Urban analysis
Amsterdam-West development past to current

Research question
Where does the diversion in the urban structure of the research area Amsterdam-West originate from?

image 1
De Dam was named after the actual function of the current square in the 13th century. Between 1204 and 1275 a dam in the Amstel was built at this location. It formed the first connection between the first settlements at the Warmoestraat and the Nieuwendijk on both sides of the river the Amstel. The Dam square was developed. It became the core of the city which developed around it.

image 2
The Spaarnedammerdijk was build around 1300 to protect the shores against the IJ. The Kostverlovenvaart was created around 1400 to improve the drainage of the IJ. The Haarlemmerdijkvaart was created around 1630 to establish a direct connection between Haarlem and Amsterdam. The straight canal is the shortest route.

image 3
The Singelgracht was build around 1660. Together with the city walls they protected the city against enemies. The Grachtengordel expanded further outward until the economical growth stopped in 1700. Around 1850 the industrialization begun and the city started developing again. In 1839 the first train was built along the Haarlemmerdijkvaart, connecting Amsterdam with Haarlem. At the time the station was located at the Haarlemmerpoort. The Haarlemmervaart lost its function. The green areas are agricultural areas ‘Sluizen’ of the municipality of Sloten.

image 4
From the 1850s the economy started flourishing. People moved to Adam to work in the harbours, causing a housing shortage in the city. Expansions outside the defence line became necessary. The first houses were of poor quality. The architect Kalf and the municipality made a development plan in 1877 to expand towards the Kostverlovenvaart and Spaarnedam, the 19th century belt (yellow). Despite the urban plan the housing stayed minimal, which lead to the Woningwet of 1901. The flourishing economy shows in the expansion of the northern harbour area. In 1879 the train to Zaandam was built and around 1885 the current central station was constructed. The Westergasfabriek developed in 1885 just outside the living area close to the train and harbour. A tram to Sloten was developed and the Admiral de Ruyterweg was born. The shape derives from the historic underlying peat structure with narrow pieces of land in between. The first part of the Breitennzone is visible.
Urban analysis
Amsterdam West

**image 5**
In the harbour area hardly anything changed except for the train tracks to transport from and towards the ships. In 1921 the urban area started to expand further than the Kostverlorenvaart, the '20 - '40 century belt (orange). In 1934 the food court relocated from the Marnixdok to the current location. At the time it formed the border of the city and was reached via the canals with the harbour and the train nearby. In 1935 the development for Plan West started according to the General Expansion Plan (AUP), most of the actual execution took place after the second world war. Even though it was an expansion there wasn’t a real overall plan for the whole city. Around the Adm. de Ruyterweg the first streets started to develop, part of the '20 - '40 century belt (orange). The Statuinen are almost gone and only present at the location of the current Erasmuspark. The rest has been replaced by buildings.

**image 6**
This image of 1935 is showing the peat structure with little pieces of land in between. The difference in structure between the existing land and the claimed land is very clear. In the existing land you can clearly distinguish the shape of the Admiral de Ruyterweg. Also the canals are overall formed by the peats. The peat structure in the claimed land is very straight. The buildings in this area are oriented according to this structure.

**image 7**
In 1966 the highway A10 was constructed on the west side of the research area. In 1966 the city had expanded further outwards. The areas of Bos en Lommer and Landlust had developed after the war mainly according to the AUP. Though in both areas there is broken with the principle of the closed block. The AUP of 1935 is readable in the image and closes the last piece of the research area. The harbour has expanded further to the current situation. The Betonnen zone seems a residuum between the Haarlemmertrekvaart, the railway track and industry in the harbour that kept expanding southwards.

In the AUP the plan was to make it a park but it never got to it. The ‘volkstuijen’ probably developed around this time. The Spaarnammerdijk was broken down since it wasn’t at the border with the water anymore. A part was left at the east part around Sloterdijk. In the east at the Spaarnamerdijk the dyke has become the Spaarnammerstraat that still follows the structure of the dyke. In 1961 the Erasmuspark became bigger and developed into a public park.

**current**
The current situation is not much different from the one in 1968. New buildings were constructed here and there. And of course the infrastructure was modernized.
Urban analysis
Amsterdam West current situation

answer to research question
The general division in the area is caused by typical characteristics due to the development of the area shown in the images 1 to 4 on the previous two pages.

image 9
Although the development through centuries has a large part in the main structure of the research area. The AUP has a big share in the development functionwise. The AUP was based on the separation of four urban functions: living, working, recreation and traffic. Which is clearly visible in this image. Within the AUP the idea on the research area was to locate the working in the western harbor area (part of the research area and in the city center. The living could be situated in the south and the west of Amsterdam (part of the research area) and the green zones would be in between of these functions.

In the research area there is a clear northern and southern part caused by the Breitzone and the Haarlemmervaart. The northern part is except for Spaarndam industrial. Nowadays a lot of companies have left the area which makes it possible to redevelop this part. The southern part exists mainly out of dwellings developed in the 20th century. The green zone in between forms a buffer. There are only a few locations where it is possible to cross from one side to the other. Another industrial part within the area is the food center. Although the food center was developed in an earlier stage than most of the area west of it, it nowadays bulges into the dwelling area which splits it into two parts. The food center is hardly accessible and surrounded by canals which makes it appear as a fortress.

image 10
The division in living, industry, offices, and shopping streets is shown within the research area. Red is living and corresponds to the image 9. Industry and offices are mainly situated in the north of the research area. The offices are generally supporting functions of the industrial functions. The brown part is the market of the food center which is not accessible for the public. The purple lines are shopping streets. Even nowadays the distinction between functions is still visible in the map. Although the real experience shows there are a lot of little shops, and offices and little companies located on the plinth of the dwelling blocks.

image 11
This image shows the type of inhabitants in the research area. The both diagrams at the top show that in Amsterdam-West the division between dutch inhabitants, western inhabitants and non-western inhabitants is equal. Almost

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Amsterdam West specifics and future

half is originally from Dutch decent. About 15 percent is from western decent and 30 percent is from non-western decent. Nowadays called, de Gulden Winckelbuurt ([J]) is the area where the Scholendrieboek is situated. The diagram shows that about 60% is from non-western origin in this
neighbourhood. 30% is from Dutch decent and only 10% is from western origin. Compared to the Frederik Hendrikbuurt (A) in 19th century belt on the east side of the research area there are about 45% more non-western immigrants around the Scholendraiburt. In the Frederik Hendrikbuurt is 60% from Dutch origin and 15% percent of western origin. A big difference in the type of inhabitants that are actually located quite close to each other.

image 12
To get an idea about the type of dwellings and inhabitants, this image shows a drawing based on the number of social housing. Most dwelling areas within the research area contain a higher amount of social housing than the average amount of social housing within the neighbourhoods of Amsterdam. This could mean there is also a higher amount of lower incomes and lower educational levels in the research area.

image 13
This image shows the build-up of the Bretenzone. The part that lies within the research contains quite some built area. Not only due to the Westergasfabriek but also because of the allotments accompanied by little sheds. There is also a lot of green and water within the area which makes the area into a real recreation space.

image 14
The image represents the future plans of the municipality of Amsterdam within the structural vision 2012-2030 developed by themselves. The image shows that the main focus is on redeveloping the harbour area in the north of the research center and the areas around the train stations west of the research center. For the area of Bos en Lommer and the Scholendrieboek there is no specific future plan. Also the extension of the subway line is not of interest for Bos en Lommer and the Scholendrieboek.

image 15
The pictures represent the diversity within the whole research area. From scenic bridges and the Westergasfabriek to apartment buildings from the 90's along the food center. Industriel properties and a view on monumental Amsterdam. The Zaanson building and the pre AUP Bos en Lommer apartments buildings next to a simple elderly house and apartment buildings in the 19th century belt from Kalff.

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Urban analysis
Bos en Lommer past to current

Research question
How did Bos and Lommer develop?

Bos en Lommer is an area within the research area in Amsterdam-West. It is bordered by the Haarlemmerweg in the north, the train tracks in the west, the Jan van Galenstraat in the south and the Westelijk marktkanaal in the east. It was built in the first half of the 20th century.

image 16
The area of Bos en Lommer was part of the AJP around 1935 and designated for dwellings. The image is showing the plan for Bos en Lommer of 1936. The war split the development of the area in two. The image shows the whole area exists out of a combination of half open building blocks and row housing. The A10 wasn’t there and planned as a large parkway coming from the north and ending at the Bos en Lommerweg in a square. In the north the plan of the Scholendriehoek is visible.

image 17
This image shows the current situation of Bos en Lommer. There is a clear resemblance between the image 16 and image 17. In image 17 the highway A10 is developed and the square was never constructed. There are some deviations from the plan, some new buildings were built in a very different setting, but the main structure is still there and strongly visible. The legend on the right side of the image shows the building stages.

image 18
The Granistraat is adjacent to the Scholendriehoek. This half open building block was built just before the war. The parallel situated building blocks weren’t constructed in the same time. A couple were developed before the war and some were developed after the war.

image 19
Elderly housing from around the 50’s in Bos en Lommer in the direction of the Hertspiegeledw. The elderly homes were a new typology. They were situated at the short side of half open building blocks. The openings created a walking path for recreational use. Along the whole Leeuwendalersweg these elderly houses were built. The path behind it is called the Leeuwendalerspad and still exists.

image 20
Aerial picture from 1972 showing the einsteinweg, the sports park Jan van Galenstraat, GAK-building en de dwelling area Bos en Lommer.
Urban analysis
Scholendrieuhoek past to current

Research question
Where does the principle of the Scholendrieuhoek derive from?

Image 21
The Scholendrieuhoek is shown which lies in the north of Bos en Lommer in Amsterdam-West. The scholendrieuhoek the year of construction and architect are shown. For comparison also the years of construction of the surrounding building blocks are mentioned. The first building in the triangle was constructed in 1952 and the last building in 1964 within that timeframe. The surrounding housing blocks were almost all developed earlier.

The scholendrieuhoek derives from the AUP with its separation of functions and the principles of light, air, and space of 'Het Nieuwe Bouwen'. The schools were separated from the surrounding dwellings functions, designed according to several new educational typologies, oriented at the sun within a larger space. The housing shortage after the second world war stimulated a fast development of new dwelling areas. The new housing and the babyboom demanded more schools. According to the AUP in 1935 36 schools of several educational levels were needed within Bos en Lommer.

The image 22
The original AUP of Bosch en Lommer from 1935 showing the Scholendrieuhoek. Already in 1935 the schools were planned in this triangle, although in a different setting than the actual design. In the original plan the schools seem to be according to the corridor typology that was abandoned in the 50's. The schools all have their own playground (S) and in the middle a playground with probably a public function. As was the green between the schools.

The earlier schools, the Princes Beatrice school, the Princes Margrietschool and the Daniel Goedkoopschool are within the designated triangle for educational buildings according to the AUP. The location of the Hendrick de Keyserschool and the Zaandstad building was designated to housing blocks with little offices.

Image 23 and Image 24
The Scholendrieuhoek in the eventual situation before the Zaandstad building was developed. There was a little garment factory next to the school. The image 24 shows the current situation of the schools. Next to the Zaandstad building in 1964, there other buildings have developed in approximately the last 10 years. Two are day care centres and one belongs to a public playground.

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Scholendrieoek context past current

The images on this page compare the Scholendrieoek within its original situation in the 60’s with the current situation.

image 25 and image 26
A change in the road system and the buildings within the triangle is noticeable. Nowadays the triangle is more densely built. In the 60’s the Multatuliweg was still a lowered road and meant to be a parkway. In 1966 the Multatuliweg became the highway A10 and part of the ring of Amsterdam. The A10 is nowadays a very busy highway. The Wiltzangaan is the main road around the Scholendrieoek. The Sara Burgerhartstraat and Kreis Louwenstraat are tertiary roads.

image 27 and image 28
The difference within the triangle is shown. The red arrows point out the entrances of the building. The Zaamstad building is part of the triangle with its entrance to the other side. It was build as a bank and wanted to function on a larger scale than on the neighbourhood. During the designing process they didn’t take in account the elevated highway. The building was supposed to connect to the Multatuliweg, to the city and to the world. The Hendrick de Keyerschool is not located within the actual triangle but as a school it does want to participate within the triangle with the entrance oriented to it.

The green within the triangle underwent a severe change. The actual situation in the 60’s isn’t quite clear. The Princes Margrietschool had it’s own garden, connected with the park and therefore semi-private. The Princes Beatriceschool had a private inner court functioning as an open air class, corresponding to its Zeitgeist. Within the H shape there were also two semi-private areas. But also a garden, and a sports area.

image 29 and 30
A difference in openness and accessibility of the triangle is shown. Around the 60’s the schools had their own private and semi-private areas and the rest of the triangle was park and visible. It was meant to be for the inhabitants of the surrounding dwelling blocks. Here they could meet and recreate.

In the line of the ‘wijkgedachte’ and supposedly due to the practical combination of child daycare and primary schools together, the Scholendrieoek contains more buildings than in the 60’s. These buildings all demand their own private playing areas which have absorbed quite some green public space in the triangle. In the current situation the buildings along the Wiltzangaan block the view into the area.

The pictures show the fences and separation from the Wiltzangaan. The triangle doesn’t invite people anymore.

source pictures: author

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Urban analysis
Value assessment and conclusions

The research area derives its division in the urban structure from the development through time. Which is in a way quite logically though very interesting to dive into. Especially in the last 206 years a lot of changes took place in the area due to the development of the industry causing a need for housing. Bos en Lommer was part of this development and was built according to the AUP to help structure the expansion of the city and maintain a certain quality. De development of the Scholendriehoek in Bos en Lommer exactly fits its timeframe.

The Scholendriehoek has a positive monumental value. It is of national meaning on cultural historical and urban level. It was developed according to the ‘Wijkgedachte’ during the reconstruction after the second world war. During the fifties and sixties the separation of functions within the neighbourhood were part of the zeitgeist. The neighbourhood had to contain all facilities to be able to function as a village within the city. De scholendriehoek provided the educational functions. The surrounding buildings are overall dwellings.

On the urban level the phasing of the districts is noticeable. De Scholendriehoek is surrounded by two different construction periods in two different neighbourhoods, Landlust and Bos en Lommer. The Scholendriehoek is part of Bos en Lommer and within this district the Scholendriehoek was functioning within the idea of the ‘Wijkgedachte’, the separation of the functions.

On the neighbourhood level the area was quite important and also has a positive value. After the second world war there was a need for housing and due to the babyboom schools were needed.

When looking at the specific object and arrangement of the Scholendriehoek itself. Two qualities come forward. The first quality is the architecture. In the buildings several educational typologies are applied. The cluster of these several typologies creates a positive value on the architectural level.

Another strong quality is the green, like grass, trees and bushes, in the triangle. The green in between the schools was actually designed and belonged to one of the few green larger areas within the direct surroundings. The green is according accessible for the public and therefore the social meeting point for the neighbourhood. This meaning on the the social level for the inhabitants give the Scholendriehoek als a positive value.

The Scholendriehoek receives a positive value in the value assessment.

image 31 source: T. Rijvers
RQ: How did the architect AC Nicolai get involved in the design of the Hendrick de Keyerschool? Where does the composition of the Hendrick de Keyerschool derive from?

Build: 1960
Address: Krelis Louwenstraat 1-3
City: Amsterdam
Client: Board Hendrick de Keyerschool
Architect: AC Nicolai
Users(s): UTSG Hendrick de Keyerschool
ROC
Function: Educational building
Floorspace: 7000m² BVO
End of function: 2000
Owner: Amsterdamse Compagnie
New function: Creative platform, architectural agency, photo studio
Name: Hendrick de Keyser was a sculptor and architect in the 16th century. Architect of the city hall in Delft.
Monument: Municipal monument

A 3D drawing and plan made by the architect AC Nicolai himself of the Hendrick the Keyerschool.

The architect AC Nicolai with his wife Cora Chaillet, also an architect. Around 1955 Nicolai designed the school in Bos and Lommer in the Scholendrieuken. He already moved to Emmen and started his own agency. The exact reason for his involvement in this project is unknown. But it is possible he got involved with the design due to this prior work at the agency of Zanstra, Giesen and Sijmens and his involvement in the reconstruction of Bos en Lommer. In a letter I did read about him getting the assignment but nothing about the how and why. On the next page more is explained about the career of the architect AC Nicolai.

The old pictures of the Hendrick de Keyerschool show the old situation. In the first image (4) the school is being constructed. In the second picture (5) the school (still under construction) is seen from the Multatuliweg (the lowered predecessor of the A10). The Zaanstad building is not visible yet but the little confection factory is still there. The third picture (6) shows an aerial view. In this picture the Zaanstad building has been constructed and the A10 has been developed.

The architect AC Nicolai with his wife Cora Chaillet, also an architect.
Architectural analysis
Hendrick de KeyserSchool & AC Nicolai

image 7 and 8 Design vision
Nicolai worked for the architectural agency of Zanstra, Gies, and Sijmons in 1939. In 1932 these architects formed Groep '32 with Van Ravesteyn, Boeken, Staal and Komter. At first they were members of the 'De Opbouw'and 'De Bo. Because they felt functionalism took a to prominent postion within 'Het Nieuwe Bouwen', they separated and founded a new group, 'Groep 32'. They wanted design and beauty to play a bigger role in architecture again and create more comfortable and pleasant buildings in which the human scale was integrated. At their agency he develops his design vision of (how he called it himself ) het 'zachte Nieuwe Bouwen'. 'Group 32' didn't actually build a lot of architecture. The atelierwoningen at the Zoererdijkstraat in Amsterdam in 1934, the Apollohuis in Amsterdam are examples. A more baroque example is 'De Holland van 1859' from Van Ravesteyn in 1939.

image 9 Study group 1939-1940
From 1939 till 1940 he took part in a private education group founded by Zanstra, Boeken and Mastenbroek. Group '32 took a stand against what they considered conservative polytechnic education. The picture show Zanstra, Gies, and Sijmons around this time.

image 10 Bosch en Lommer
In 1941 architectural agency Zanstra, Gies, and Sijmons got the assignment to design 1600 dwellings in Bos en Lommer. Due to the war nothing is build and therefore the agency already starts to work on the reconstruction for after the war. At this time Nicolai is at the agency working on the book 'Van woning tot stad'about the reconstruction of Amsterdam after WOII and adjustments on the AUP.

image 11 Career 1949-1983
In 1947 he won the silver prize of the Prix the Rome for a religious center. He made a lot of designs in NL but the most important are the ones in boomtown Emmen. The image shows a drawing of the design of 144 dwellings at the Spoorweg in Emmen. He had 2 agencies of his own and was part of architectural agency Emmernhoum.

image 12 Schools
Nicolai designed at least 10 schools through the whole country. Nicolai's career took place during the reconstruction of world war II in which budgets were small. In the same time he had to deal with the educational renewal.
The image of a school for kindergarten teachers at the Anglersdijk in Emmen of 1964, shows a resemblance to the Hendrick the KeyserSchool in Amsterdam. The building consists out of several volumes situated around an innercourt.

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img 7 source: www.rijksmonumenten.nl

img 9 source: AC Nicolai bouwstenen voor een moderne woonomgeving

img 10 source: Bos en Lommer De Baarsjes, Ton Heijdra

img 11 source: AC Nicolai bouwstenen voor een moderne woonomgeving

img 12 source: AC Nicolai bouwstenen voor een moderne woonomgeving

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Architectural analysis
Hendrick de Keyerschool composition

RQ: Where does the composition of the Hendrick de Keyerschool derive from?

image 13
The building exists out of 6 volumes. They are designed according to the incorporated functions. The colours correspond to the adjacent legend.

dimage 14
The building could be regarded as two L-shaped volumes that intersect. At this intersection the canteen/theater is located. The meeting place as the crown of the building corresponds to the vision of Nicolaï: ‘Het Zachte Nieuwe Bouwen’.

image 15
The volumes are situated as an opened carré which establishes a green inner court. In the past, part of it was the sports playing field. Also the innercourt refers to ‘Het Zachte Nieuwe Bouwen’. A nice to place to reside and meet each other.

image 16
The image shows the amount of levels of the volumes. The colours correspond to the colours in the adjacent legend.

dimage 17
Due to the changing educational system in the 50’s other school typologies needed to be developed. In general the typology changed from a corridor to a hall typology. But Nicolaï used a combination of the two in this building, the hall-corridor system. Although he regarded himself as an architect of ‘Het Zachte Bouwen’, he was still a functionalist, but with a softer touch. The corridors functioned as a connection between the entrance hall and the other volumes and to unlock the class rooms. The halls were to meet each other to soften the functionality of the building.

image 18
The main entrance (red arrow) of the school is situated at the side of the schooleindriehoek, which shows the connection with the triangle in which the other schools were located. The inner court can be reached via the entrance hall, there is a door across the main entrance (purple arrow).

The vertical distribution (blue arrow) is organized via stairs in the high rise and in the lower parts. There is a small elevator in the high rise. In the entrance hall there is a floating representative stairs that is moving upwards to the assembly hall, the crown.

image 19
The shifting of the volumes creates a entrance square in front of the school.

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1 level (with several heights)
2 levels + basement
5 levels

main entrance
entrance square
vertical access

inner court entrance

main entrance
shift of the volumes
Architectural analysis
Hendrick de Keyerschool outside

image 20
The facade shows a clear grid defined by the grid of the main construction, concrete floors with concrete columns. The outside columns of the bearing construction are part of the facade and create a quadrangular opening of 3.6 by 3.7 meter. The openings are filled with concrete infill panels made out of concrete and glass.

image 21
There are about 12 types of panels with a different organization in amount of glazing and concrete. The infill panels are applied according to the function behind it. The classrooms for example contain a closed plint on the bottom with glass in a concrete framing (1). The entrance hall has panels that only contain glass with concrete framing (2). And the corridors on the north have a closed concrete plint on the bottom but also on the top with glass in between (3).

image 22
These pictures show interesting aspects of the facade. The first row are the artworks by Lex Horn. An expressionist artist who made many comparable artworks during the reconstruction after the second world war. The right picture is not on the exterior but in the interior, the entrance hall. The second row shows the entrance. The entrance is situated in a corner and not very notable. It is overshadowed by the crown of the building, the theater and canteen. The entrance is a bit recessed with a stair in front of it. Above the entrance shows 'Hendrick de Keyerschool' in steel letters. The third row shows a deviation in the facade and the innercourt. The protruding window element is located in the director's office. Probably to emphasize the function. The innercourt is a green area within the carre shape of the building. The picture is taken from the innercourt entrance at the entrance hall.

image 23
In the upper drawing of the facade the main material, concrete, is coloured. The exterior mainly exists out of concrete, combined with brick in the gables.

image 24
The middle drawing shows the amount of glazing in the facade. At the first glance it seems like a lot of transparency. In the actual situation the building looks quite closed from the outside. Probably caused by the large amount of concrete as counterpart of the amount of glazing.

image 25
The lower drawing shows the elements of blue in the facade, like balusters and doors. In the interior the blue element are more present.
Architectural analysis

Hendrick de Keyser School inside

Images 26 and 27
These images show the situation in the past and the current. Remarkable is that hardly anything changed within the building. The assembly hall has hardly changed, except perhaps for the colour of the paint. The entrance hall is the same as in the past. The corridor in the high-rise contains the same separation walls. The workshop area is now partially in use by an architectural agency and a photo studio. Due to the latter the skylights in the roof are covered. They added a extra level themselves as a office space. The washing room being the connection between the practice rooms and the workshop area changed quite drastically. Once a large open space with a vide, but when the automotive education was located here they had to place separation walls due to the exhaust of the cars. These walls are shown in the picture of the current situation. The washing basins are nowadays used as planters in the innercourt.

Image 28
The drawings show the interior in the Hendrick de Keyser School. From the outside the school is almost completely concrete but on the inside it is different experience. This completely corresponds to the ideas of the architect Nicolai. On the larger scale he designed in a functionalist way but on the smaller scale he tried to add atmosphere and character.

In the interior of the entrance hall the concrete construction also shows but the predominant material seems to be red brick combined with blue elements, wood panels, and natural stone flooring. The amount of blue elements have gained when comparing this to the picture in the past.

Image 29
This drawing shows the canteen and theater. This space was really designed to be a special area, a meeting area, also corresponding to Nicolai’s vision. A high space with curved designed concrete white painted columns that really add to the experience of the place. A lot of daylight is coming in and combined with the white concrete it creates a light area. The floor is wood and again the blue elements are used in the interior.

Image 30
The drawing shows the corridor in the volume of the practice rooms. This corridor is in the middle with rooms on both sides therefore it is quite dark. There are no skylights, the received daylight is through the windows in the separation walls with the practice rooms. The doors have a typical old green colour, the floor is of brown linoleum and the columns are painted dark brown. The frames of the separation walls are white as are the infills except for the wooden panelling.
Architectural analysis
Comparisons, conclusions and value assessment.

image 31
The Hendrick de Keyzerschool was designed around 1955 and constructed in 1960 by the architect AC Nicolai.

image 32
In 1958 Nicolai also designed the Casimir Lyceum in Amstelveen. The functional appearance due to the use of cubic volumes is recognizable, there are lesser volumes. It has the same structure in the façade as the HSK. The concrete construction is visible. The resulting square openings are filled in with brick and windows. The construction is made out of concrete floors with a concrete column structure as well. In this building brick is applied in a larger amount than in the HSK. Another remarkable aspect is that again the colour blue is used to accentuate details as doors and balusters.

image 33
The Daniel Goedloopen school was designed by architect Peyrot and constructed in 1956. It is situated within the actual triangle of the Schooldriehoek. Like the Hendrick de Keyzerschool, this school is also composed out of volumes around a inner court. The main entrance is inside this innercourt, differently than the Hendrick de Keyser where the entrance is on the schooldriehoek side to connect the school to the triangle. The Hendrick de Keyser appears to have a more strict structure within the façade.

image 34
The Hendrick de Keyzerschool as an architectural object has a positive value. Within the history of architecture it is a school that was built during the change of the educational system which resulted in the use of new typologies. The hall corridor system is in between of the old and new typology. The architecture follows modernism with a soft touch. Which fits the vision of the architect. It is an interesting approach within architecture and the timeframe. The combination of the functionalist aspects of modernism with more friendly elements to create a building which offers a nicer atmosphere for the users. The architect AC Nicolai designed at least 10 schools of which the Hendrick de Keyzerschool is probably the best kept. Although Nicolai designed a lot of buildings through the whole country he never became a very known architect. Although the building is very functionally organized within several cubic volumes, the differences in sizes, shapes and heights create a playful unity. Also some interesting spaces were created. The private innercourt for example offers a high quality within the building, especially due to the location within the city. Another space with high quality is the entrance hall with its double height, floating stairs and artwork of Les Horn.
Building technology analysis
Hendrick de Keyser school composition

RQ: How does the composition of the Hendrick de Keyser school display itself in the construction and materialization of the building?

Composition
The composition of the volumes of the Hendrick de Keyser school shows directly in the main baring structure of the building. The volumes are constructed separately. Three dilatations in the structure create four different volumes.

Remarkable is the separate high rise part belonging to volume A instead of volume B. The foundation of this small high rise part is part of the foundations of the volume A. There is a dilatation visible between the two building volumes A & B, shown in the images 7 and 8.

The images 3 to 6 are showing the different volumes and correspond to the numbers in the arrows in the 3D model (image 1).

The plan of the foundation of the Hendrick de Keyser school is showing the separate baring structures of the volumes at the blue dashed lines. Evidently this is also where the dilatations are visible in the facade.

The images 7 to 10 are showing the locations of the dilatations in the facade. They are visible from the outside. The images correspond to the numbers in the foundation and basement plan.

Sources:
All pictures and images within the building technology report were made by the author. The used resources were the archives at the NAI where almost all the drawings of the school are kept.

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Building technology analysis
Hendrick de Keyserschool baring structure

image 11
The piling plan, the foundations and the first floor with the span direction is shown. Although the used construction technique is almost identical in every volume. There are differences in span dimension and span distance. The first floor is the roof construction of the volume 3 and 4. These are constructed out of prefab beams instead of in situ.

Almost the whole construction of the Hendrick de Keyserschool is made out of in situ reinforced concrete, except for the all piles and the beams in the roof of the volumes 1(partly), 3 and 4. They are prefab reinforced concrete.

image 12
The plans of the highrise are shown. In all volumes the construction is comparable with the one in the highrise. The ground floor has a different span direction than the first floor.

image 13
The in situ construction creates ‘momentwaste’ connections. Therefore especially in the lowrise stability is not a main issue. A scheme is shown in the top right image in a section of the classrooms in volume 1.

In the top bottom image the stability through masonry walls is shown. Due to the ‘momentwaste’ connections of the main construction stability is not a main issue. In the highrise which is 5 stories high this is a more important issue due to wind load.
Building technology analysis
Hendrick de Keyserschool construction

Image 14
The sections are shown in the plan of the Hendrick de Keyserschool. E, F and G are shown on the current page. Section H is shown on page 19. And section I, a 1:50 facade fragment on 1:50 that is shown on page 20.

Image 15 and 16
The general construction of the Hendrick de Keyserschool is shown. The construction exists out of a in situ concrete structure of floors, columns and beams on concrete prefabricated piles. The facade panels are constructed of prefabricated concrete, Scholbeton. The scheme show the "momentvaste" connections due to the in situ construction.

Image 17
Section E is taken through the volume A and B and shows the dilatation in the highrise (between the blue dashed rectangle). The construction in volume B is grey and the construction of volume B is grey with black hatched lines. The outside facade of the highrise of volume A (the blue arrow) exists out of a double masonry wall and gives this part stability.

Image 18 and 19
Section F is through the entrance hall and G is a section of the class rooms. In both sections you can clearly distinct the in situ construction and grid. In both sections the basement is shown.

Image 18
In section F the floor is thicker around the vide and hollow. The thickness deals with the cantilever and the moment of force. The hollow part is to make the floor lighter and probably for esthetics in the entrance hall. The cantilever in the assembly hall/canteen is dealt with the same way, shown in section E and H.

Image 19
In section G a change in the grid is made due to the size of the class rooms and the width of the corridor. In the earlier design drawing of the Hendrick de Keyserschool of AG Nicolai the columns didn’t shift but only the walls. In the later designs a shift in the whole construction of the building was created at this location.
Building technology analysis
Hendrick de Keyzerschool construction

image 20 and 21
Elevation and section of the entrance part on the east of the building. The facade and section show that almost the entire building exists out of concrete. Not only the construction but also the facade elements are made out of concrete.

Above the lowered ceilings in the corridor ventilation ducts are located. From the basement they transport fresh air into the classrooms. There is no mechanical outlet. The windows of the classrooms contain air grids through which the air can exit. The ducts are also visible in the section of the highrise in the image 17.

All the installations are located in the basement. The building has central heating, and mechanical ventilation in the classrooms and work shop areas.
Building technology analysis
Hendrick de Keyser school detailing

The top right 3D image shows where the several details are located within the building.

image 22
As explained in the architectural analysis the facade exists out of different window frame panels which are distributed according to the function.

A 1:50 section is shown of the facade at the entrance hall. Under the entrance hall a basement is situated with daylight and fresh air openings. This section involves two levels with a vide. There is no floor on the first level.
The dark grey concrete forms the baring structure of all the volumes within the building. The structure exists out of in situ concrete floors, beams and columns. In between this structure the window frame infill panels are placed. This means the construction is in direct connection with the outside.

The prefab concrete elements in the Hendrick de Keyser school are made from Schokbeton produced by a company in Kampen. This prefab ‘Schokbeton’ was compacted by means of shock during the hardening process. Nowadays the concrete is compacted through vibration. This concrete was used around the fifties and sixties.

image 23
This horizontal detail shows the connection between the Schokbeton window frame and the in situ concrete columns of the construction. The panels are placed between the columns. In the vertical styles of the window frame there are some little openings left. In these openings wedge bolts are placed which clamps itself in to a slot in the in situ concrete column. Afterwards the openings are filled and the steel glass frame is placed over it which makes the openings in the Schokbeton invisible.

image 24
This detail on scale 1:10 shows the small amount of insulation within the building. In the roof Durisol merviet plates (wood fiber cement plates) are used for insulation and in the facade there is 30mm of mineral wool. The window panels contain no insulation at all and the glazing is still single. There are a lot of cold bridges. As far as I know nothing changed during the years.

image 25
This detail is almost identical to image 24. It is situated in the class rooms. Above the window the heating ducts and sun shading are nicely integrated into the building. Which makes...
Building technology analysis
Hendrick de Keyerschool detailing and value

Image 26
Detail 2 shows a sketched detail principles from the roof of the workshop volume (volume C). This volume is one level high and constructed out of a in situ floor and columns with a prefabricated roof construction. The roofing exists out of prefab Schokbenton beams covered by two types of Durisol mevriet plating (wood fiber cement plates). The first layer of wood fiber cement plate is reinforced which makes it possible to span the beams. The second layer is functioning only as insulation. Directly above the beam space for the heating ducts is created. The whole workshop contains skylights. The final roofing material is called Ruberoid.

Image 27
Detail 3 shows the dilation between two volumes. The opening is covered by rubberoid roofing material and a sink element to close off the opening.

Image 28
Detail 4 shows the roofing package of the assembly hall. This higher roof also exists out of prefabricated beams on which two layers of Durisol mevriet (wood fiber cement plates) are placed. The lower part is in situ. The whole construction rests on the in situ concrete column and beam construction as shown in the image 21, section H, on page 19.

The materials used for cladding and construction in the whole building are in situ concrete, Schokbenton concrete and masonry.

Only a few defects have been found in the building. In the toilet in volume 1 there is some leaking from probably the roof or a leaking gutter. The concrete staircase in the innercourt is sagging, probably the foundation has a defect. On the west facade of the highrise there is a vertical crack from bottom to top which is probably caused by the expansion and contraction of the long wall due to weather and temperature. The wall is 44 meters without a dilation.

Positive Value
The building construction has a positive value. The used building methods were modern techniques at the time and are mainly still used. The application of in situ concrete and Schokbenton was often used at the time.

The building is still in a very good condition on the technical level and therefore very suitable for reuse. The lack of insulation and single glazing is something that needs to be handled when redesigning the building.

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P1 report - Mixed project 2012-2013
Chosen project
Willem van Rijn introduction

Build: 1938
Adresse: Haarlemmerweg 475
City: Amsterdam
Client: Company
Architect: Merkelbach and Karsten
User(s): Willem van Rijn NV
Function: Office and showroom of household appliances
Owner: Da Vinci Creatieve ruimtes
New function: Offices for independent entrepreneurs within the creative sector
Name: Willem van Rijn, I suppose the founder of the company Willem van Rijn NV
Monument: no

image 1
The location of the Willem van Rijn building within the research area.

images 2, 3, 4, 5
The pictures show the Willem van Rijn building in the current situation. Image 2 shows the high-rise at the backside of the building built in 1967. Image 3 shows the entrance to the innercourt of the building. Image 4 displays the side of the main entrance. Image 5 reveals the main entrance.
**Chosen project**  
Willem van Rijn possibilities

The choice for the Willem van Rijn from architect B Merkelbach in 1938 is mainly based on a feeling. At first I was aiming at the Hendrick de Keyserschool from Nicolai or the Graficoulour building from Merkelbach a well. When I heard about this building and its location I was interested.

**image 6**
The situation and location is interesting. The building is close to the Bretenzone, the Westelijk Marktkaal and the Haarlemmerveart. Also there is a short connection with the city center, the central station and the highway A10.

**image 7/12**
These show the difference between the past around 1940 and now.

**image 13**
The size of the building is interesting for my ideas on my graduation project. Since my research topic is about combining accessibility and cultural heritage I want to implement several functions within the building to deal with the aspect of accessibility on several scales. For example apartments, offices, and a public function.

Interesting about the building is also that it was clearly built in different timeframes which will probably cause some changes in heights, routing and vertical access.

**image 14**
The innercourt I find a beautiful addition for the project. Especially when housing is involved.