

The Reduced Raumplan



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The Reduced Raumplan

Implementing Loosian design principles in lower-
middle-class housing

Abstract

During the 1920s and 1930s, a group of Viennese architects designed houses with an architectural idea called Raumpfan. With this idea, primarily larger villas were designed and built. The houses that Jacques Groag designed for the Viennese Werkbundsiedlung have some implementations of the characteristics of the Raumpfan but were designed as lower-middle-class housing.

Therefore, the research question is as follows: what happened to the Raumpfan when it was applied to Groag's lower-middle-class housing in the Viennese Werkbundsiedlung?

This thesis will research historical literature and compare it with images and drawings of various houses belonging to the Raumpfan and the Werkbundsiedlung. First, the Werkbundsiedlung and the Raumpfan will be explained. After explaining the Raumpfan and the Werkbundsiedlung, the dwellings designed by Groag, Loos, and Kulka for the Werkbundsiedlung will be compared with the characteristics of the Raumpfan and earlier designs by the architects. This provides a clear picture of what characteristics of the Raumpfan and earlier projects the architects incorporated into lower-middle-class housing. Based on this, a proper conclusion can be drawn on the research question.

It can be concluded that there is not one particular way of implementing the Raumpfan into lower-middle-class housing. It can be done in several ways, addressing different characteristics of the Raumpfan. One thing is clear: when applied, the Raumpfan can be found in a derived or reduced form, and it does not fully correspond to the characteristics of the Raumpfan as found in the larger villas.

Table of Contents

Introduction	4
The Raumplan in lower- middle-class Housing	8
Conclusion	31
Appendices	33
Bibliography	38

The Viennese Werkbundsiedlung

The Viennese Werkbundsiedlung and Jacques Groag

Between 1927 and 1932, several architecture exhibitions were held in Europe, partially organized by the German and Austrian Werkbund organizations to show people the possibilities of single-family houses (van Gameren & van Andel, 2018). The Werkbund organization in Austria, also the Wiener Werkstätte, included such members as Josef Hoffman and Josef Frank and focussed on the change in production from craftsmanship to an industry-driven production (Barbara, 2015). According to Rakowitz (2016), the Werkbundsiedlung was a proposal for one particular vision of the municipality of Vienna on housing in that period.

The Werkbundsiedlung was built in an area with few buildings. As a result, the district was initially quite isolated in the landscape. The different houses all had a plastered facade, creating unity in the architecture of the district. The houses had spacious gardens and were accessed by spacious roads. The heights of the buildings varied, with houses of the same height often grouped.

The Werkbundsiedlung was different from the building blocks that were built in Vienna in the time before the Werkbundsiedlung. Vienna had many urban building blocks constructed on fixed methods and on a large scale for the lower-middle-class (Rakowitz, 2016). The Werkbundsiedlung, in contrast, should consist of different housing types that all had a connection to nature (Gravagnuolo et al., 1995). Another important aspect of these houses was the optimal use of the few square meters of the houses and wasting as little space as possible. Eventually, the Werkbundsiedlung consisted of a wide range of houses, varying from ground-level bungalows to three-story houses (Prokop, 2005).

Jacques Groag was invited to design houses 45 and 46 of the Viennese Werkbundsiedlung. When Groag was a kid, he went to the German Realgymnasium in Olomouc (Plaisier, 1987). After his graduation in 1909, he went to Vienna to study at the technical college there. In his early years, Groag worked on several interesting projects. Groag managed the project of House Moller in Vienna for Adolf Loos. From the mid-1920s, Groag started to get more design projects for houses (Schneider, 1999). The most renowned of this period was a redesign of the interior for the notable Viennese actress Liane Haid. Due to his skilled work, Groag became involved in additional interior redesigns. Starting in the 1930s, Groag began designing houses that combined both exterior and interior elements.



1
Picture of Jacques Groag in 1927
(Schneider, 1999)



2
View from the air on the Viennese
Werbundsiedlung
(Bildarchiv Austria, n.d.)



3
Site plan of the Viennese
Werbundsiedlung
(The Houses Of The Werkbundsiedlung, n.d.)

Josef Frank was the initiator of the Werkbundsiedlung in Vienna and served as the vice president of the Austrian Werkbund association (Gravagnuolo et al., 1995). He was the only Austrian architect to design houses for the exhibition of the Weissenhofsiedlung in Stuttgart in 1927 (Van Gameren & Van Anandel, 2018). Almost all the architects who created houses for the Werkbundsiedlung in Vienna were Viennese, and they were all part of Frank's circles (Prokop, 2005). Adolf Loos, a prominent Viennese architect, was one of those connected to Frank and, as a result, received an invitation. Jacques Groag received his invitation to design houses for the Werkbundsiedlung early on. At that time, Groag primarily focused on interior design (Prokop, 2005). There were several reasons he could have been invited. Firstly, he had ties to Loos from working with him and had visited Loos at the Bauschule in Vienna (Plaisier, 1987). Due to his association with Loos, Groag was probably invited. Additionally, Groag had previously worked on exhibitions for the Austrian Werkbund, designing interiors and furnishings (Prokop, 2005). This experience also likely influenced his invitation to design homes for the Werkbundsiedlung.

In the 1920s and 1930s, a group of Viennese architects designed with an architectural idea called the Raumplan. With this idea, primarily larger villas were designed and built. The houses that Jacques Groag designed for the Werkbundsiedlung have some implementations of the idea of the Raumplan but were designed as lower-middle-class housing. Because the houses that were normally designed through the principle of the Raumplan were bigger, it is interesting that research will be conducted on how these principles are incorporated in lower-middle-class housing.

Therefore, the research question is as follows: *what happened to the Raumplan when it was applied to Groag's lower-middle-class housing in the Viennese Werkbundsiedlung?*

The Raumplan in lower-middle-class housing

Houses number 45 and 46 of the Viennese Werkbundsiedlung

In the upcoming multi-paragraph chapter, the dwellings designed by Jacques Groag for the Viennese Werkbundsiedlung will be discussed first. Following this, the characteristics of the Raumplan will be explained. Finally, a comparison will be made between Groag's Werkbundsiedlung dwellings, those designed by Loos and Kulka for the Werkbundsiedlung, and unbuilt lower-middle-class dwellings by Loos and his students. From this, a solid conclusion can be drawn in the next chapter.

The houses in the Werkbundsiedlung designed by Groag are situated on the west side of the site. The exhibition primarily featured attached houses, with the two attached houses variant being the most common. According to the historical numbering, the homes designed by Groag are located on Woinovichgasse, specifically houses number 45 and 46. These houses, unlike many others, are oriented from northwest to southeast. The houses do not have their front doors facing the street; instead, they are located at the back or side of the house.

The white plastered façades of houses number 45 and 46 create a uniform appearance. Throughout the building, the windows are arranged in a regular pattern, contributing to an overall sense of sobriety. This is shown in Figure 4. The cubic nature of the house's volume is interrupted by a terrace that connects to the living room (Prokop, 2005). The entrance features its own platform, canopy, and a round window for the toilet.

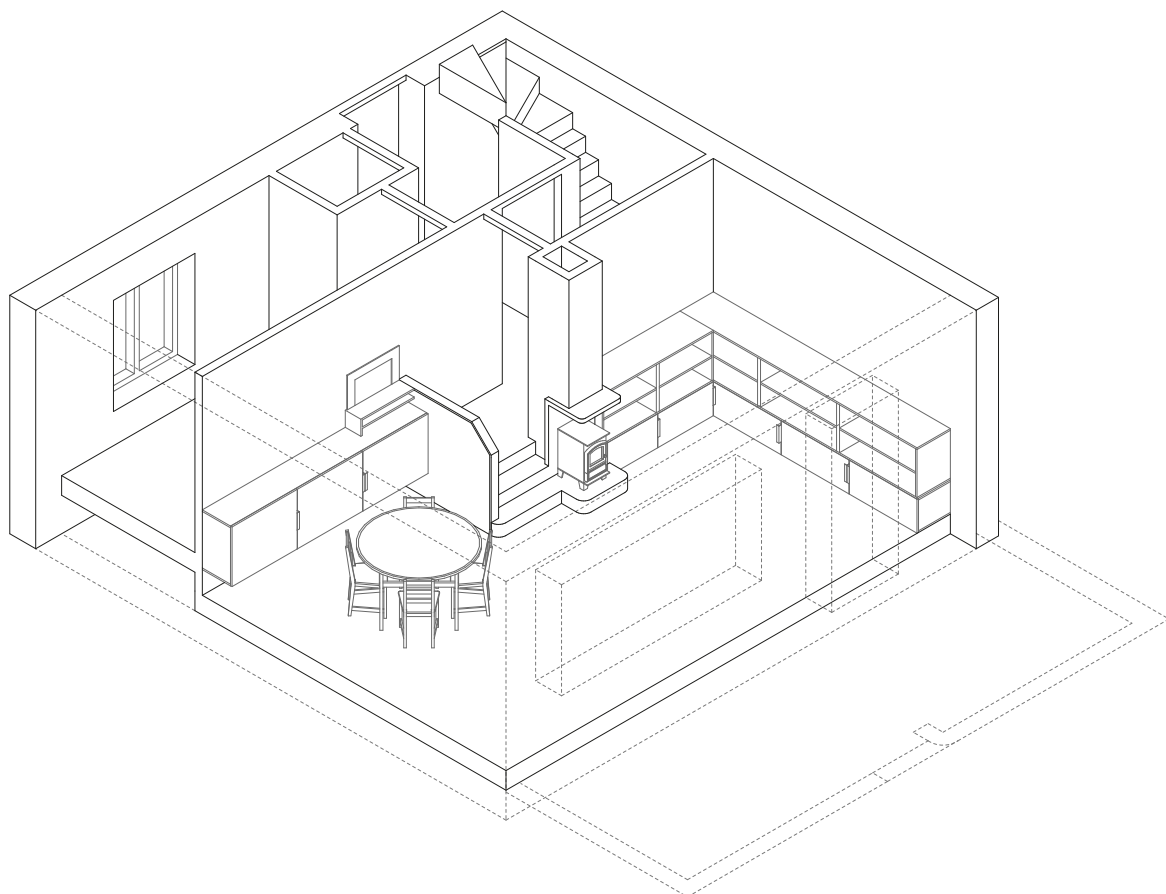
The front door of house number 45 is situated on the rear of the house, and upon entering, one is greeted by a small hallway. On the right, two doors are positioned; the first leads to the toilet, and the second provides access to the kitchen. Opposite to the front door, one encounters a door that opens onto an additional hall, facilitating access to the stairs on the left or the living room on the right. Upon entering the living room, one is greeted with an expansive view of the surroundings, as the room is situated on a raised platform that connects to the lower level via stairs. When standing in the living room, several things are interesting to look at. Firstly, the fireplace is interesting to examine. The last step of the stairs sticks out and forms a platform for the fireplace to stand on, as shown in Figure 5. The windows are quite big, and the furniture is placed beneath them. According to Prokop (2005), the connection between inside and outside was a characteristic that Groag used more often in his designs. Against the wall separating the living room from the kitchen, there is a cabinet where there is also a hatch to the kitchen. This hatch was probably used to place food from the kitchen directly onto the cabinet in the living room. On the first floor, the hallway leads to a door that opens to a bathroom. At least two bedrooms are present on this floor, one smaller and one larger, with the option of dividing the larger bedroom into two smaller bedrooms using a curtain. If you take the stairs up to the second and last floors, you'll find an atelier with a roof terrace.



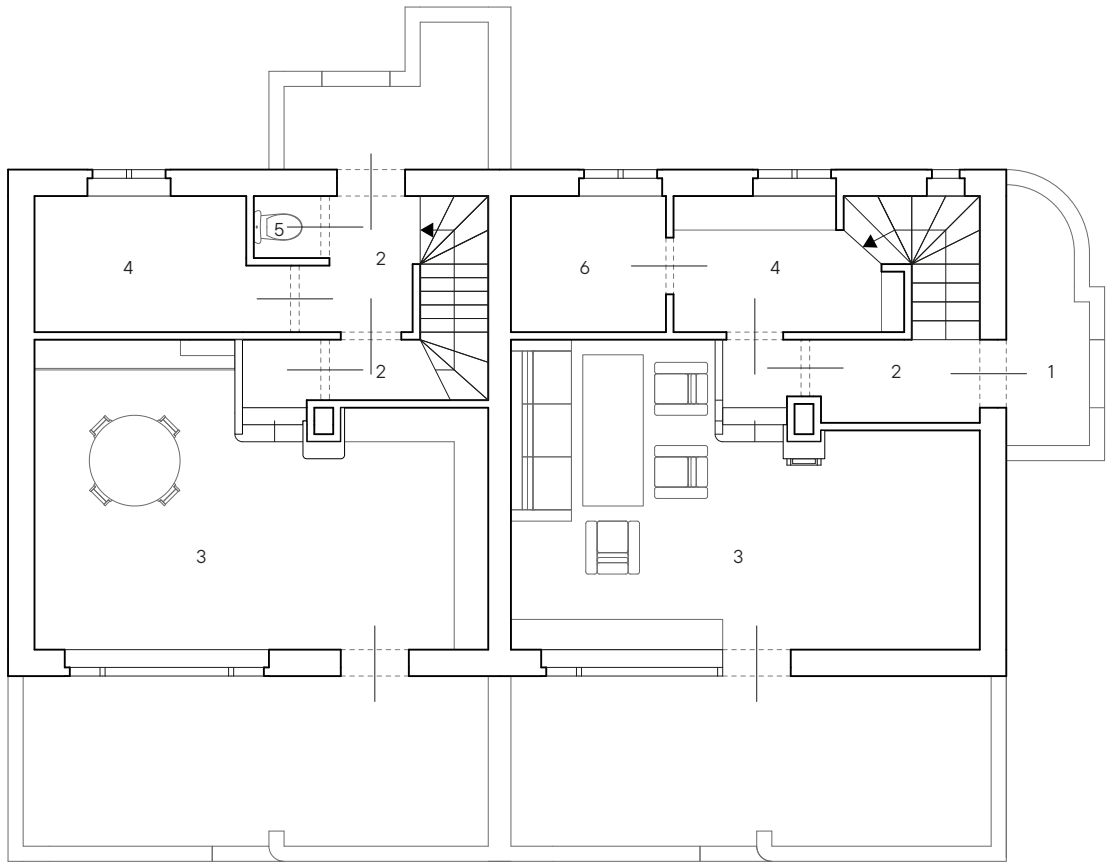
4
Outside picture of houses number 45 and
46 of the Viennese Werkbundsiedlung
(Werkbundsiedlung, n.d.)



5
Interior picture of the living room of house
45 of the Viennese Werkbundsiedlung
(Werkbundsiedlung, n.d.)

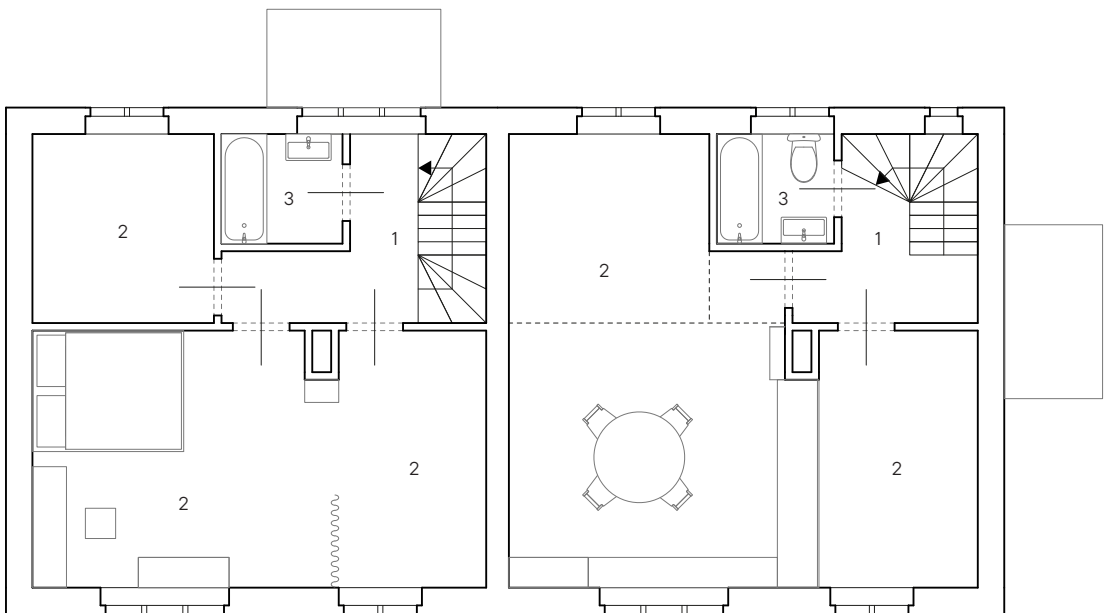


6
Axonometric drawing of the ground floor
of house number 45 of the Viennese
Werkbundsiedlung



7
 Floor plan of the ground floor of houses
 number 45 and 46 of the Viennese
 Werkbundsiedlung

- 1 Entrance platform
- 2 Hall
- 3 Living room
- 4 Kitchen
- 5 Toilet
- 6 Office
- 7 Outside space



8
 Floor plan of the ground floor of houses
 number 45 and 46 of the Viennese
 Werkbundsiedlung
 1 Hall
 2 Bedroom
 3 Bathroom

Looking at the floor plans of houses number 45 and 46, there are several differences shown in Figures 7 and 8. To start with, the entrance to house 46 is not at the back but at the side of the house. There is no toilet on the ground floor, but an extra space has been created adjacent to the kitchen. A difference can also be seen on the first floor. Again, there is one large and one smaller room, but both spaces have not been divided as bedrooms by the architect. The large space has been divided by Groag as a kind of extra living space. The second and last floor has no differences and is almost the same as house number 45. Throughout the house, it is noticeable that the stairs in both houses have a slightly different shape. This probably has to do with the positioning of the entrance.

The Raumplan and Adolf Loos

In this paragraph, the concept of the Raumplan will be introduced and additionally shown in Villa Müller. This house was designed by Adolf Loos and was built between 1928 and 1930 (Van de Beek, 1984). This villa provides a good example to show the Raumplan, because many characteristics of the Raumplan can be found in the villa. Additionally, this villa provides a good example because the dwelling was designed and built in a short period of time before the Werkbundsiedlung.

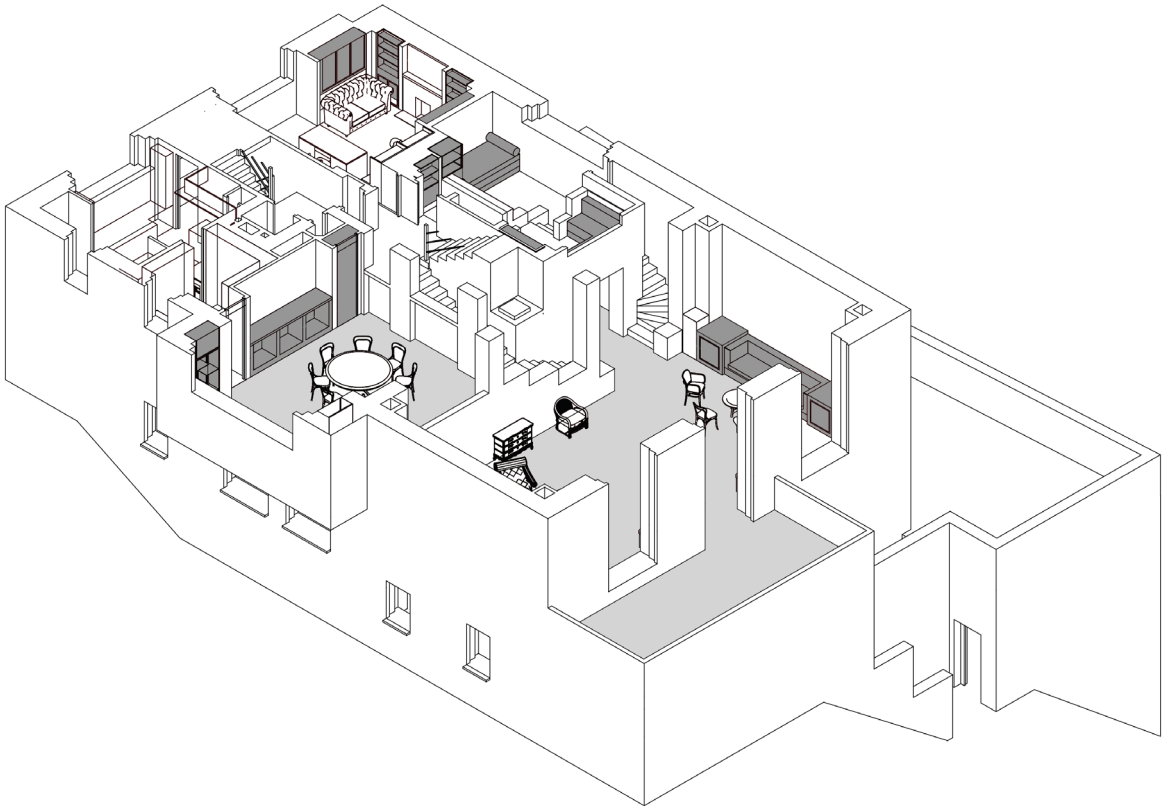
As described, Adolf Loos was also invited by Josef Frank to design houses for the Werkbundsiedlung in Vienna. Heinrich Kulka stated about Loos that he came up with a different way of thinking about architecture. According to Kulka, Loos abandoned the standard thinking in separate spaces and separate floors. Loos came up with ideas to connect spaces, use different floor heights, and bring a play of these spaces and floor heights together in one volume (Loos & Kulka, 1979). Loos used the method to design the spaces first and bring them together in a building (Worbs, 1983). Tournikiotis (1994) explained that Raumplan can be described as Loos' design method or his autograph as an architect. The Raumplan, therefore, should not be seen as an architectural movement but more as an idea of an architect, which also a small group of other architects, such as Jacques Groag, worked with.

Several characteristics can be identified as part of the Raumplan. Such as built-in storage and furniture, floor fields with different ceiling heights, different cladding of each room, the fireplace or another element as the center of the house, the constant turning into different spaces, and steps that introduce themselves into a space.

According to Van de Beek (1984), most houses consisted of four floors. The basement and upper floors were used for storage or secondary functions. The ground floor was used as a living environment, and the first floor was used for bedrooms.

Loos used leftover spaces created by the three-dimensional composition of spaces as built-in storage and built-in furniture as part of the walls (Tournikiotis, 1994). This made the furniture part of the three-dimensional play of walls and floors. This can also be seen in Villa Müller. In Figure 9, the amount of built-in furniture is shown. Almost every room in the house has pieces of built-in furniture or storage.

What also can be seen in Villa Müller is the use of different floor heights within the same floor level. The presence of these different floor heights and how they are connected is also an important characteristic of the Raumplan (Tournikiotis, 1994). As shown in Figure 9, the stairs connect the living room with the dining room and the ladies' room. This is one of the examples in Villa Müller where these different floor heights can be found. It is also important to note that these different rooms are also visually connected.



9
Axonometric drawing of Villa Müller
indicating height differences and in-built
furniture
Drawing by David Barneveld

Another characteristic of the Raumplan is that Loos's designs always differed in the cladding of each room, giving its own characteristics (Van de Beek, 1984). For example, Loos often used plaster walls and exposed brick fireplaces for the living room (Tournikiotis, 1994). This can be seen in Villa Müller in Figure 11 on the left side of the figure. Also shown in Figure 11 is a very outspoken use of material with marble cladding on the walls. This living space is a more public space in the house. In the third image, in a different room and a more private room of Villa Müller, wood is used as cladding for the interior. A less expensive, but also quieter material. It could be that the use of various materials is related to the specific use of the different rooms.

Additionally, also a central element can be found in Villa Müller. Loos used these elements to define and separate spaces in Haus Rufer in Vienna, and these elements appear more often (Jara, 1995). One can argue that in Villa Müller, the staircase in the middle of the house is the element that organizes the spaces around it. This can be seen in Figure 12 and shows that this central element can be defined in several ways.

The constant turning into spaces is another important element in Villa Müller. Frank (2013) describes that one should not experience the length of circulation spaces and that the constant turning when walking through the house is a good solution to this. In Figure 12, the constant turning in Villa Müller is shown. One can see that through staircases and entering living spaces, one constantly has to turn to reach a new space. This ensures that the circulation spaces don't feel long.

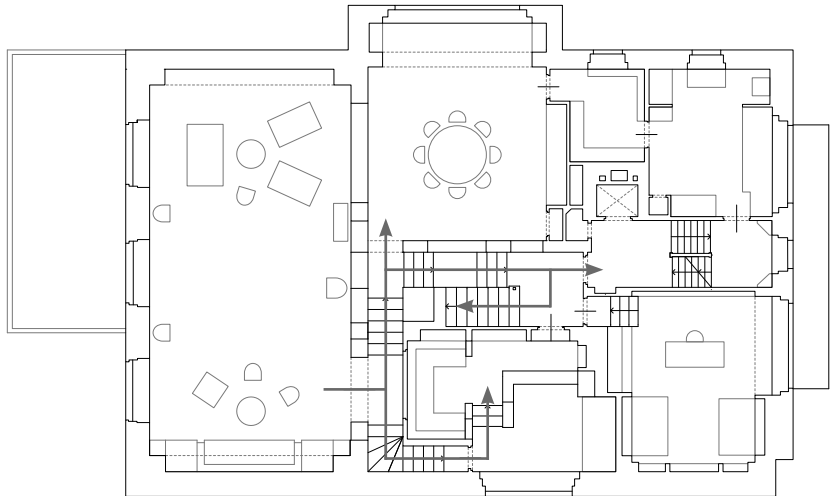
Finally, a recurring element can be found in the houses designed according to the principle of the Raumplan. As shown in Figure 10, the last step is often used to allow the staircase to introduce itself into the space. This may have been done because because of its connecting function between the different height differences. The staircases had a prominent role in the houses designed according to the Raumplan principle.



10
Picture of the stairs and last step in Villa
Beer
(MAK, n.d.)



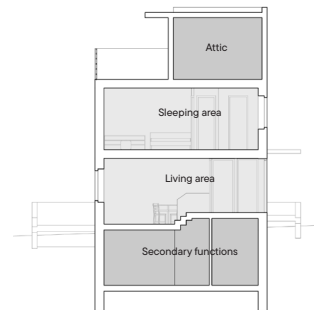
11
Picture of the living room of Villa Müller
(Fabrizi, 2018)



12
Floor plan of the ground floor of Villa Müller indicating the routing from the living room to other spaces
Drawing by David Barneveld

The Raumplan in houses number 45 and 46 of the Viennese Werkbundsiedlung

Examining the houses designed by Jacques Groag for the Werkbundsiedlung reveals several distinct characteristics. One notable feature is the variation in ceiling heights on the ground floor; the living area has a higher ceiling than the kitchen. Besides this first characteristic of the Raumplan, the steps that connect these different levels can also be seen as a characteristic of the Raumplan. The final step introduces itself into the living room, simultaneously creating a platform for the fireplace. Additionally, the house incorporates a small piece of built-in furniture between the kitchen and the living room. These various aspects of the Raumplan present in Groag's houses for the Werkbundsiedlung are illustrated in Figure 14.



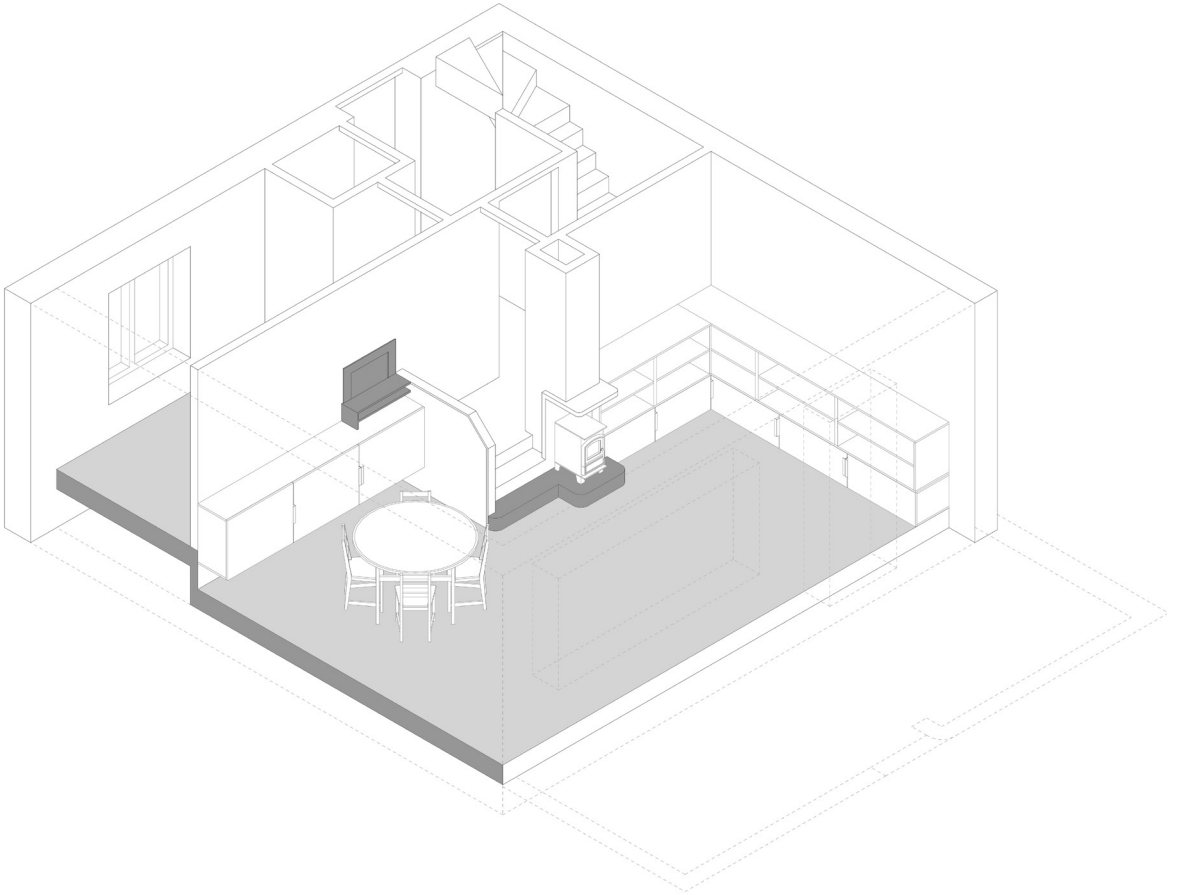
13
Division of floors in section house number 45 of the Viennese Werkbundsiedlung

As mentioned earlier, these Raumplan houses had a certain division of spaces on different floor levels. As shown in Figure 13, the houses that Groag designed for the Werkbundsiedlung had the same division. The lowest floor is a basement, with on top of that the floor with the living area. The first floor is the sleeping area, and the second floor is used as an atelier and balcony.

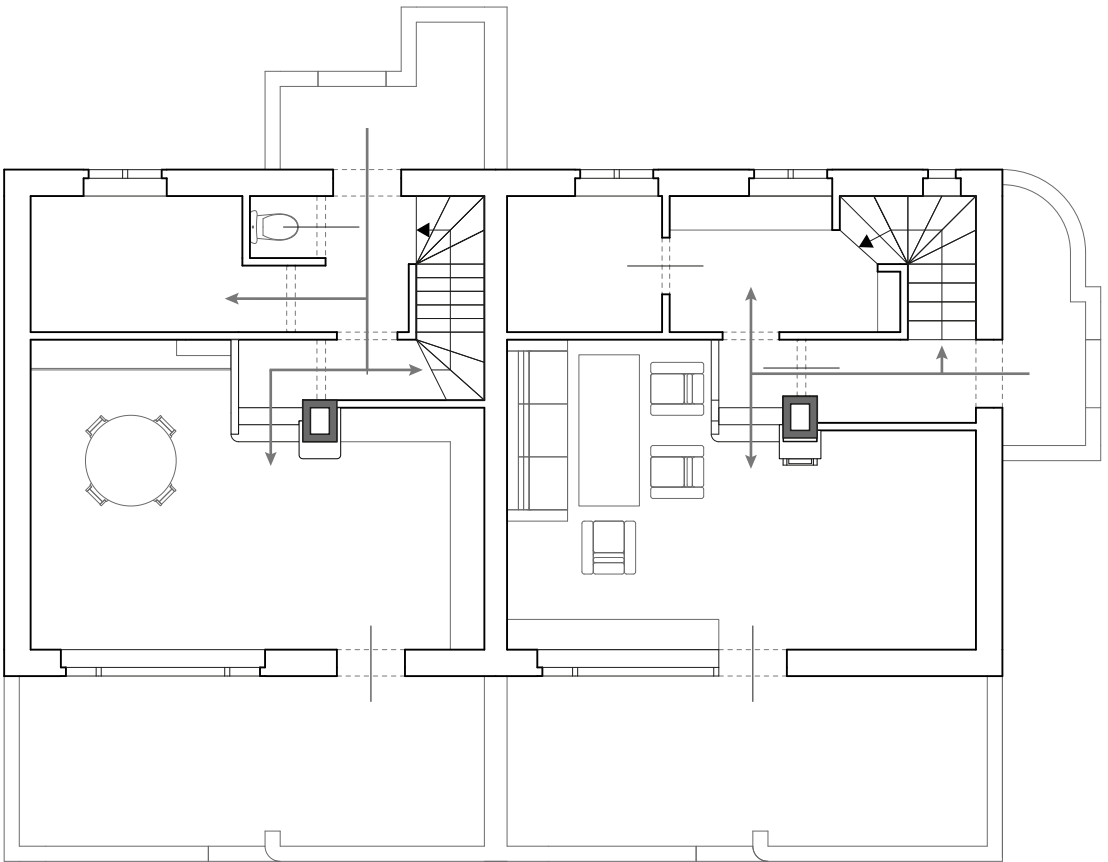
A central element in a house is also a characteristic that can be seen as part of the Raumplan. The houses at the Werkbundsiedlung designed by Groag clearly have a central element in the house. The chimney is the central element and divides the house into three areas on the ground floor and four areas on the first floor. The upper right area is the circulation space in both houses. This is shown in Figure 15.

The constant turning in the Raumplan can also be found in the houses designed by Groag, as shown in Figure 15. For example, from the entrance of house number 45, one must turn to the right to enter the kitchen. Continuing down the hall, one must turn right to enter the platform of the living room and turn again to go down the stairs. Each turn provides a new experience and image of the house. The combination with the stairs reinforces this experience.

Comparing the characteristics that Groag used to the larger villas designed with the concept of the Raumplan reveals some interesting insights. The used characteristics include the final steps leading into a space, the division of spaces at different floor levels, a central element, and the continuous turning required to enter new areas within the house. These features can be more easily adapted to lower-middle-class housing since they have minimal impact on cost and do not occupy a lot of square meters.



14
Axonometric drawing of the ground floor
of house number 45 of the Viennese
Werbundsiedlung indicating Raumplan
characteristics



15
Floor plan of the ground floor of houses
number 45 and 46 of the Viennese
Werkbundsiedlung indicating the
characteristics of the Raumplan

Examining variations in ceiling heights, built-in furniture, and distinct cladding for different rooms, it's evident that these elements are less prevalent or absent in the houses designed by Groag for the Werkbundsiedlung. The varying ceiling heights are noticeable on the ground floor, particularly between the living room and the other spaces. While Groag incorporated built-in furniture, it was significantly less than typically found in Raumplan designs. The varied cladding in different rooms is absent from houses number 45 and 46.

Some characteristics of the Raumplan are effectively utilized in the homes Groag designed for the Venniese Werkbundsiedlung, while others are less so. This discrepancy likely relates to the costs and square footage of these lower-middle-class houses. The features not included in these homes tend to be more expensive and require more square meters than those that are present. The Raumplan is integrated into the houses that Groag designed for the Werkbundsiedlung, but in a manner that is more economical concerning both costs and space.

The Raumplan in houses number 49 to 52 of the Viennese Werkbundsiedlung

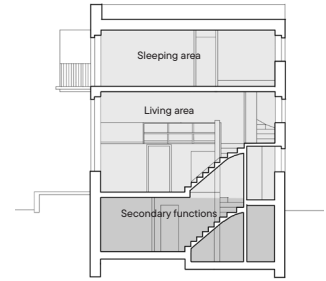
Besides Jacques Groag, also Adolf Loos, together with Heinrich Kulka, designed houses for the Werkbundsiedlung in Vienna (Bock & Loos, 2007). They designed houses nr. 49 to 52, and these houses also contain some Raumplan characteristics. When one enters one of the houses, one steps into a small wardrobe with a door leading to an anteroom. To enter the living room, one has to make a turn to the left. When entering the living room, one will be welcomed by a double-height space with a stair that leads to the gallery in the same space but on a higher level.

In contrast to the houses designed by Groag, the differences between ceiling heights are more extreme. The space that is used to create a double-height space is transferred to the second floor if we compare it to the houses designed by Groag. Loos and Kulka use two floors for their living room, and therefore, the bedrooms and bathroom are situated on the second floor, as shown in Figure 16. Groag managed to design with different floor heights and still use only one floor level for the living room. Based on this characteristic, Groag made a more economical decision while retaining the Raumplan. Loos and Kulka, on the other hand, implemented the Raumplan more directly and less efficiently on costs and square meters.

Looking at the use of materials, there are some differences between the characteristics of the Raumplan and also to the houses designed by Groag. Loos and Kulka used different materials in the living room. The balustrades, stairs, and floors are made of wood and give a warm feeling to the large space, as shown in Figures 17 and 18. Groag used some wood for his interior but way less in comparison to Loos and Kulka. Comparing the two living rooms, one can conclude that the living room of Loos and Kulka, in terms of the use of materials, is more related to the Raumplan than the living room designed by Groag.

Jacques Groag did use some small pieces of built-in furniture, but Loos and Kulka used more pieces as shown in Figures 19 and 20. This suggests that Loos and Kulka were approaching the amount of built-in furniture used in the large villas designed according to the Raumplan, but that Groag again chose the more economical choice while retaining the characteristics of the Raumplan.

Like Groag, Loos and Kulka, designed stairs with a step that introduces itself into the space. Loos and Kulka kept it quite simple and extended the step to the end of the wall. As mentioned before, Groag used the step to create a platform for the fireplace and interacted more with the other furniture.



16
Section of house number 49 of the Viennese Werkbundsiedlung indicating the division of floors



17
Interior picture of the living room of
house number 52 of the Viennese
Werkbundsiedlung
(Werkbundsiedlung, n.d.)

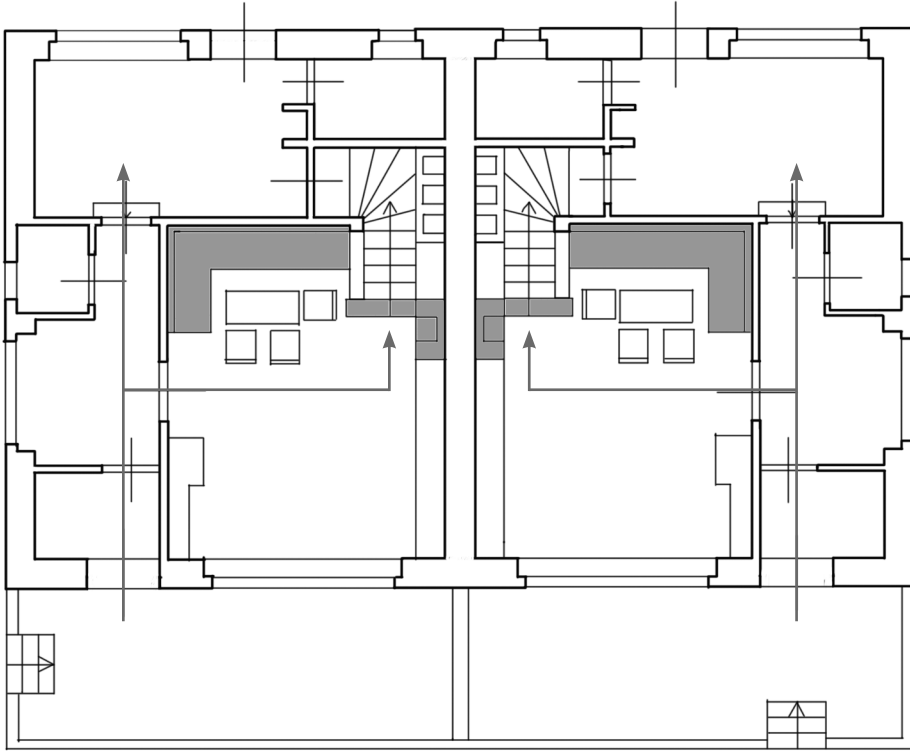


18
Interior picture of the living room of
house number 49 of the Viennese
Werkbundsiedlung
(Werkbundsiedlung, n.d.)

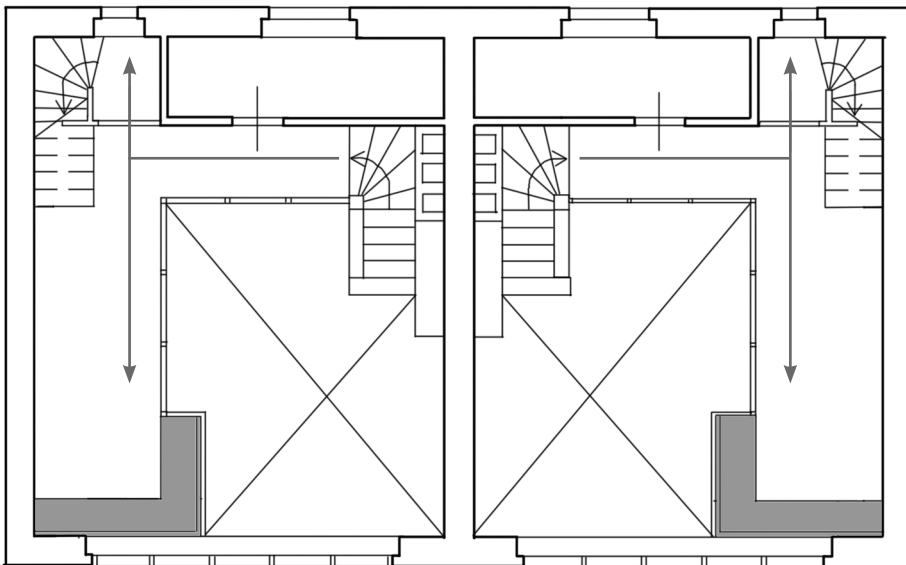
In both concepts, Groags and the one from Loos and Kulka, the movement of turning into different spaces is an important element. In the houses designed by Loos and Kulka, multiple of these turning points are created. For example, turning into the living room, turning before and on the stairs, and the turn towards the seating area in the gallery. This is shown in Figures 19 and 20. One could say that there is no major difference in the approach to this feature between the architects.

The last characteristic is the central element in the house. In the houses designed by Loos and Kulka, there is no clear central element to be found. The living room has a fireplace, but the space is not created around it and there is no other element in the house that organizes the rooms. Groag did design such an element and incorporated this characteristic of the Raumplan in his design for the lower-middle-class houses.

Looking at both designs, one could argue that Groag's design is more compact and cost-efficient and, therefore, more suitable for the Werkbundsiedlung. The houses designed by Loos and Kulka are more related to the characteristics of the Raumplan when applied to villas. None Groag, none Loos and Kulka did it in a better way than the other. Both concepts are different from each other but incorporate characteristics of the Raumplan.



19
 Floor plan of the ground floor of
 house 49 and 50 of the Viennese
 Werkbundsiedlung indicating built-in
 furniture and the movement of turning

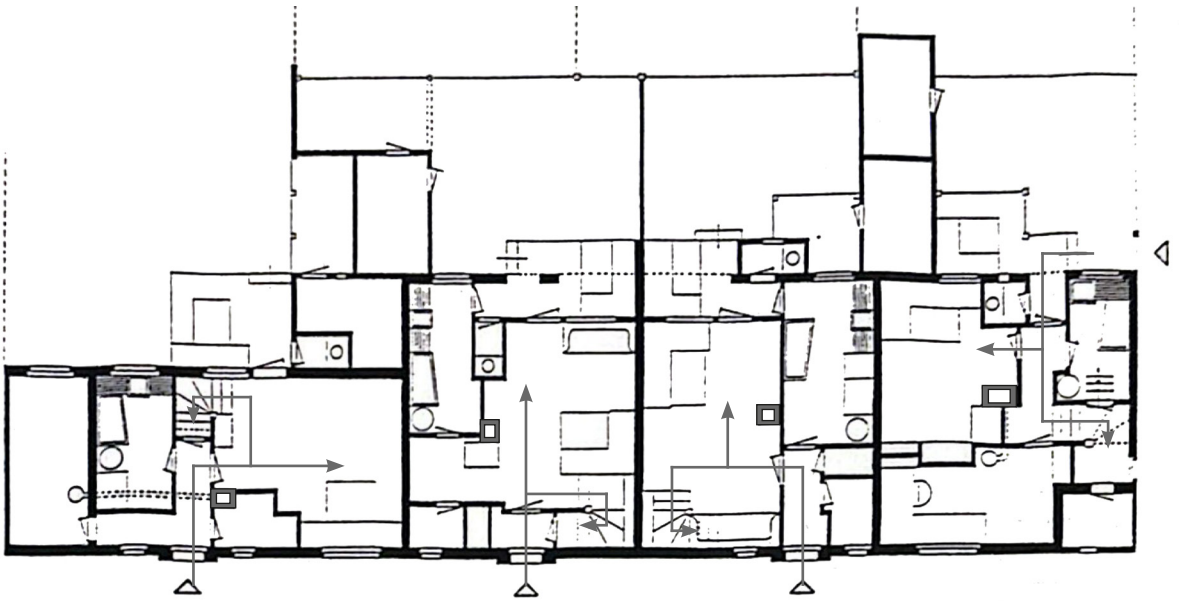


20
 Floor plan of the first floor of house 49 and
 50 of the Viennese Werkbundsiedlung
 indicating built-in furniture and the
 movement of turning

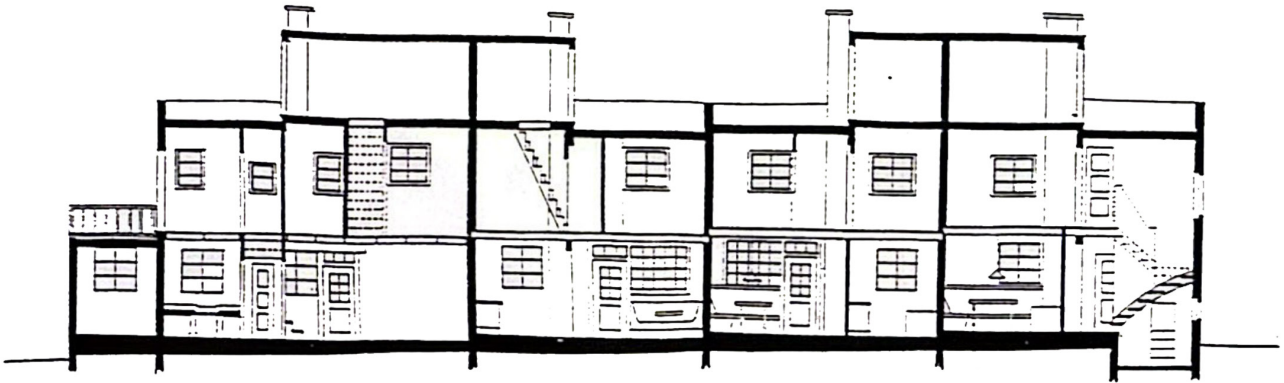
The Raumplan in unbuilt lower-middle-class housing designed by Loos and his followers

In addition to the houses that Groag, Loos, and Kulka designed for the Werkbundsiedlung, Loos, in collaboration with his staff and students, tried to design houses for the lower-middle class more often, but none of these were realized. In the following paragraph, the floor plans and sections of two unbuilt houses by Loos will be compared to the houses that Jacques Groag designed for the Viennese Werkbundsiedlung. The comparison will be made based on three characteristics because of the lack of material for these unbuilt houses. These characteristics are the movement of turning into new spaces, different heights of floor fields and ceilings, and a central element in the house.

In 1921 Loos, but more probably Kulka, designed settlement houses in Vienna (Kinderdijk et al., 1992). The houses were designed in different variants of 4.5, 5, 5.5, and 6 meters wide, respectively. What is striking compared to the dwellings of the Werkbundsiedlung is that they are linked together as terraced houses and are semi-detached on a larger scale. This can be seen in Figure 22. Also, these houses do not contain height differences within the same floor and there is no basement, as shown in Figure 22. Furthermore, the constant movement of turning into other spaces can also be found in these houses as shown in Figure 21. One can say that these houses all have a central element in a fireplace with a chimney, but in some of the houses, it is more clear than in others.



21
 Floor plan of the settlement houses
 in Vienna indicating the Raumpfan
 characteristics
 (Kinderdijk et al., 1992)



22
 Section of the settlement houses in
 Vienna indicating the floor levels
 (Kinderdijk et al., 1992)

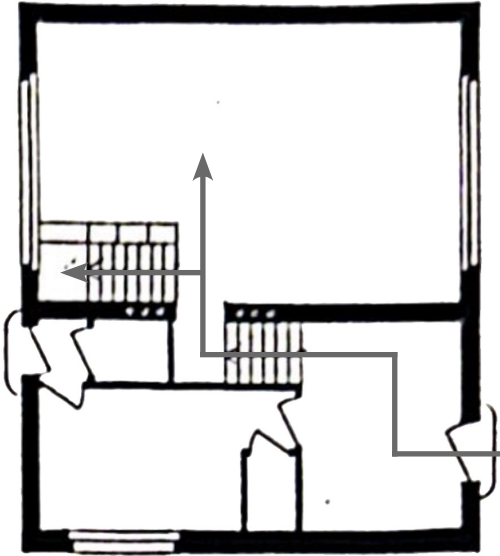
The second example chosen is a house designed shortly before the Werkbundsiedlung in Vienna. This single-family house was designed by Kurt Unger and Loos later finished the design. Kinderdijk et al. (1992) state, in The book “Nooit Gebouwd Loos”, that it was not Loos, but Kulka who designed the houses for the Werkbundsiedlung and that Loos was dissatisfied with the result. In response to Kulka’s design, Loos reportedly created this single-family house. The cross-sections clearly show that this house features various floor fields, all of which are separate floors. This can be seen in Figure 25. The floor fields interact differently than usual with the Raumplan. Typically, the floor fields are visually connected; however, in this case, the split-level floors exist as distinct planes.

When entering the house, one has to turn to the right and then to the left to go upstairs to the floor of the living area. When arriving at the end of the stairs, one has to make a turn to enter the living area. Also, when going upstairs, one constantly has to turn on the stairs and on the floor levels to reach new rooms. These houses contain the characteristic of the Raumplan of the constant movement of turning, as shown in Figures 23 and 24.

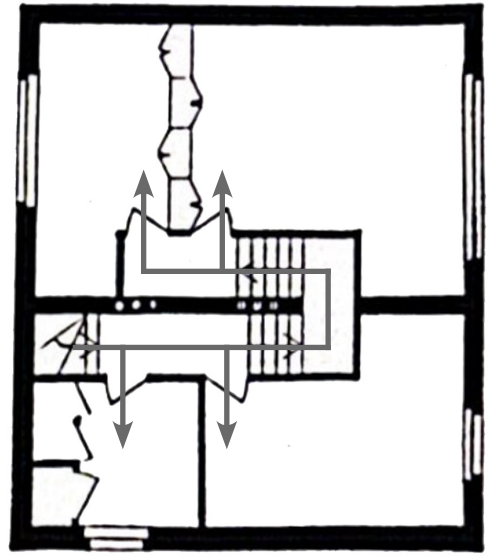
There is also a clear central element in the house. The stairs with the wall in between are the central element of this house and additionally, the circulation space to reach all the floors in the house. The function of this central element is well chosen in this particular house because of all the split levels. Circulation space is key in this concept and therefore it is well chosen to be the center of the house.

Additionally, it is noteworthy that a closet wall is used on the bedroom floor to separate the two bedrooms, as depicted in Figure 24. This element of built-in furniture is also present in one of the dwellings Groag designed for the Werkbundsiedlung.

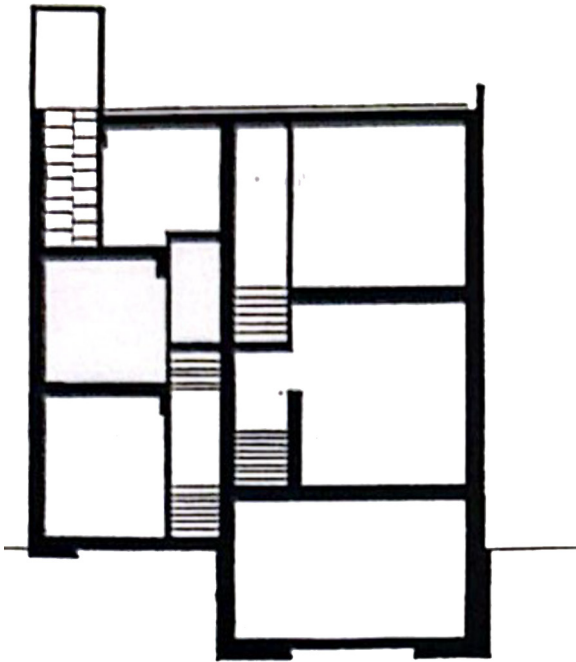
It’s interesting to conclude that these two examples of unbuilt lower-middle-class housing are different compared to each other and to the houses that Groag designed for the Werkbundsiedlung. Some of the same characteristics are incorporated in the houses but some others are left out or used differently. This could imply that Loos and his employees and students struggled with implementing the Raumplan in these smaller houses. Therefore, it could be possible that they designed so many different options with different implementations of the characteristics of the Raumplan in this lower-middle-class housing.



23
Floor plan of the living area of the
single-family house indicating Raumplan
characteristics
(Kinderdijk et al., 1992)



24
Floor plan of the sleeping area of the
single-family house indicating Raumplan
characteristics
(Kinderdijk et al., 1992)



25
Section of the single-family house
indicating the split-level floors
(Kinderdijk et al., 1992)

Conclusion

After examining multiple examples of the Raumplan in lower-middle-class housing, the research question: what happened to the Raumplan when it was applied to lower-middle-class housing in the Viennese Werkbundsiedlung? can be answered.

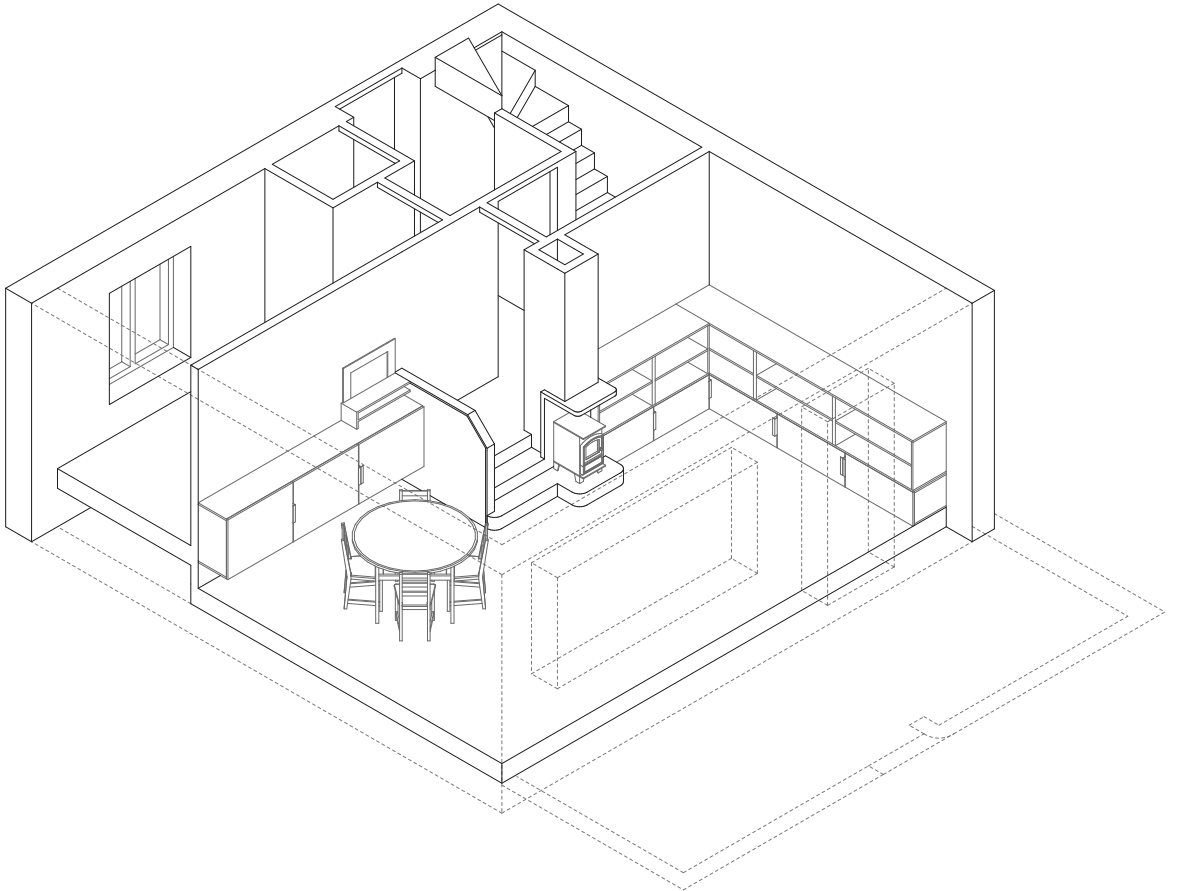
Jacques Groag implemented several characteristics of the Raumplan in his design of the houses of the Viennese Werkbundsiedlung. Height differences, built-in furniture, and steps that introduce themselves into the space are examples of characteristics that appear. It can be concluded that some of the characteristics of the Raumplan recur in a derived or reduced form and do not fully correspond to the characteristics of the Raumplan in larger villas. In addition, some characteristics, like the use of specific materials for particular rooms or interiors, are absent. This is probably the case because Groag was tied to a tight budget and a small amount of square meters.

Adolf Loos and Heinrich Kulka also implemented characteristics of the Raumplan in the lower-middle-class housing for the Werkbundsiedlung. However, they did this differently than Groag. Firstly, Loos and Kulka designed a double-height living space that has a strong spatial effect. Furthermore, they used more built-in furniture than Groag did. Just like Groag, Loos and Kulka used steps that introduce themselves into the space. On the other hand, they used more materials for the interior of the living space in comparison to Groag. Loos and Kulka had the same tight budget as Groag but implemented the Raumplan more similarly in comparison to the bigger villas that were built according to the Raumplan.

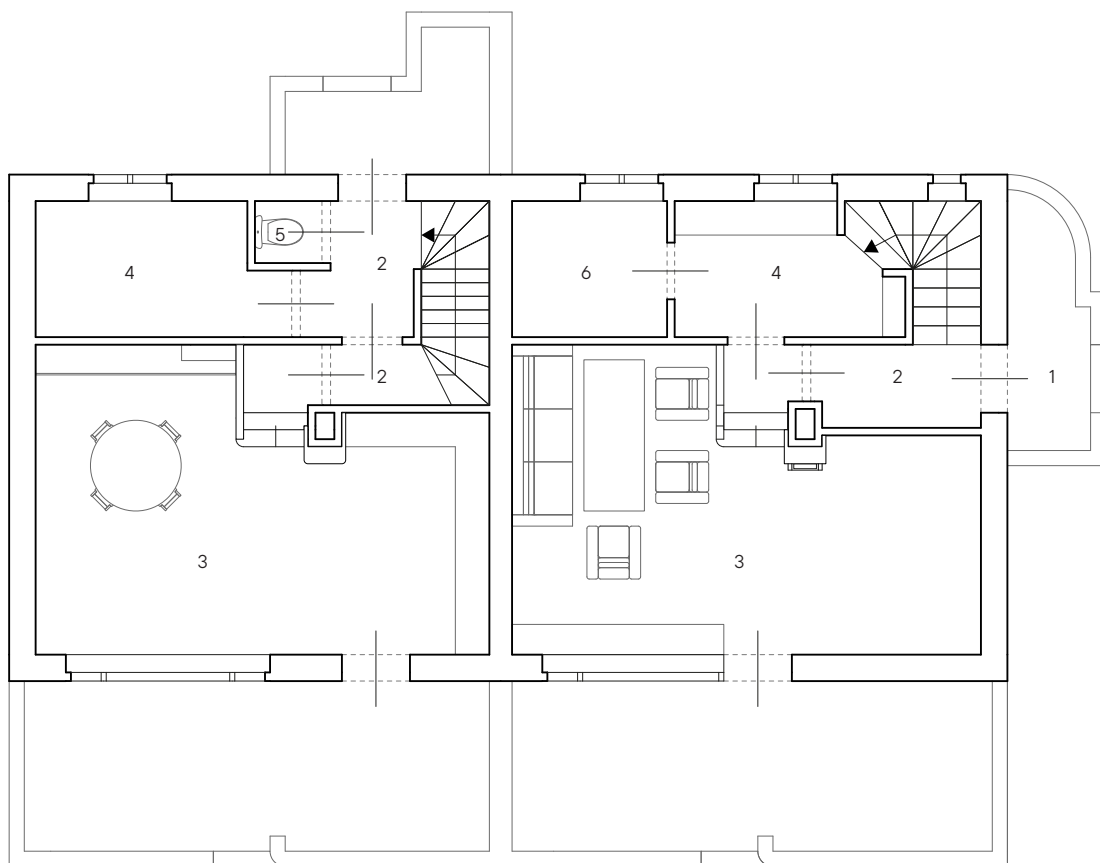
Other unbuilt projects by Loos and his students again show a different approach to translating the Raumplan into lower-middle-class housing. There is a differentiation in the use of floor levels and heights and the spatiality of the spaces. In both examined designs, the ceiling height stays the same and this has no positive effect on the spatiality. The constant movement of turning into spaces is implemented and also a central element can be found in these unbuilt houses.

Concluding by answering the research question, there is not one particular way of implementing the Raumplan into lower-middle-class housing. It can be done in several ways, focussing on different characteristics of the Raumplan. One thing is clear: when applied, the Raumplan can be found in a derived or reduced form, and in some cases, it differs from the characteristics of the Raumplan when applied to larger villas. One could argue that all these designs were only experiments of implementing the Raumplan into these houses, but it shows that the spatial and interior qualities of the Raumplan can be really interesting to add quality to lower-middle-class housing.

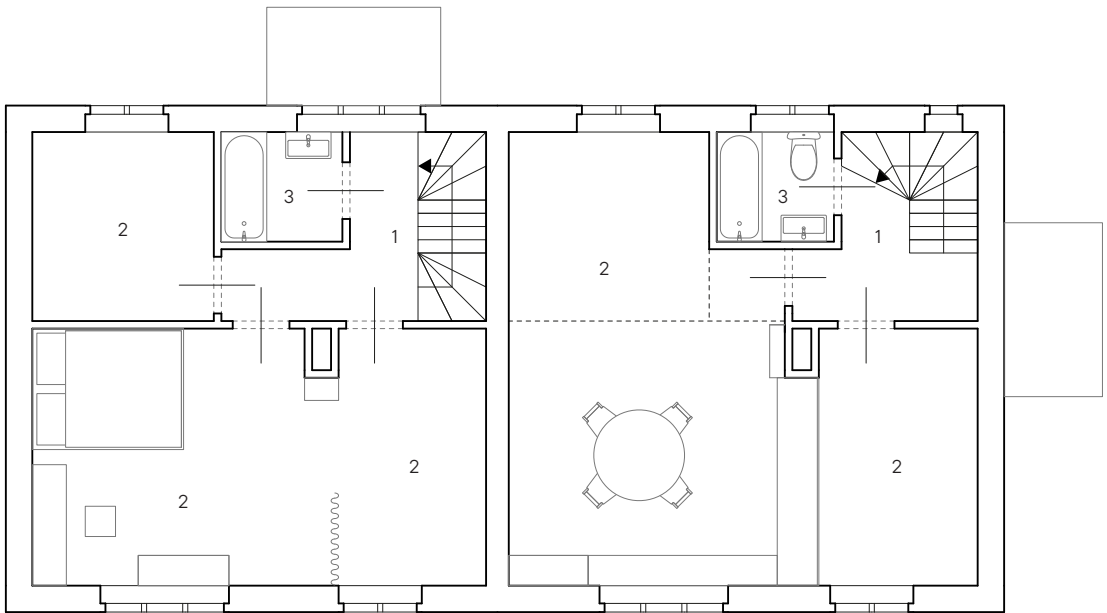
Appendices



A.1
Axonometric drawing of the ground floor
of house number 45 of the Viennese
Werbundsiedlung

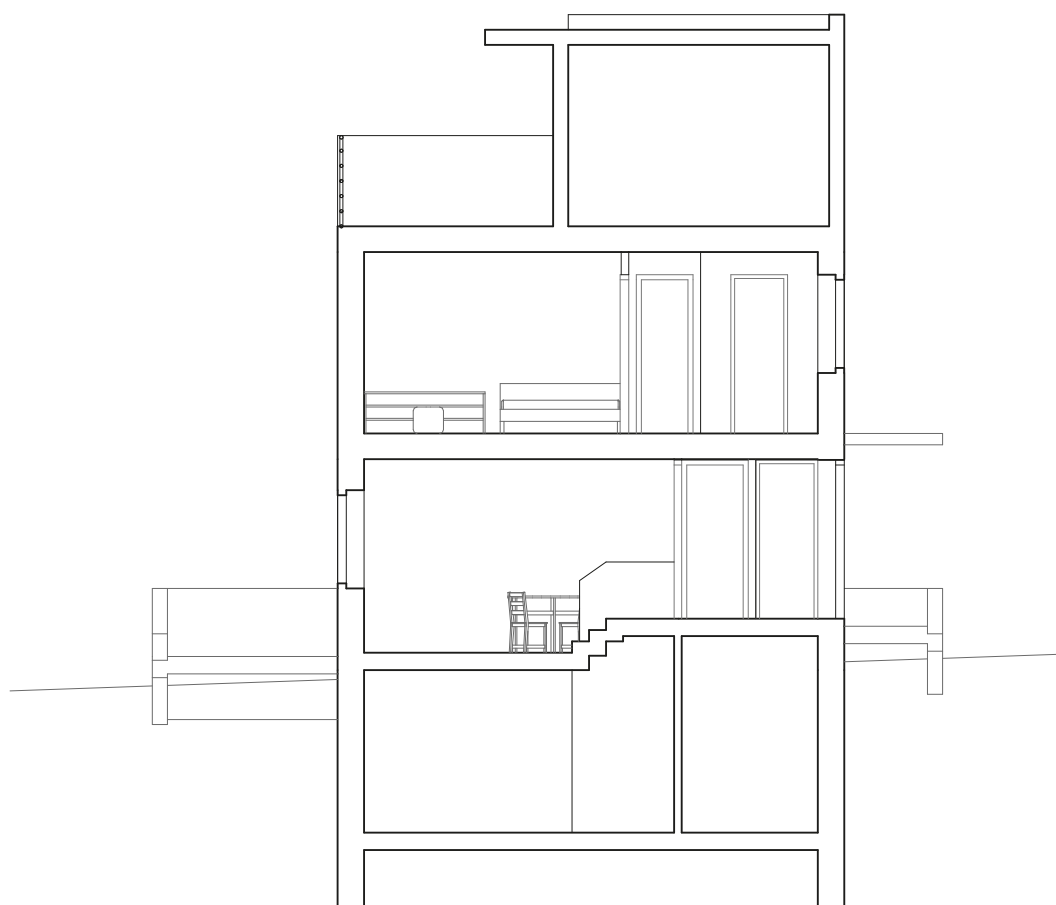


A.2
Floor plan of the ground floor of houses
number 45 and 46 of the Viennese
Werkbundsiedlung
1 Entrance platform
2 Hall
3 Living room
4 Kitchen
5 Toilet
6 Office
7 Outside space



A.3
Floor plan of the ground floor of houses
number 45 and 46 of the Viennese
Werkbundsiedlung

- 1 Hall
- 2 Bedroom
- 3 Bathroom



A.4
Section of house number 45 of the
Viennese Werkbundsiedlung

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Colophon

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