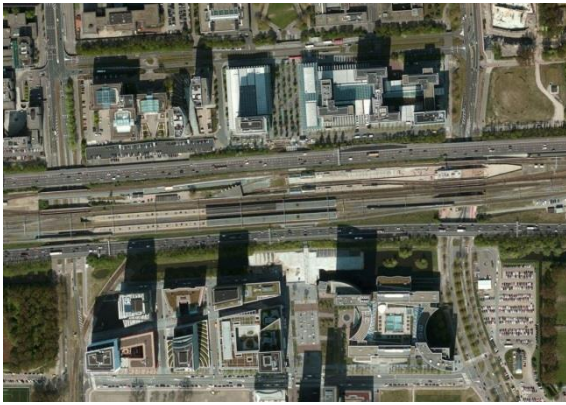


Fig 14. Topview of Amsterdam Zuid



Fig 15. Entrance to the station at the Mahlerplein



Fig 16. Proposed Zuidasdok



Fig 17. New proposed entrance to the station

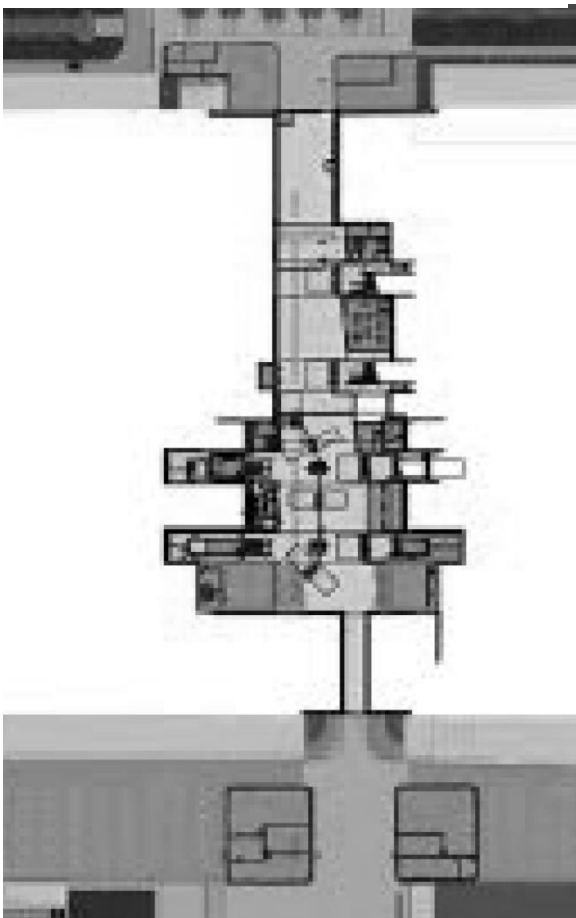


Fig 18. Floorplan of the current Zuid station

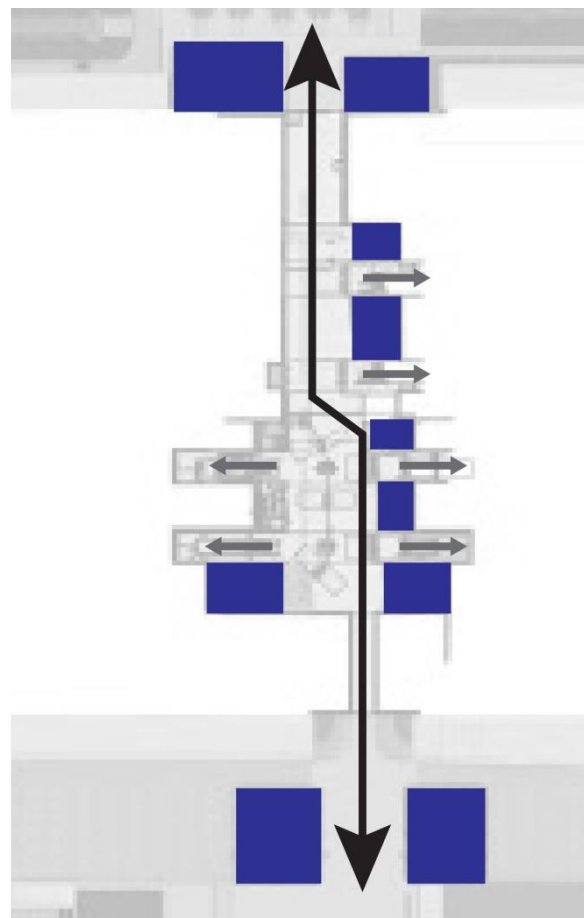


Fig 19. Position of the functions

Amsterdam Zuid

Context

Amsterdam Zuid Station lies in the center of the so called Zuidas (South-Axis,) The Zuidas is mostly known for being the business district of the city of Amsterdam. Where large international companies like Google, Tesla, ABN AMRO and Akzo Nobel have their headquarters which are housed in large high rise buildings¹⁴. It is also the location for the World Trade Center of Amsterdam.

The station itself, which was opened in 1978¹⁵, lies in the middle of a city block of high rise buildings and is flanked by the A10 ring road of Amsterdam which runs on either side of the railway lines. Next to the railway tracks are also two metro lines, which also have a stop at Amsterdam Zuid. Both the metro and train tracks as well as the highway lie on top of a dyke which cuts the urban block in half (fig. 14).

Design

The current Amsterdam Zuid station doesn't really have a very concrete design. The station consists of a relatively narrow tunnel that goes underneath the tracks and gives access to both the metro and train platforms. The tunnel connects the Zuidplein in the north to the Mahlerplein in the south. The appearance of the station on both sides of the tunnel is very similar, this means that there isn't a designated front or backside to the station. In order to make the station more visible, a large blue plane has been placed on either side of the tunnel, which bares the logo of the railway and metro company

The new design for the station is part of a larger masterplan the city of Amsterdam has planned for the Zuidas. The main goal of this plan is to connect the inner A10 Amsterdam with the outer part by placing the highway, railroad and metro underground in a so-called Zuidasdok (fig. 16). At the moment, there is not enough money for the complete 'dok' so the project is divided in to two phases. The first phase consists of only placing the A10 in tunnels. The space that becomes free on ground level will be used to create a new temporary station (fig. 17) which is also designed by Benthem&Crouwel architects. This situation will remain until 2030-2040, after which phase two will commence and the municipality will also place both the train and metro lines underground.

Functions

At the moment, the station houses the usual array of businesses connected to the Dutch Railway company. These functions include Burger King, Etos (pharmacist) and Ako (bookshop). Most of the functions are placed inside the passage (fig. 19). Other functions like Starbucks, HEMA (retail) and Julia's (pasta) are being housed in four small kiosk-like building that are placed on either side of the tunnels.

In the new (temporary) design for the station, more functions will be added. Not only in the main passage, which will be widened, but also in a secondary passage. Furthermore, functions such as retail and a bicycle storage will be placed on either side of the dyke.

¹⁴ www.amsterdam.nl

¹⁵ www.stationsweb.nl

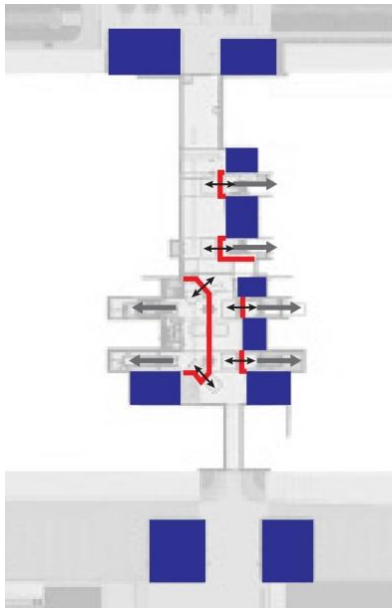


Fig 20. OV-chipcard gates current

Fig 21. Functions placed outside the gates

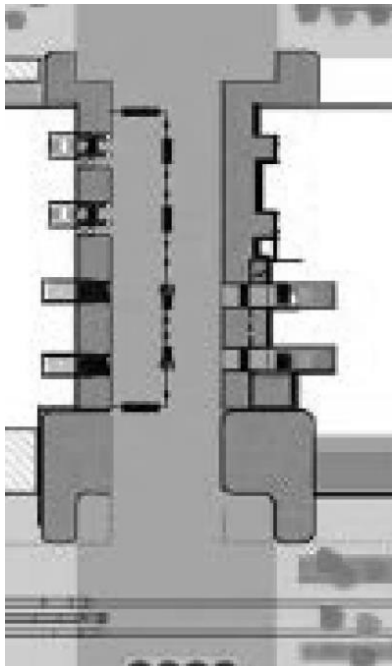


Fig 22. New design for Zuid

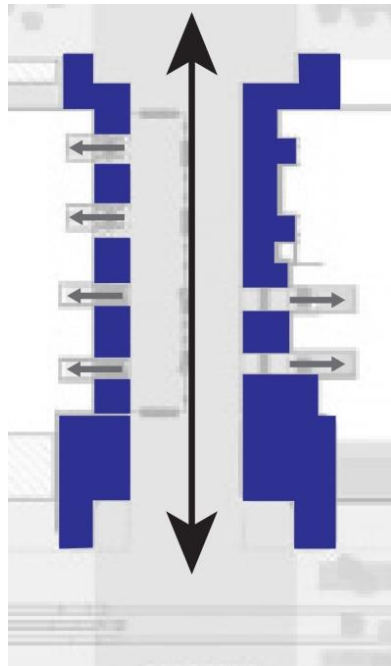


Fig 23. Widened passage

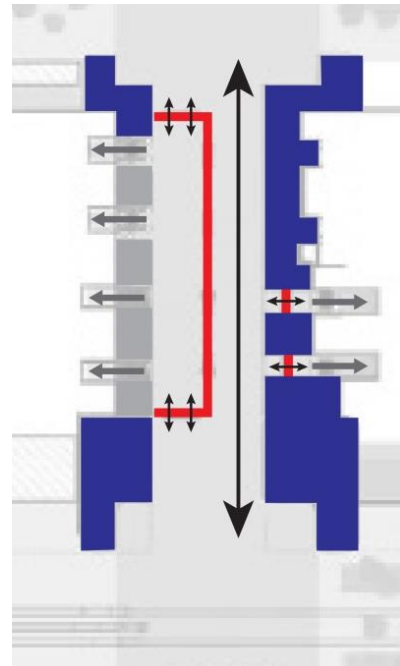


Fig 24. OV-chipcard gates new

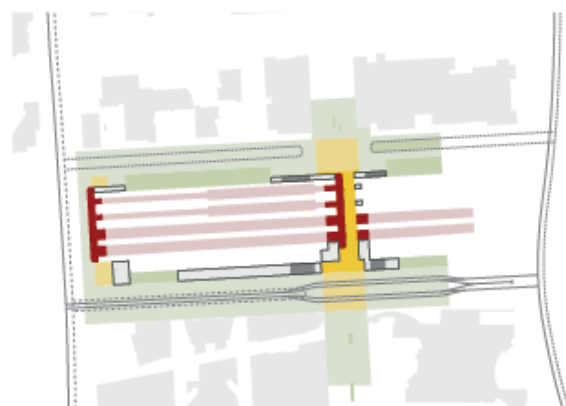


Fig 25. Proposal made by the municipality

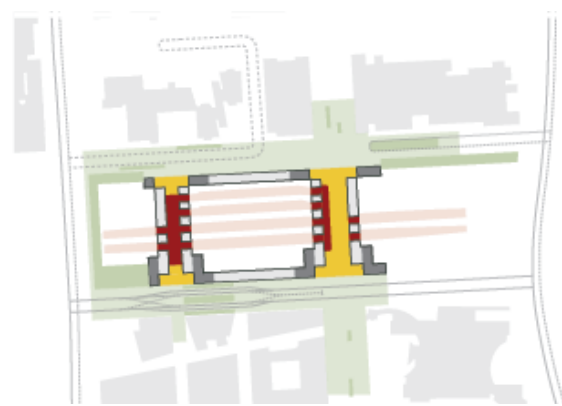


Fig 26. Proposal made by Benthem&Crowel

OV-chipcard

With regards to the OV-chipcard gates, in the current situation the gates aren't placed at the end of the tunnel, but rather at the bottom of the stairs and escalators leading up to the platforms (fig. 20). This means that functions that are in passage remain open to anyone who passes through the station (fig. 21), even if they don't check in and that the tunnel itself still functions as a connecting element. However, the tunnel is relatively narrow and not completely straight, which gives it chaotic look.

In the new floorplan of the passage (fig. 22) we see that the main passage has been widened and straightened. The new plan also includes more functions although some of those functions are now out of reach. This is because, even though the tunnel is widened (fig. 23), half of it has been blocked by OV-chipcard gates (fig. 24). Most of the functions are still available for people passing through but the passage doesn't quite live up to the connection that the municipality aims of making between the north and south part of the Zuidas.

Routing

In the current situation the station has one main passage with functions between the Zuid- and Mahlerplein. Apart from this tunnel there is also second access point to train platforms at the Parnassusweg. This entrance is mainly used by students who come by train to go the VU university, which is west of Amsterdam Zuid.

Regarding the second the second passage in the new scheme of the station, the municipality is still somewhat divided. The municipality would prefer to keep the current setup and simply add functions to the Parnassusweg entrance (fig. 25). There is however a second scheme made by Benthem&Crouwel which suggests to make a secondary tunnel between the current passage and the Parnassusweg and to place the extra functions here (fig. 26).

Pedestrian friendliness

One of the biggest advantages of this station at the moment is that it is a very pedestrian friendly station. Like a lot of other stations in the Netherlands, Amsterdam Zuid functions as a public transport hub where commuters switch from train and metro to bus and tram, but unlike other stations you can walk out of the station on either side without being run over by a tram, bus, car or cyclist.

In the new design, this quality has been tried to preserve as much as possible. By placing the trams and busses on either side of the tracks the amount of traffic which crosses the pedestrian stream is kept to a minimum, with only one set of tram tracks which goes in front of the entrance/exit at the Mahlerplein side of the station.



Fig 27. North side of Rotterdam CS

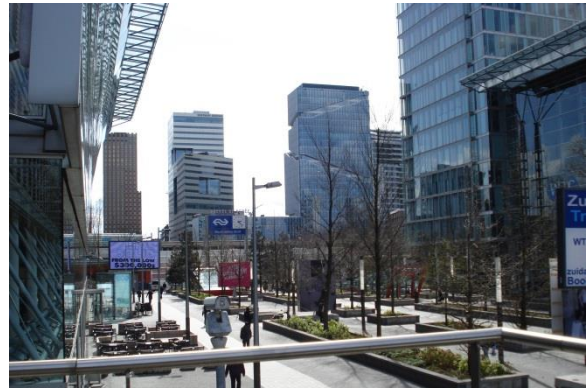


Fig 28. North side of Amsterdam Zuid



Fig 29. South side of Rotterdam CS



Fig 30. South side of Amsterdam Zuid

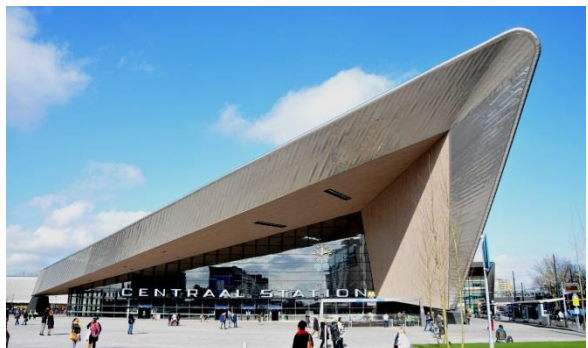


Fig 31. Entrance at Weena side



Fig 32. Entrance at the Mahler/Zuidplein side



Fig 33. Entrance at Blijdorp side



Fig 34. Entrance at the Parnassusweg side

Comparison

Context

If we compare the two stations with each other there are several interesting observations to make. The first thing which both stations and the railway lines have in common is that they cut through the urban fabric and create a barrier. However, because the area north of Rotterdam CS, the green neighborhood of Blijdorp (fig. 27), is very different from the southern area, the highrise filled Weena boulevard (fig. 29), the railway lines form a very natural border; here the railway dyke really forms the edge of the city center.

This is very different at the Amsterdam Zuid station, where the urban setting around the Mahlerplein (fig. 30) in the south is very similar to that of the Zuidplein (fig. 28) north of the station. Here the railway, metro and A10 ringroad really cut through the urban block and separate both sides from each other. In this situation, the site would really benefit from the station being an connecting element.

Design

As mentioned before, in their current state the two stations differ a lot from each other. But even when the new Amsterdam Zuid station will be completed, there will still be huge different between the two. One of the main differences is the direction the buildings have in the urban fabric. In Rotterdam, a very clear distinction a been made between what is considered to be the front and backside of the station. With the front being the large hall at the Weena boulevard (fig. 31) and the back being the glass façade towards the Blijdorp neighborhood (fig. 33).

In Amsterdam, the station is placed between two squares, as a result the station doesn't really have a front or backside. In the new plan the façade facing the Mahlerplein will be very similar to the one facing the Zuidplein (fig. 32). Where the station does differentiate between front or back is in the difference between the main passage and the exit at the Parnassusweg (fig. 34). Which in the current situation doesn't have any functions and feels like a back entrance because of all the bicycles parked underneath the overpass. In the new design this will be balanced out better, with functions also being placed at the Parnassusweg and the entrance being marked more clearly in terms of the façade.

Functions

At the moment Rotterdam CS has a lot more to offer in terms of functions. The wide passage has a lot of shops and catering functions which can also be interesting for people who aren't traveling but just want to get something to eat. The new design for Amsterdam Zuid shows an increase in retail space compared to the current situation but the nature of the functions is still unclear.

Apart from the retail and catering functions at the station themselves, both stations are also very near a shopping mall. In Rotterdam the Lijnbaan is only ten minutes walking and at the Zuidas the Gelderlandplein is a very popular shopping mall and a mere five minutes walking. However, because the Zuidas has the ambition of becoming a center itself, it would benefit from having more functions attached to the station, which is at the heart of not only the urban block but the Zuidas itself.

OV-chipcard

In terms of the OV-chipcard gates, Amsterdam Zuid seems to have taken them in to consideration by placing them at the end of the stairs and escalators leading up to the platforms instead of at both ends of the passage as the architects have done in Rotterdam. By doing this they are allowing the passage to still connect the Zuidplein to the Mahlerplein while at the same time keeping all of the functions accessible to the general public. This setup is being continued in the new design for the Amsterdam Zuid station, although some of the functions are now also behind the gates.

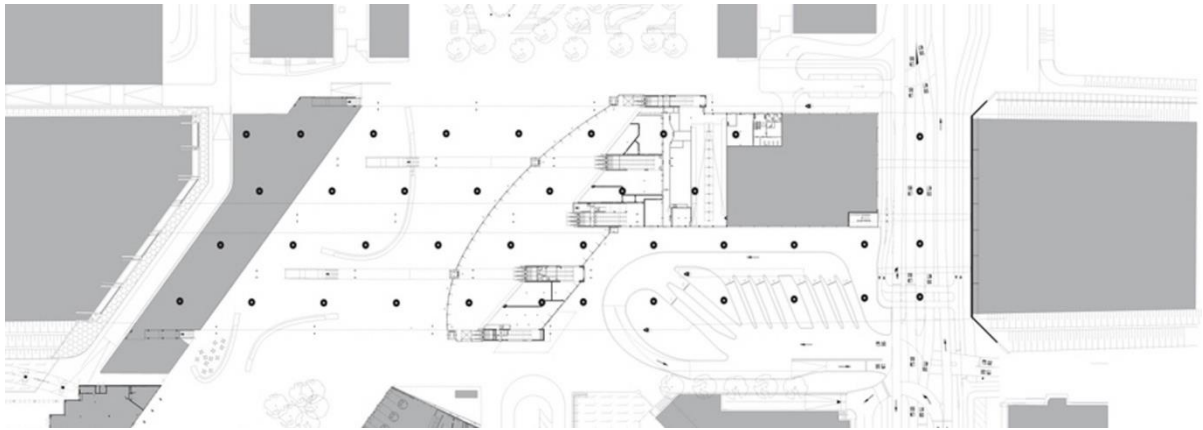


Fig 35. Floorplan of the ground level at Amsterdam Bijlmer-Arena station

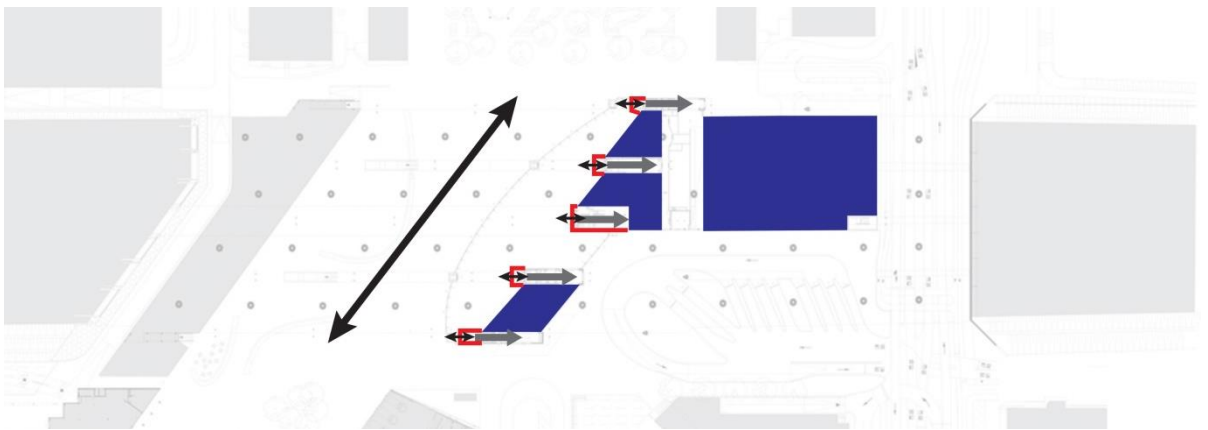


Fig 36. Functional layout of Bijlmer-Arena



Fig 37. Passage underneath the tracks



Fig 38. Glass façade that marks the station

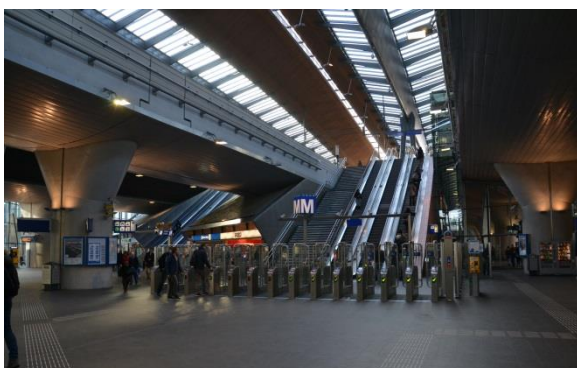


Fig 39. Gates at the bottom of the escalators



Fig 40. Fit For Free at the station

Routing

Both stations have a similar setup in terms of routing. The basic layout of Rotterdam CS is a wide passage with functions that ends at the city center side with a large entrance hall. Next to this passage there is the pedestrian tunnel that should keep the connection open when the OV-chipcard gates close and seal off the main passage.

Amsterdam Zuid also has a passage which will be widened and contains functions but depending on which proposal the municipality will choose there will be either a secondary tunnel with functions or an exit at the Parnassusweg as it is in the current situation.

Recommendation

Based on the analysis of both stations, several recommendations can be made for the new design of Amsterdam Zuid. The most important being, that if the current trend of adding more extra functions to the station(area) continues, then the critical question that designers will have to ask is not so much what these functions could be, but where they are placed in relation to the station. With stations becoming more closed off, the position of functions is crucial if they are to be used by more than just the traveler. In the current situation with the OV-Chipcard gates, the best thing to do would be to place the functions outside the gates.

Not only do the gates have an impact on the use of functions at the station, but also on the use of the station as a connecting element. If stations want to maintain their function as a bridge between two sides of a city divided by railway dykes, then the OV-Chipcard gates should also be placed in such a way that they don't block or inconvenience the people using the station passage just to get to the other side of the tracks.

There is a station in the Netherlands that has both the qualities and would therefore also be interesting to take inspiration from. This station is the Amsterdam Bijlmer ArenA station which was designed by Grimshaw architects and completed in 2008. If we look at the layout of the station (fig. 35) we see that it also has a wide passage that connects a square north of the station to boulevard like square in the south (fig. 36 & 37), where it differs from most stations in the Netherlands is that the passage itself isn't the station. The entrance to the station is on the right side of the passage and is simply marked by a glass curtain wall (fig. 38).

Furthermore, the OV-chipcard gates are placed at the bottom of the escalators (fig. 39) and the functions, which consist of the usual array of Burger King, Starbucks, Etos and Hema, are accessible to general public. Apart from the standard functions, the station also houses a Fit For Free fitness center (fig. 40), which overlooks the bus station. Because the station is also relatively compact, it's very easy to walk around it, placing it very centrally in its urban surroundings.

The Bijlmer station defies the current passage-typology of current stations and replaces it with a more all-sided building. By doing this it's still able to connect both sides of the train tracks whilst functionally serving as something more than just a station and also incorporating the OV-chipcard gates without them forming a barrier.

The final recommendation for the Amsterdam Zuid station and indeed every station that aims to become a destination rather than a place of transition; is to create places where people can actually stay. Although adding more functions and placing benches for people to sit is a good start, it isn't enough. By comparing Leiden CS with Rotterdam we see that the way the benches are configured plays a huge role in the way they are being used. The addition of something as simple as a table can mean the difference between a waiting area and a space that starts to feel like a living room.



Fig 41. Places to sit in the entrance hall at Rotterdam CS



Fig 42. Maankwartier at the train station in Heerlen

Conclusion

The general conclusion that can be drawn from this comparison is that stations nowadays are becoming more public and less public at the same time; by simultaneously adding more functions and blocking those functions off to anyone but the traveler. They are also no longer connecting elements in a city divided by railway dykes, because of the introduction of OV-Chipcard gates.

These developments are worrying for several reasons. First of all, stations really have the potential to become something more than "just" a public transport hub. Because they are generally centrally located and also have a lot of visitors each, they are ideal for not only housing retail or catering functions but possible even other facilities like sports or cultural functions. Even if it's just providing a space for a temporary activity like the exhibition at Rotterdam or the small concerts at Leiden CS¹⁶.

Secondly, even though the OV-Chipcard gates are in place for several years now and they will be closed very soon, stations are still being seen as connecting elements in the city; as we saw at Amsterdam Zuid, where the municipality wants to connect the city by placing a station in between. It is possible to use a station as a connecting element as the Amsterdam Bijlmer ArenA example shows, but it all depends on where the gates are being placed in relation to the public routes. Although simply placing the gates on either side of the passage is the simplest way, it will cause a lot of problems in most cities in the Netherlands.

Finally, stations are losing their place in the public realm. Where stations just to be public gateways to a city, they are becoming more privatized and closed off. Even though they have the potential to become more than just a place of transition, to really become a "living room of the city"¹⁷ (fig. 41).

Discussion

Although stations proved to be an excellent framework to house a lot of functions, a word of caution is necessary. Due to the financial crisis, a lot of retailers had to close down their shops leaving a lot of vacant space in the main shopping streets of various cities, which risks making them less attractive. By adding a lot of functions in or around the station, you might create a very vibrant center there, but run the risk of drawing functions away of creating competition for an already struggling city center.

A good example of this is the city and station of Heerlen in the south of the Netherlands, where a local artist has designed a plan for the area around the station. The plan, which he named "Maankwartier" (moonquarter), involves adding close to 20.000 m² of retail, catering and hotel functions, 19.000 m² of office space and 99 dwellings (fig. 42).

Apart from the fact whether the municipality, NS and housing corporations can pay for it, which is still somewhat unclear, the main criticism on the plan is that it focusses too much attention on the area around the station. The city center, which already has 20% vacant retail space, runs the risk of becoming even more deserted¹⁸. Even though many citizens of Heerlen oppose the plan, the municipality has given the green light for the construction of the new station and its surroundings.

¹⁶ www.mijnproefstation.nl

¹⁷ Luijt 2014: 4

¹⁸ www.ftm.nl

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