A family's floorplan

The transformation of the dwelling floorplan according to the family life in the 19th and 20th century

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Abstract

The main question of this thesis is: ''What impact did family life in the 19th and 20th centuries have on the floorplan of family homes in the Netherlands?'' In the 19th century, families lived close together in slums, in which housing conditions were poor. Privacy within the family was far away, as living, cooking, etc. were all done in one shared room. After the Housing Act in 1901, workers' living conditions were improved through better hygiene and more spacious dwellings, in which, according to families' needs, each function was given its own space and parents, boys and girls were also given separate bedrooms. In the reconstruction after World War II, on the opposite, dwellings were set back to square one with a more open floorplan, just like the slums, with different functions - such as living and cooking - in one space. This involved only more space and the privacy of family members was better incorporated into the floorplans, through separate bedrooms and more living space.

Key concepts/words

Floorplan, dwelling, family life, slums, social housing

1 Introduction

In the 18th century, a house with a backyard was a desirable type. In the 19th century, on the contrary, this became an exception as poorly lit rooms on the indoor courtyard were no longer acceptable. In the 19th and 20th centuries, there were many developments within families that led to transformations of housing floor plans. These developments included changes in family size, the division of roles between men and women, and societal changes that occurred during this period. (Prak, 1991)

In the 19th century, it was common for large families to live together in small houses. There was little room for privacy and personal development. Children shared bedrooms and there was often only one common room that housed the whole family. However, this period saw a change in the way families lived. The Housing Act for example, but also industrialisation led to urbanisation and the rise of the middle class. This created more opportunities to invest in home ownership (Van Gennep Amsterdam, 1933). This created new types of houses with several rooms, where the kitchen was no longer the central space.

The 20th century brought further changes in the way families lived. In the 1950s and 1960s, there was a strong emphasis on traditional family life where the husband worked and the wife looked after the household and children at home. The house plan reflected this division of roles: there was a clear separation between the living room and the kitchen. The kitchen was an enclosed space in which the woman did her work. The living room was for receiving guests and for special occasions (Keppler, 1909, p. 326-327).

The transformations of the house plan in the 19th and 20th centuries show that the way families live is constantly changing. These changes are reflected in the way houses are designed and built. The development of the house plan shows that housing is not only functional, but also reflects the social developments that are taking place.

What is remarkable in the history of social housing in the Netherlands is the succession of relatively short periods of ten to fifteen years during which a few dominant principles always determined the design of dwellings and living environments. Many of these principles are still fascinating, sometimes because they have become so totally unnecessary as ambitions, sometimes also because they are still worth pursuing. (De Vreeze, 1993, p. 5)

This thesis will research the main question, “What impact did family life in the 19th and 20th centuries have on the floor plan of family homes in the Netherlands?’’. This question is answered through a number of sub-questions. The first question asked is, “How did slum housing evolve into social housing?” and is discussed in chapter 2.1. Next, chapter 2.2 will answer the question “How did social housing evolve into the open floor plan?” and chapter 2.3 examines the question “What has been the role of decency in the evolution from slum housing to social housing to the more open floor plan?’’. The last research chapter answers the final sub-question, “How has the development and change of family composition affected the floor plan?” and the discussion and positioning can be found in Chapter 3 and 4. This research was mainly researched from academic literature review and case study for the different floorplans through the years.

2 Research
2.1 From slum housing into social housing

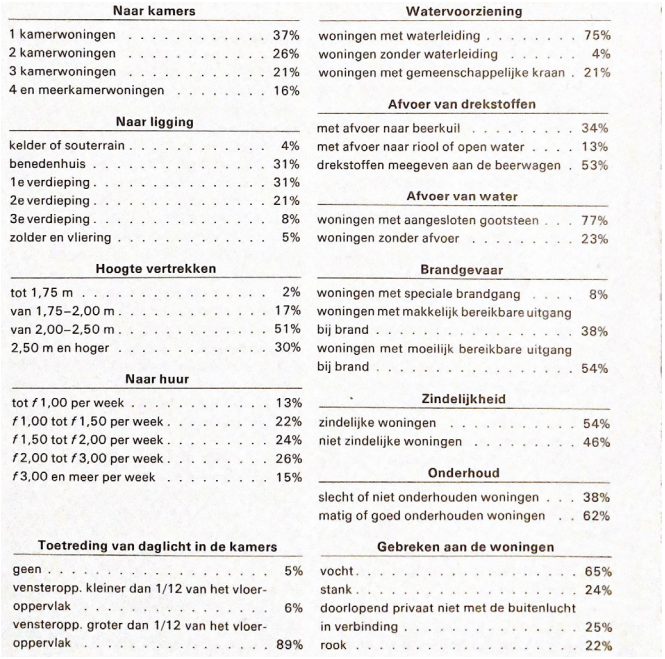
'As long as there are slums, people will live in them. As long as gross inequality prevails in our society, the issue of public housing will never be solved'. Johanna ter Meulen (1903) wrote this at the beginning of the 20th century. There are still slums. Even the robust approach to urban renewal envisioned in the Netherlands in 1975 will not lead to its total disappearance. Only what was called a slum in 1900 is slightly different from what we mean by it today. (Ottens, 1985, p. 3)

2.1.1 Hygiene, heating and lighting from 1800 till 1870

Daily lifestyles changed little and slowly in the 19th century compared to the 18th century. Nevertheless, things did change in essential ways. Restraint towards more intimate life activities, such as bowel movements and sex, increased. Faeces on a public dung heap was 'unbecoming' (P.R. Gleichmann, 1985). The smell of dung and urine, of sweat and unwashed clothes, for centuries a normal occurrence in cities, became increasingly difficult to tolerate. According to sociologist Norbert Elias (1939), this was a consequence of the sharp awareness of one's own person, which resulted from increasing urbanisation and the increasingly dense network of social relations. Precisely because people came into ever more frequent and close contact with each other, there might have been a need to shield part of one's own existence from the intrusive attention of others (Prak, 1991, p. 20). In this, the Netherlands followed the developments of France, Germany and England.

2.1.2 Slum housing

During the period from 1897 to 1900, the Municipal Health Service surveyed 5367 occupied dwellings, 953 of which were indoors. The survey covered the core of the old town, the Jordaan, the area around Leidse- and Utrechtsedwarsstraat, the Jodenbuurt, Wittenburg, Kattenburg and the new town. On average, each dwelling is occupied by 4.5 people. The results of this survey can be seen in image 1.



Naar kamers	
1 kamerwoningen	37%
2 kamerwoningen	26%
3 kamerwoningen	21%
4 en meerkamerwoningen	16%

Naar ligging	
kelder of souterrain	4%
benedenhuis	31%
1e verdieping	31%
2e verdieping	21%
3e verdieping	8%
zolder en vliering	5%

Hoogte vertrekken	
tot 1,75 m	2%
van 1,75–2,00 m	17%
van 2,00–2,50 m	51%
2,50 m en hoger	30%

Naar huur	
tot ƒ 1,00 per week	13%
ƒ 1,00 tot ƒ 1,50 per week	22%
ƒ 1,50 tot ƒ 2,00 per week	24%
ƒ 2,00 tot ƒ 3,00 per week	26%
ƒ 3,00 en meer per week	15%

Toetreding van daglicht in de kamers	
geen	5%
vensteropp. kleiner dan 1/12 van het vloeroppervlak	6%
vensteropp. groter dan 1/12 van het vloeroppervlak	89%

Watervoorziening	
woningen met waterleiding	75%
woningen zonder waterleiding	4%
woningen met gemeenschappelijke kraan	21%

Afvoer van drekstoffen	
met afvoer naar beerkuil	34%
met afvoer naar riool of open water	13%
drekstoffen meegeven aan de beerwagen	53%

Afvoer van water	
woningen met aangesloten gootsteen	77%
woningen zonder afvoer	23%

Brandgevaar	
woningen met speciale brandgang	8%
woningen met makkelijk bereikbare uitgang bij brand	38%
woningen met moeilijk bereikbare uitgang bij brand	54%

Zindelijkheid	
zindelijke woningen	54%
niet zindelijke woningen	46%

Onderhoud	
slecht of niet onderhouden woningen	38%
matig of goed onderhouden woningen	62%

Gebreken aan de woningen	
vocht	65%
stank	24%
doorlopend privaat niet met de buitenlucht in verbinding	25%
rook	22%

Image 1. Systematisch woononderzoek 1897-1900. (E. Ottens, 1985a, p. 17)

Before 1900, the living conditions of many workers in the Netherlands were very poor. Many workers lived in hovels and slums, where conditions were often unhealthy and dangerous. These dwellings were often overcrowded, and Image 1 shows that these dwellings often had little daylight or ventilation and were often without sanitation. Defects such as dampness, smells and smoke were also common, making it easy for diseases and epidemics to develop

and spread. Moreover, there was often poverty, unemployment and social exclusion, which made life even more difficult for workers. (Ottens, 1985)

This situation became increasingly untenable during the 19th century and led to growing attention to workers' living conditions. Social reformers, trade unions and other organisations pushed for improvements in housing and advocated more government intervention in this area.

2.1.3 Functional characteristics of dwelling floor plans in the nineteenth century

In the nineteenth century, working-class dwellings consisted of a small porch and one or two rooms, in which, with mostly child-rich families, all activities such as sitting, sleeping, cooking, eating and washing took place in the same room. Sleeping was done in the bedstead, usually there were two. In working-class dwellings, children often slept in bare attics. The bathroom was located outside the dwelling, in the porch or in a courtyard. It was a facility usually used by several households. In the living space was a boiler that was used to prepare food and as heating. (De Vreeze, 1993, p. 60)

Image 2.
Kelderwoning in Amsterdam, 1880-1900. Foto: Foto-archief Spaarnestad (De Vreeze, 1993a, p. 112)

2.1.4 1901: The Housing Act ('Woningwet')

On 19 April 1901, the votes in the House of Representatives were counted, with 72 in favour and only four against. The ratio in the Upper House was 25 in favour and 19 against. Opposition mainly arises against the possibility of expropriation without compensation. Nevertheless, this eventually led to the introduction of the Housing Act in 1901, which was an important step towards better housing conditions for the less fortunate. This act imposed requirements on the quality of housing and promoted the construction of affordable and decent housing. The introduction of the Housing Act and other reforms in public housing helped improve the living conditions of workers and develop modern cities as we know them today. (Ottens, 1985)

The Netherlands is famous for its Housing Act; it was the first country to take such a step. This was much needed, as the workers who moved into the cities in masse from the countryside found shelter in basements, slums, shacks and one-room houses, where one had to live with the whole family. Streets were built close together, as seen in image 3, leaving little daylight and fresh air. Unhealthy living conditions caused diseases and epidemics (Krotwoning,

Postkantoor, Museumwoning, 2022). But in the Netherlands, public housing, especially in the larger projects, did not really take off until the early twentieth century. The introduction of the Housing Act in 1901 can be seen as a starting point, as before this time hardly any major public housing projects could be found in the Netherlands (Horst et al., 2001).

Image 3.
Neglected and dilapidated working-class houses in the Jordaan (Amsterdam). (Prak, 1991)

2.1.5 The Housing Act in Amsterdam

In Amsterdam, the Housing Act went into effect on August 1, 1902, and became a crucial step in the development of Dutch public housing and architecture. Not only was the housing development, but also the expansion of building in general, more strongly regulated than ever before: municipalities were required to make building regulations or, if they already had one, to strengthen them. Places with more than 10.000 inhabitants had to make an expansion plan. Along with these regulations came building authorities such as 'Bouw en Woning Toezicht' (BWT), housing inspectors and Health Commissions. However, the most important measure for the architecture of social housing was that for the first time there was the possibility of government support in building houses. (Ottens, 1985, p. 16-17)

A central figure in the public housing movement in Amsterdam was undoubtedly Keppler, who worked at 'Bouw en Woning Toezicht' (BWT) from December 1905, first as a volunteer and later as head of the department in charge of workers' housing. He also became director of the Municipal Housing Service in 1915, was a member of the Health Commission, a board member of the Amsterdam Housing Council and the STVIA (Stissi, 2007, p. 41). Meanwhile, the practicality of the floor plan was considered much more important than the appearance of facades or interiors. Keppler considered this a very important aspect shows nicely in his description what was understood by a good workers' home in 1909 and what people and families at that time considered important elements in the floor plan. These dwellings consisted of a spacious front room 3.70 by 4.50 meters with two bedrooms and a narrow kitchenette 1.75 meters wide. There were closets, toilet, muntgas connection, etc present. The stairwell is located at the backside of each plot and there is a storage room in the attic for each plot. The kitchen is accessible from the front room, which saves porch space and forces occupants to use the living space more, instead of living in the kitchen and using the living space only on special occasions. Each dwelling also has a balcony with storage closet. There are exceptions in some

dwellings, such as an additional sleeping niche, with the intention of increasing the amount of sleeping space to allow father and mother, girls and boys to sleep separately (Keppler, 1909, p. 326-327). However, this layout was intended for Rochdale housing in the Van Beuningenstraat in Amsterdam, and serves as an example for several working-class dwellings in Amsterdam, but certainly not meant for poor workers.

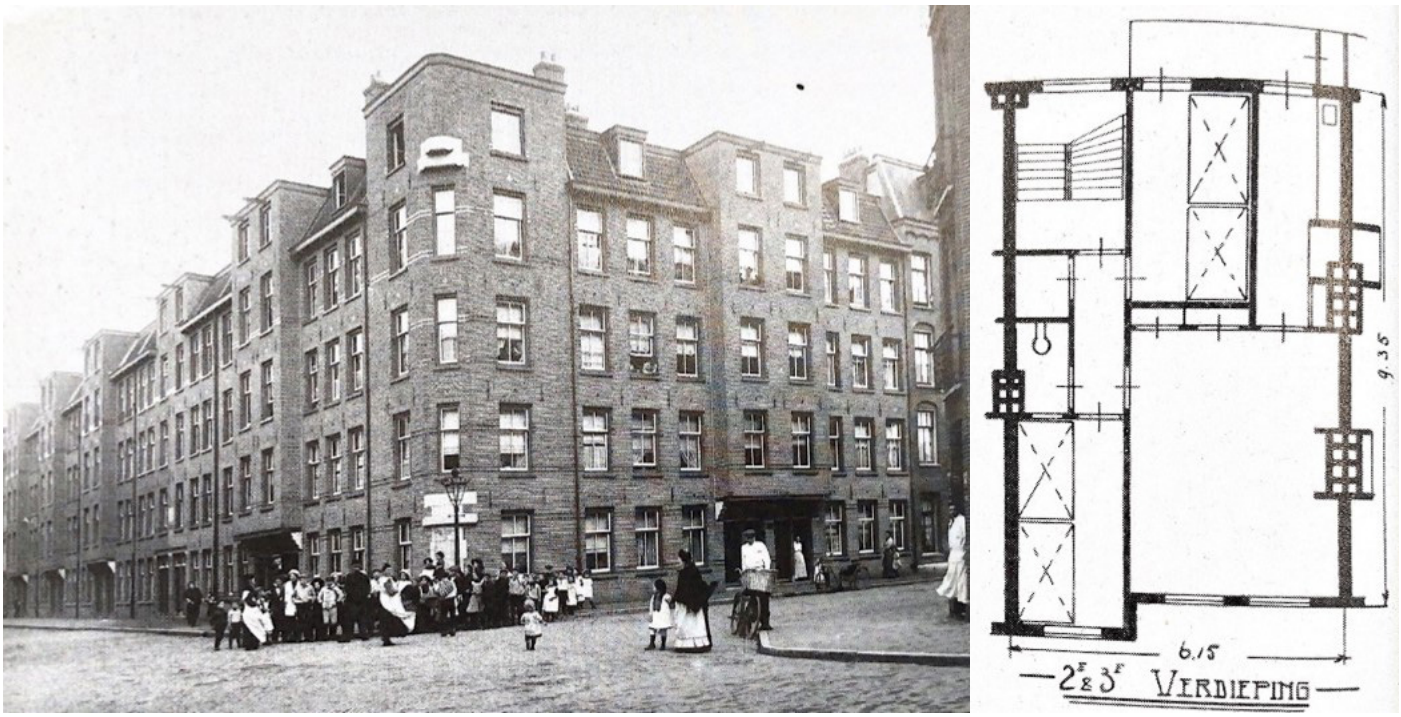


Image 4. J.E. van der Pek, first block of Rochdale (1907-1909): facades Van Beuningen-straat corner Fannius Schol-tenstraat & typical dwelling floor plan 1913. (Stissi, 2007a, p. 42)

2.1.6 Hygiene, heating and lighting from 1870 till 1914

Between 1870 and 1914, personal hygiene increased significantly in the Netherlands. In the beginning, almost everyone still used the washing bowl and the lampet jug, but in 1888, Dr P.H. Kooperberg, a doctor, mentioned in his 'Geneeskunde Plaatsbeschrijving van Leeuwarden' that people did not bathe or swim much, but that the tendency to do so had increased recently. However, it is almost rare to find a proper bathroom in houses (Kooperberg, 1888). By 1914, a bathroom in a mansion had become a matter of course.

The growth in population drove up rents between 1870 and 1914, and with it the demand for land and therefore in return the land price. More expensive land was an incentive to get more out of each plot and thus build houses more tightly. At the same time, the gradually increasing prosperity made each family demand for more space and thus the houses actually had to be bigger. The development in floorplans between 1870 and 1914 is therefore mainly determined from this dilemma. (Prak, 1991, p. 95)

2.1.7 Conclusion

In conclusion, the text answers the sub-question ''How did slum housing evolve into social housing?" by looking at problem of slum housing and the living conditions of workers in the Netherlands in the 19th century. Johanna ter Meulen wrote that "as long as there are slums, people will live in them. As long as there is great inequality in our society, the problem of public housing will never be solved," which is still true today. Workers' living conditions were very poor: many lived in overcrowded slums without sanitation, daylight or ventilation. Because of the unhealthy living conditions, diseases and epidemics prevailed. The Housing Act of 1901 was introduced, an important step toward better housing conditions for the less fortunate. The slums slowly turned into social housing and the law set requirements for housing quality and promoted the construction of affordable and decent dwellings. In Amsterdam, the Housing Act went into effect on August 1, 1902. Before 1900, working-class dwellings consisted of one or two rooms, in which all activities took place. Sleeping was done in bedsteads, and

children often slept in bare attics. The bathroom was outside the dwelling, and the living area contained a boiler used for food preparation and heating. The hygiene and living conditions of workers also improved thanks to social reformers, labor unions and other organizations that advocated housing improvements and more government involvement in this area.

2.2 From social housing into the open floorplan

During the 20th century, social housing underwent a transformation from closed and traditional floor plans to more open and flexible designs. These changes were aimed at improving family life in these homes. Traditional homes often had separate rooms for different activities, such as cooking, eating and relaxing, which can lead to feelings of isolation and distance between family members. Open floorplans, combining these rooms into one large space, have made it possible for families to spend more time together and create a sense of belonging. This transformation of social housing has been an important development in the way we think about housing and family life (De Vreeze, 1993).

2.2.1 The 'Prince Alberts model house'

The 'Prince Alberts' model house appeared for the 1851 World's Exposition in London, but was used over 60 years later by Keppler as an example of how things should be done. An example of this dwelling type by H. Roberts is seen in image 5. The floorplans are mirrored, with a large bedroom for the parents and separate bedrooms for the boys and girls, which is located off the living room. Also located adjacent to the living room is the scullery. The 'prince Albert'-dwellings had also been imitated in the Netherlands shortly after 1851 in some philanthropic housing projects, the distant forerunners of the Housing Act, but these soon became unusable because only much smaller dwellings were affordable for workers. What appealed to Keppler about these floorplans was the fact that each dwelling has its own porch and private outdoor space. He also noticed that each dwelling consists of a large living area and three bedrooms in addition to a flush loft. Thus, the dwelling provided separate sleeping quarters for parents, boys and girls. Also, around 1910 Dutch workers still slept mostly in bedsteads in porches or in the sleeping niche: far from outside windows or doors and far from fresh air or light. (Keppler 1910, 73-74)

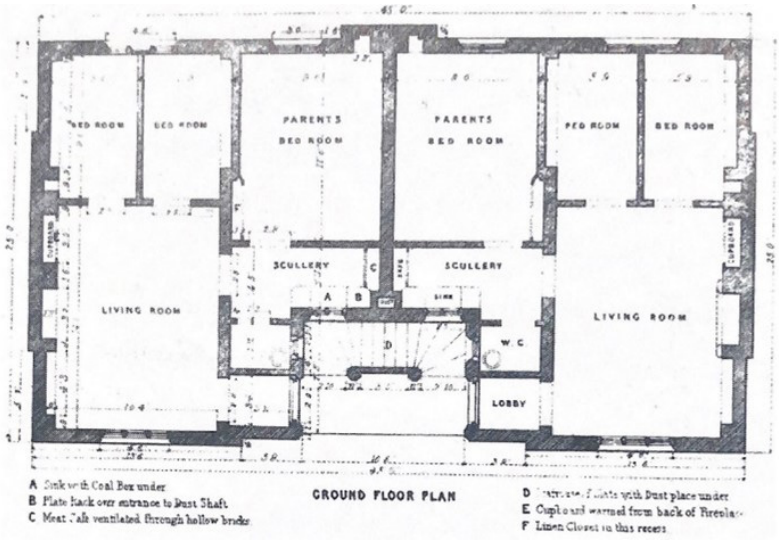


Image 5. H. Roberts, 'Prince Albert model-huis' (1851): plattegrond, (V. Stissi, 2007c, p. 268)

At the time Keppler stated that he considered the 'Prince Albert' model house as an example, the first 'Prince Albert' dwellings in Amsterdam had already been built. In fact, the floor plans of Van der Pek's first project for Rochdale were a variant of the English example. These variations of the 'Prince Albert' model (image 6) proved to be very successful. Almost all of Amsterdam's housing law complexes built until about 1918 contained mainly dwellings of this type, which remained in full use even after that, until the 1930s. Moreover, some other frequently used floorplans are closely related to the 'Prince Albert' example. An important reason of the success of the basic type of the 'Prince Albert'-dwellings is mostly the flexibility of the floorplan. (Stissi, 2007, p. 266)

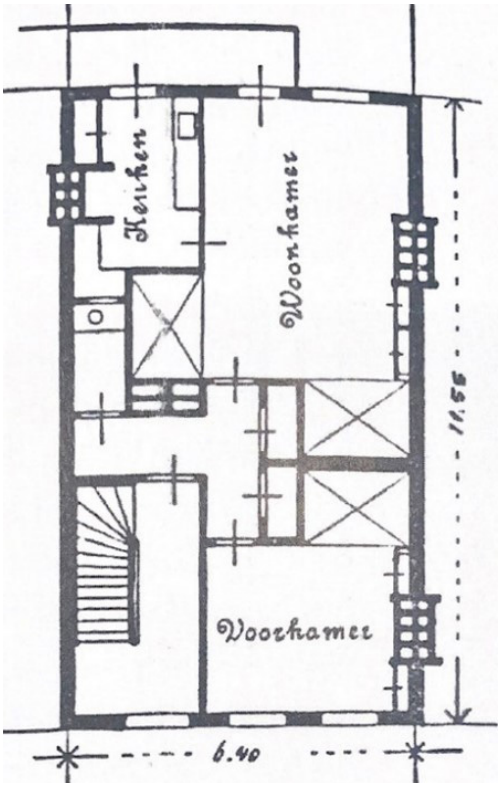


Image 6. J.E. Van der Pek, eerste blok van de Vereeniging Amsterdamsch Bouwfonds, Agatha Dekenstraat (1907-1908): typische woningplattegrond, met bedsteden, (V. Stissi, 2007d, p. 268)

The Amsterdam 'Prince Albert' dwellings consist of a wide aisle about four meters wide and a narrow aisle about two meters wide. In the wide aisle, on one side (usually in front) are full-width living rooms and on the other side are two identical bedrooms of half a width. The narrow nave houses the stairwell (usually on the front façade), a hallway and the kitchen; in the cheapest versions, built by 'De Arbeidswoning' and the municipality, this kitchen has been replaced by a rinsing shed on the front façade, so that the third room in the back also serves as a bedroom. Amsterdam's "Prince Albert" dwellings are generally ten to fourteen meters deep, so the net living area is less than 60 square meters. So by today's standards they are small and lofty, but compared to the usual speculative building types they were quite an advance. Indeed, these were often smaller. One notable disadvantage of this 'Prince Albert' type is that often one but sometimes two of the bedrooms or the kitchen open directly onto the living room and cannot be reached through a hallway. Only a few association boards and architects) thought it was worthwhile to enlarge the hallway in the middle of the dwellings so that all the rooms were attached to it. The others were more concerned with the net usable housing area or did not consider indirect access a problem. Some also saw this as an advantage, since this way the bedrooms were closer to the heat source. (Stissi, 2007, p. 267-269)

2.2.2 Functional qualities

Functional qualities can be defined as properties of dwellings that relate to the use of the dwelling and the corresponding floor plan characteristics: the size of the dwelling, the number of square meters per person, type and number of rooms, the relationships between rooms and the technical facilities associated with certain rooms. It involves the 'usability' criterion, the level of suitability and adaptation of dwellings to use by specific categories of occupants (De Vreeze, 1993, p. 57, 58).

In the development of conceptions about the preferred functional qualities of dwellings, as in the development of technical qualities, much can be recognized from the increase in wealth: newly built dwellings tend to be more luxurious than dwellings from earlier periods. More luxurious in the sense of: more square meters per person, larger rooms, more spacious staircases and storage rooms. But also more luxurious in terms of technical facilities: in the 1930s and after, sanitary facilities were increasingly expanded, central heating became common after World War II in the 1950s. Sanitary facilities in the nineteenth century were

mostly located outdoors: for faeces there was a collective bathroom, for hot water there were water heating stations, washing was done in the street and on the bleaching field, bathing was done first under the pump and later in the bathhouse (De Vreeze, 1993, p. 58).

Slowly but surely, all these facilities became part of the dwelling, as preferred by families. First there was a connection to the water supply and then the connection to the sewer, later the lavet was replaced by a shower with a collective or individual supply of hot water. In 1904, the first electric lights flashed on Amsterdam's Stationsplein: after World War I, electricity became a common supply in dwellings. This also affects floorplans. The equipment of the kitchen with sink, kitchen cabinets and space for household equipment increased from around 1 square meter in the nineteenth century to five to seven square meters according to the central government's regulations for minimum room dimensions in 1965. (De Vreeze, 1993, p. 58)

2.2.3 Functional innovations in dwelling floor plans between 1900 and 1940

In the first decades of this century, more and more spaces were created for specific purposes of use: people lived in the living room, cooked in the kitchen and slept in the bedrooms, parents separated from children and boys separated from girls. This development occurred in both single-family houses and stacked dwellings. The pattern of the middle-class dwelling of the nineteenth century only became municipal property for the working class through the Housing Act in 1901.

In the 1930s, housing activities were increasingly detailed and defined in space requirements for different types of households. A precise scheme of living activities was created, containing separate rooms such as living room, kitchen, storage room, laundry room, parents' bedroom and children's bedrooms, for different types of households. This scheme of functionally defined rooms remained dominant after World War II. Many 1920s and 1930s dwellings recognize exactly the spatial standards in terms of room size and functional differentiation from the post-war building regulations and subsidy conditions. (De Vreeze, 1993, p. 60)

2.2.4 Dwellings from 1915 to post-World War II

In the period from 1915 to the reconstruction after World War II, much changed in housing construction in Amsterdam. During this period, there were different styles and trends in dwelling floorplans. Before World War I, dwelling floorplans were often still traditional, with separate rooms for different functions (living room, bedroom, kitchen, etc.). During reconstruction after World War II, dwellings were often built with an open floorplan and large windows, allowing plenty of light and space to enter. An important feature of dwelling floorplans during this period was an increased focus on creating living space and comfort. This manifested itself, for example, in the appearance of bathrooms, which were not previously standard in dwellings. More shared spaces were also created, such as a shared garden or children's play area. Another notable feature of dwelling floor plans during this period was the increased attention paid to hygiene. For example, more attention was paid to ventilation and the prevention of moisture problems (Prak, 1991).

Finally, the post-World War II period also saw an increased focus on building affordable dwellings. Because of the war, many dwellings had been destroyed and there was a great need for new housing. This led to the emergence of new construction methods, such as the use of concrete and prefabricated elements, to build quick and inexpensive dwellings (Ottens, 1985, p. 125).

2.2.5 Hygiene, heating and lighting from 1914 till 1940

A house of today is on electricity, gas, water and there is a connected sewage system; a house of 1870 was not. Between 1870 and 1914, there was some change in this, but real progress only came between 1914 and 1940. Of course, not equally for all utilities: electricity went relatively

quickly, sewage very slowly, and of course rural areas lagged behind cities. In 1938, all 1054 municipalities in the Netherlands were surveyed about their methods of waste disposal (CBS, Statistiek der openbare reiniging in Nederland 1938, 1940, p. 174, 175). The disposal of faeces was particularly important for the development of the home.

It was not until 1935 that the water closet was mandatorily prescribed in Amsterdam's building regulations. Middle-class houses were fitted with bathrooms with bathtubs and often one or more sinks in bedrooms. For working-class housing, this was still too much of a luxury. Most Housing Act houses ('woningwetwoningen') had to live with one tap in the kitchen, to which the lampet jug had to be filled. In 1933, the municipality of Amsterdam was the first to make the inclusion of shower rooms compulsory in the building regulations. (Prak, 1991)

Single-room heating with a fireplace was still the most common, even in middle-class houses. A number of middle-class houses had a second chimney connection so that another room could be heated. Central heating was limited to villas and service flats. During World War I, however, coal imports declined sharply. Demand was partly met by expanding the Netherlands' own coal production. But this Limburg coal was not fat enough to produce town gas; it was suitable for firing the boilers of power plants. This promoted the construction of power stations and the fast expansion of the electricity grid (Den Haag Energiek, 1981). As a result, electric light became a normal part of home equipment. And with the electricity came a number of other electrical items within reach: the iron, the vacuum cleaner and the radio, and in exceptional cases even the refrigerator and the washing machine (Prak, 1991). This promoted hygiene and comfort within the family's household.

2.2.6 Rationalization of dwelling floor plans between 1945 and 1970

The design of dwelling floorplans in the 1960s took into account the changing dynamics of family life. In single-family homes, the living room and kitchen were usually located on the second floor, reflecting the importance of these spaces as common areas for family gatherings and meals. Bedrooms and bathrooms were located on the second floor, allowing privacy and separation from common areas. The surfaces of individual rooms were carefully tailored to their purpose, including bedrooms for parents and children.

Besides the common 'standard type', all kinds of variations on components emerged during the 1960s. Variations in type and number of rooms were created. Dwellings with one, two, three or four bedrooms. Living rooms as sun-through rooms (image 7), rectangular between front and back façades, z-rooms diagonally or as garden rooms (image 8). In addition, some designs incorporated special spaces. As the decade progressed, variations on parts of the floor plan emerged, giving families more options to meet their specific needs: an open- or closed kitchen, an indoor kitchen, a kitchen on the garden- or street side, an open or closed staircase, or a bedroom near the living room. Room separations with closed walls and doors, glazed interior walls or interior walls in the form of a closet wall. Departments with specific uses, such as hobby or work rooms, studio dwellings with studios and drive-in dwellings with indoor garages. And finally, storage rooms for individual use per dwelling, inside or outside the dwelling, against the front or back façade, or free-standing, in the front garden as a separation between garden and street and in the back garden as a separation from a back path. With this element, many variations could be developed in the plot pattern and in the different types of façade and street views (De Vreeze, 1993, p. 61). These options allowed families to customize their homes to suit their unique lifestyles.

All these variations were increasingly systematically investigated in the 1960s. Computer programs were developed as a useful tool to quickly get a complete overview of the possible layout variants. But even apart from such advanced design methods, in traditional design practice 'thinking in variants' increasingly became the starting point for designing dwelling

floorplans. This included the different types of access to the dwelling: directly from the street, via a front garden, with or without a pergola or carport, via an internal corridor, a gallery or a porch. This differentiation was mainly determined by the linking and stacking of dwellings in relation to each other. (De Vreeze, 1993, p. 61, 62)

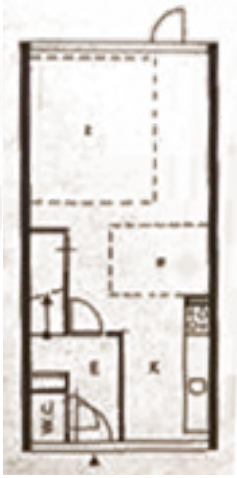


Image 7 (left). The sun-through type from the 60s and 70s (N. De Vreeze, 1993b, p. 61

Image 8 (right). The garden room type from the 60s and 70s. (N. De Vreeze, 1993c, p. 61)

2.2.7 Conclusion

To conclude the sub question 'How did social housing evolve into the open floorplan?', social housing in the 20th century changed from traditional, enclosed floorplans with a seperate space per function to more open and flexible designs, like the 'Prince Albert' dwellings. This change aimed to improve family life by making more time for each other and creating a sense of belonging, instead of only using the living room in special occasions. It has been an essential development in the way we think about housing and family life.

Functional qualities in dwellings, which relate to the use of the dwelling and its floorplan features, have increased with the increase in affluence, leading to more luxurious dwellings with larger rooms, technical features, and more spacious stairwells and storage areas. Kitchen and bathroom equipment have also increased significantly. Much changed in terms of hygiene, heating and lighting from 1914 to 1940. Advances were made in electricity, water and sewage, although the pace of change varied by facility. The water closet and showers were gradually incorporated into building codes, and central heating was limited to villas and service flats. One-room heating with a fireplace was still common even in middle-class dwellings. In general, the texts suggest that social housing and the functional qualities of dwellings were constantly being changed, making dwellings more comfortable and hygienic.

Dwelling floor plans have evolved over time, from a strict separation of living and sleeping rooms to variations in room types and relationships, and even incorporating specialized rooms for hobbies and work. With the advancement of computer programs, designers were able to explore different layout variants more systematically. Additionally, the design practice shifted towards 'thinking in variants' as a starting point for creating floor plans. The differentiation of access to dwellings was also taken into consideration, mainly determined by the linking and stacking of dwellings in relation to each other. These developments have led to a greater flexibility in designing dwelling floor plans to cater to individual preferences and needs. Overall, the integration of family life into the design of dwelling floor plans in the 1960s reflected the changing dynamics of the time, with an emphasis on shared living spaces and flexibility to meet the needs of individual families.

2.3 The role of family life in the evolution from slum housing to social housing to the open floorplans

At the beginning of the 20th century, Vreewijk, a neighborhood in Rotterdam, sought to create a healthy environment for families. The single-family houses that were rented out per family symbolized the family as the first priority. The houses were fairly private and people had their own gardens. This enclosure was pursued by Granpré Molière, a motif that was not strange at this time. But this enclosure was still not enough according to Molière. In the first designs, he drew the kitchen and the barn in an extension behind the house, which, in his opinion, reinforced the enclosure. In the other houses, however, he did not succeed in this (Smits, 1991). During renovations, the kitchen extension was often enlarged, again increasing the enclosure of the house. (Horst et al., 2001)

Architects like Berlage were precisely not into this type of open family life. He tried to remedy this by, among other things, placing windows in working class houses so high that people could not hang out of them. Berlage's contemporary Kallenbach expressed similar ideas: ''In de woning heeft het familieleven zijn zetel, zij heeft invloed op den lichamelijken en geestelijken welstand der menschen, van haar komt alle invloed die de maatschappij, hetzij ten goede, hetzij ten kwade, een bepaalde richting geeft, in haar wordt de familiezin ontwikkeld: die toestand der woningen geeft een spiegelbeeld van den trap van beschaving der volken op elk gegeven tijdstip''. (Kallenbach, quoted in Deben, 1988, p. 70). This quote implies that family life influences the home, both on the physical and mental wellbeing of the people and from this comes all influence in society, good or bad. The condition of the homes mirrors the staircase of the population of the time.

2.3.1 Class differences

Central issues in "completing society" around 1900 were combating the poor living and working conditions in the cities - exacerbated as a result of urbanization and industrialization - and fighting the growing social gap between the classes: the so-called "social question''. Here a difference can be made between developments in the material field, such as improvements in working-class dwellings and the construction of sewerage and drinking water facilities, and developments in the social and cultural field (Smit, 2007). Louise Went was a woman who was involved in the social question at this time. Went was the Netherlands' first housing supervisor. As co-founder of Bouwonderneming Jordaan, she was one of the first to engage in social housing in the Netherlands. Her successor Wilhelmina Blomberg says in 1991 of her, "She dedicated her life to the human aspect of public housing''. One of the committees in which Went became actively involved was a committee that prepared the establishment of a housing association for working-class dwellings in the Jordaan. The committee's ideal was to build free-standing houses for working-class families on the site of slums and shacks, but given land prices and the lack of space in the Jordaan, that ideal was unreachable. Still, the plan was not to build cheap rental barracks, but to build dwellings where sufficient light and air could enter. In addition, the plan was to "guide" the future occupants in the occupation of their new homes. (Smit, 2007a, p. 3-4)

Differences in working-class dwellings in terms of classes are clearly seen in the images below. These three different images show the differences in floorplans between Amsterdam's third or lowest class, second or middle class and first or highest class. You can see the difference for example in sleeping space, from two sleeping places in the living room (image 9), without any privacy, to a shared bedroom (image 10) to each having their own sleeping quarters (image 11). In 1851, Wintgens tabled a bill to improve housing for the working class. Better housing may have a beneficial effect on production and reduce the risk of disease, but, according to him, health care and public housing in the Netherlands lagged far behind compared to other Western European countries. This reveals itself mainly in the average lifespan of residents and

infant mortality (Ottens, 1985, p. 7).

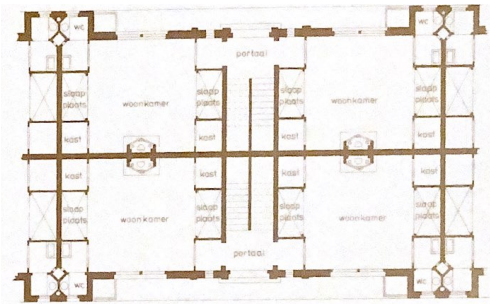


Image 9 (left). Het ontwerp van twaalf arbeiderswoningen der derde of laagste klasse voor Amsterdam. (E. Ottens, 1985b, p. 7)

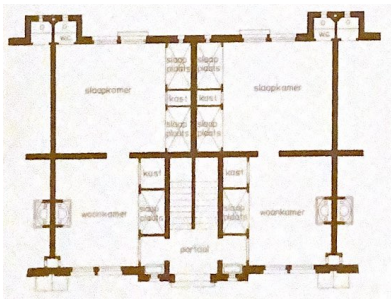


Image 10 (middle). Het ontwerp van zes arbeiderswoningen der tweede of middenklasse voor Amsterdam. (E. Ottens, 1985c, p. 7)

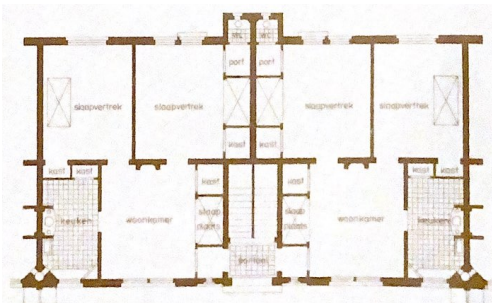


Image 11 (right). Het ontwerp van zes arbeiderswoningen der eerste of hoogste klasse voor Amsterdam. (E. Ottens, 1985d, p. 7)

2.3.2 Functional quality judgement

How did the judgements on the functional quality of dwellings come about? As with technical standards, building regulations and subsidy conditions played an important role. In these, house size was always regulated by prescribing minimum departure sizes. And these 'judgements' too, as with technical standards, can ultimately be traced back to nineteenth-century insights regarding the hygienic quality deemed desirable. But even more important than hygienic arguments, discussions on the functional quality of dwellings were initially arguments related to marital and family morality. Dwellings for families should have at least a separate parents' bedroom and two separate bedrooms for boys and girls respectively. (De Vreeze, 1993, p. 66) Family morality also worked its way into the development of a kitchen separated from the dwelling space from the 1930s onwards.

The role of decency within families played an important role in the evolution of housing, from slum housing to social housing and eventually to open floor plans. In slum housing, families were often packed into small, poorly designed spaces with little privacy, which affected decency within the family unit. With the introduction of social housing, families were given more space and privacy, reinforcing decency within the family. As housing developed, open floor plans became popular, giving families even more space and eventually more privacy. This allowed a greater focus on cultivating a sense of decency within the family, as families had more opportunity to respect each other's boundaries and personal space (De Vreeze, 1993).

The evolution of housing, from slum housing to social housing and open floor plans, has shown that the physical environment of a dwelling can greatly influence family dynamics. Decency within families is an important aspect of healthy family dynamics, and the evolution of housing has provided families with the space and privacy necessary to cultivate this important value.

2.3.3 Conclusion

In conclusion of the last sub-question ''How has the development and change of family composition affected the floor plan?'', the evolution of housing from slum housing to social housing and open floor plans was driven by several factors, including the need to combat poor living conditions, the growing social gap between classes and the desire to cultivate decency within families. The physical environment of a dwelling can greatly influence family dynamics, and the evolution of housing has provided families with more space and privacy to cultivate healthy family relationships. As new housing models continue to evolve, it is important to prioritize the well-being of families and create living spaces in which they can thrive.

3 Discussion

Many of the sources used were very useful, and a lot of information was extracted from them. Almost all of the sources were scientific, and I made more use of reading books than online scientific articles for the first time during this thesis. But some of the literature used, mostly some books, is old, though, and thus written a long time ago, which puts it more in perspective. Of course, things used to be looked at differently than they are now, for example, the normal size or conditions of a dwelling. I tried to reflect this difference as clearly as possible in the thesis, but was sometimes very difficult to put into words and make this clear.

Unfortunately, I was not able to find all the books I needed to complete this research because, for example, they were highly sought after in several libraries and were therefore always on loan. This unfortunately prevented me from obtaining them in time. Because of this I do not consider this research to be completely closed, because for example in Dick van Gameren's book, Dutch Dwellings (2022), there is still a lot of information to be found on this subject which has not been used yet. I also used one non-scientific website, namely the website of museum Het Schip, but since it is a museum website, I assume that the information on it is scientifically proven. I have also been to this museum myself in the past to take the guided tour, from which followed some general information that has been incorporated into this thesis.

Concluding, I think that with the information used, a clear and scientific result has come out of the main question posed. More extensive research could be done on this subject by looking more outside Amsterdam for example, or looking at the richer workers rather than the poorer workers and the middle class workers.

4 Conclusion

In conclusion, this thesis was intended to investigate the influence of family life on the floor plan of family homes in the Netherlands in the 19th and 20th centuries. It was found that in the 19th century families lived in slums where privacy was almost non-existent and all activities were carried out in one shared space. However, after the introduction of the Housing Act in 1901, living conditions improved and families were given more spacious dwellings with separate rooms for each function according to their needs. This provided more privacy and comfort, with parents and children having separate bedrooms.

In contrast, in the post-World War II era, the trend was toward more open floor plans with different functions in one space. This approach was similar to the slums of the 19th century, but with more living space and more privacy for family members. Reconstruction provided a new start to the architecture of family housing, taking into account the changing needs of families and incorporating more amenities and facilities for them.

Overall, the research has shown that family life has had a significant influence on the floor plans of family homes in the Netherlands, with the changing needs and lifestyles of families shaping the evolution of residential architecture over time. As such, this research offers valuable insights for architects, urban planners and policy makers who want to design dwellings that better meet the needs of modern families.

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