

Graphic Expression of the Transformability of Domestic Space. From Le Corbusier to Andrés Jaque: a Real and Symbolic Evolution.

Abstract. Coinciding with the centenary of the opening of Staatliches Bauhaus in Weimar, our aim was to succinctly analyse how the appearance of the concept of the rational home of the Modern Movement, which was derived from the Bauhaus, gave rise to the first examples of transformable domestic space. From this first stage we describe the contributions of Le Corbusier in the Weißenhofsiedlung in 1927, Gerrit Rietveld in the Rietveld Schroder House in the same year, and Pierre Chareau in the Maison du Verre in 1932. The simultaneous analysis of the interior mobility elements and their graphic expression, brings us to a second more modern stage, in which both, the elements related to the flexible configuration of domestic space, and the graphic media the architects use, are somewhat more ambitious. For this we describe the work of Rem Koolhaas and the spanish architects Iñaki Carnicero, Vicente Guallart and Andrés Jaque. We thus highlight the real and interesting evolution in the means, and symbolically in their graphic expression, of this essential value in the concept of the modern home, which is part of the contemporary pattern of family unity, and is characterized by the redefinition of the boundaries between the different ways of inhabiting private and public spaces.

Keywords: Key Words: Domestic space, graphic expression, transformability.

1 Introduction and Background

April this year saw the 100th anniversary of the opening of the Staatliches Bauhaus in Weimar. The visionary architect Walter Gropius, its first director, published its Founding Manuscript in the form of a four-page booklet, with the strict intention of combining all the artisan disciplines and re-focusing its work from a rational point of view, “the form follows the function”, in such a way that the result was a number of products accessible to everybody, for the sake of greater social equality.

The defiance of the traditional standards, which began in the Bauhaus workshops, the authentic epicentre of the new teaching focus, was a radical change in the history of architecture and other fields. Nobody has any doubt that the Bauhaus was the precursor of the Modern Movement in architecture, which from the beginning was also very attentive to the new concept of home, which not only had a social character but was also committed to modernity.

It is therefore nothing strange that the radical proposal of the semi-detached houses

Le Corbusier built in Weißenhofsiedlung in Stuttgart in 1927, breaking with the traditional rigidly compartmentalized domestic space, had a lot to share with the origins of this new dwelling-house culture. (Stick, E., 2012).

This new arrangement of the transformable domestic space in this case, was characterised by a clear and adaptable solution of the day/night configuration of the two houses by means of movable boundaries and adaptable furniture. It is also necessary to consider the extraordinary drawings in which it appears, which were also pioneers of the reflection on the conscious use of the means of graphic expression in projects (see Figs. 1 and 2).

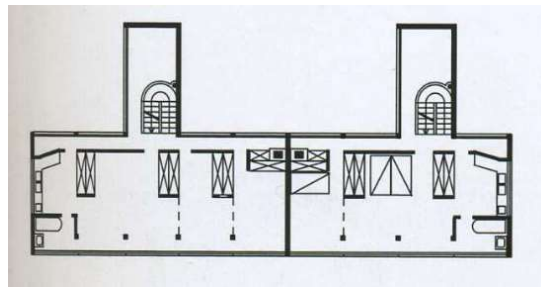


Fig. 1. Modular composition of the dwellings (5 in the large and 4 in the small), supported by the expression of the daytime configuration in the large dwelling, and the night-time in the small. The entire drawing unites content and graphic intention, thus advancing this new focus of architectural graphic expression with very basic means.

In this way, it all gives rise to sparsely explored line of analysis that associates the basic ideals of the Modern Movement's concept of dwelling, as social concern and attention to contemporaneity in its widest sense, together with the evolution of its graphic support, which also exceeds the traditional purpose of the objective and simple representation of the buildings.



Fig. 2. Elements of day/night-time adaptability in the Stuttgart houses: sliding partitions and closet with wardrobe and sliding bed.

2 Discussion

2.1 The contribution of the pioneers

Our analysis aims to give a small historical tour of this question, including some other milestones of important examples of domestic architecture with adaptable spaces, projected with the support of drawings, that reflect these intentions by different graphic means. In this regard, we can point out two other examples of the pioneering epoch: the 1924 Rietveld house, and the combined dwelling – doctor’s surgery known as the *Maison du Verre*, designed by Pierre Chareau in 1932.

In the Rietveld Schroder House, a brilliant work by the best known representative of the neoplasticism group De Stijl, we can highlight how the architect implemented a system of sliding partitions to form the living room, piano room and bedroom, which occupied three-quarters of the building’s floor area. The result is a highly flexible spatial configuration, and thus highly polyvalent, as demanded by the client herself (see Fig. 3).

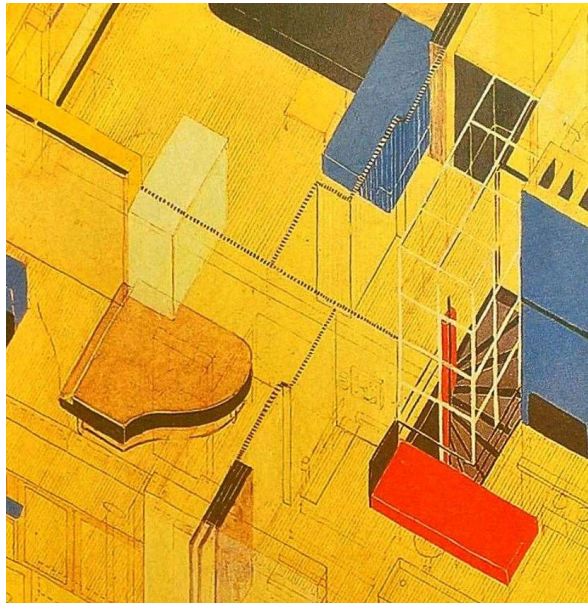


Fig. 3. Rietveld Schroder House, Utrecht, Holland, 1927. Architect: Gerrit Thomas Rietveld. The rotated axonometric drawing, thus less biased, (foreshortened in the illustration), and the striking use of graphic resources (linear attributes and flat colours), reveal the intention of achieving a very adaptable space, with different day/night-time configurations. The sliding elements are drawn symbolically, with an original lined in their intersection with the ceiling, and their lines contrast with the aspect of the rest of the drawing for their faintness, anticipating the idea of openness. The convergence of the sliding elements in the central part reinforces the provision of their joint use, impressively modulating the spaciousness of the area.

In contrast with the intention of these architects of adapting domestic spaces to day/night-time configurations, in the combined house/surgery for Dr. Jean Dalsace and his wife designed by Pierre Chareau, the aim is to control the space in order to regulate the privacy of certain uses, which always take place on two different levels of the building, by means of very original movable elements.

We can highlight here two spaces with this quality: firstly, Dr. Dalsace’s study on the

first floor, which contains the daytime zone, and is connected by a private stairs with the surgery on the ground floor. This office can also be integrated with the living area by means of an enormous mechanically operated sliding partition, thus being transformed into a large open space, with views of the front and rear sides of the building. (see Fig. 5).

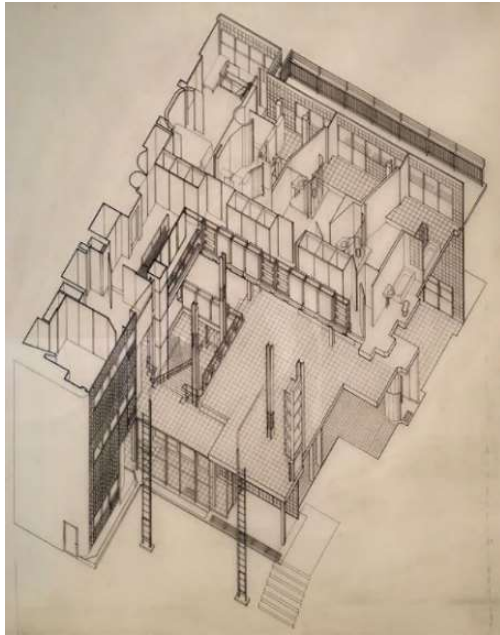


Fig. 4. Axonometry of the Maison de Verre by Pierre Chareau. Drawing by Kenneth Frampton et al., 1985 (“Pierre Chareau: Modern Architecture and Design Exhibition”). Although no known drawings by the author exist, the building’s inherent worth drawings of this type are of great interest. The double height between the daytime zone and the second level with bedrooms can be seen, for which, nothing less than one of the most iconic elements is suppressed, i.e. the moulded glass tile façade over the entrance (left foreground). The enormous level of detail suits the exquisite design of the building’s elements and shows, among other things, the device thought up by Chareau to control the privacy of the bedrooms: a complex handrail high enough to prevent one from looking down on the ground floor, formed by opaque wooden panels and others of metal in the form shelves, behind which a corridor with wardrobes filters the access to the interior of each room. The retractable stairs can also be seen in the left background.

Secondly, we have the retractable staircase that connects the second-floor bedroom with a private sitting-room at the back of the first floor, looking onto the interior garden and communicating both spaces. It was designed to be manually operated by a curious folding/sliding system that matches the stairs and the handrails to the base. (see Fig.4).

Also of interest are the diverse transformable furniture designs, considerably more sophisticated than those of L. C. in Stuttgart, such as in the main bathroom, equipped with mechanisms activated by pivots and hinges fitted to the perforated plywood panels

on the cupboards, or on glass screens, that compartmentalise the space and provide privacy.

This building is in fact both a complex dwelling place, and doctor's consulting rooms, that strictly interpret the corbusierian ideal of "living machine" by means of elaborate structural, constructive and equipment solutions, and besides, as Kenneth Frampton has pointed out, is able to "*offer by means of the fluidity of the floor plan, the standardization of its components and mobility of its parts*", a novel and demanding control of the relationship between its public and private spaces. (Frampton, K., 1969).



Fig. 5. Maison de Verre, front view of the living room onto the interior garden. On the ground floor the enormous sliding partition can be seen, that allows the room to be configured with continuity from the front to the back facade, or to close off the doctor's working zone, which communicates with the clinic by means of internal stairs. On the upper floor the modular screen is high enough to prevent a direct view of the lower floor, except in the area of the shelf units in the central position, and in a very limited way, as can be appreciated.

2.2 The contemporary contribution.

However, the real impulse to this binomial of planning and visual intentions derived from the graphic media, arrived when architects became aware of the importance of this strategic feedback relationship in the process of designing buildings. Although this approach began with the Bauhaus abstract advance guard, as we have just seen, it did not come to fruition until the 1970s, when the New York vanguard, with Kenneth Frampton and the Five Architects, as its most distinguished advocates, was internationally recognized. (see Puebla, J., 2002).

We can here analyse four contemporary examples of this fecund and parallel evolu-

tion, between the mutability of internal domestic space, now much beyond the typological supremacy of the rational dwelling of the CIAM, and the symbolism of the drawings on which it was based, and therefore with a certain degree of subjectivity and polysemy, as part of the new creativity.

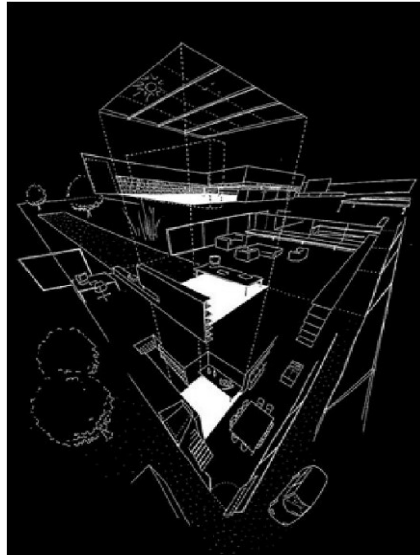


Fig. 6. Schematic drawing of the *Maison à Bordeaux* by architect Rem Koolhaas (OMA), 1998. The choice of a downward conical perspective favours the interpretation of the complex internal space, and the communication of the main floor with the adjacent garden (on the left, with transparency). The white-shaded areas show the situation of the elevator on the building's three levels. The dotted lines symbolize the enormous vertical hollow that pierces the house and the lateral shelf that accompanies it, thus supporting the movement of the "ejectable room".

In first place we put Rem Koolhaas's *Maison à Bordeaux*, built for a married couple. The husband was confined to a wheelchair and this posed a huge challenge to the architect because he demanded "a complex house, as the house will define my world" (Koolhaas, R., 1998). It was thus a combination of eloquent formal features: it was situated on top of a hill, a opaque second floor (with small anti-claustrophobic windows) floating over an open-plan first floor, or the large transversal beams, especially the one over the roof held by a tensing cable at one end, which heightened the anti-gravitational effect of the first floor terrace.

The interior contained a 3.50 x 3 m. elevating platform that "changes each floor and its function. Sometimes it remained flush with the floor and others it floats above it" (Koolhaas, R., 1998), and it could also stop between floors. Around each floor there is a shelf wall that contains all that the client could need, as everything result accessible from a wheelchair, as the platform could be adapted to the appropriate height. (see Figs. 6 and 7).

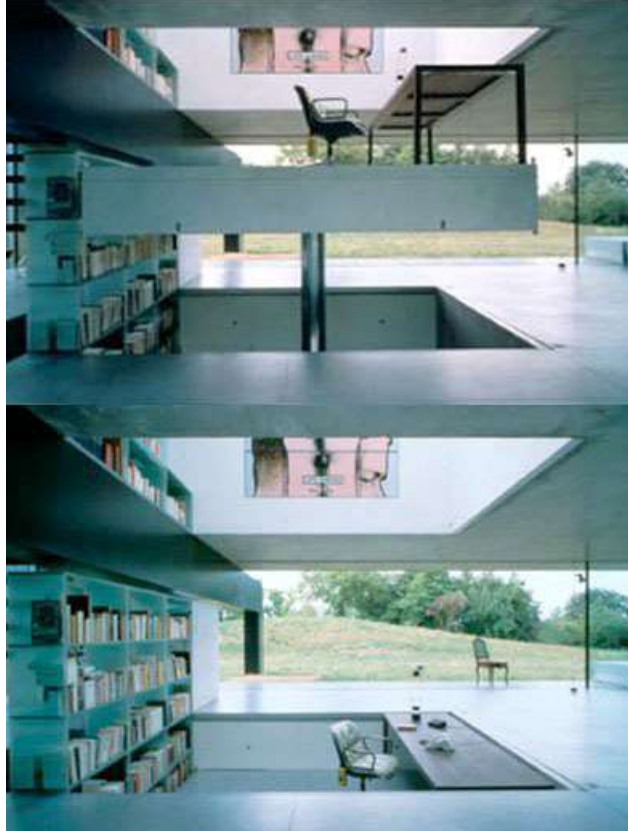


Fig. 7. Sequence showing the enormous elevating platform furnished with a desk and the changeable spatial effect on each floor level caused by its movement, seen here from the open ground level. In a certain way, it appears to be a much more powerful mechanical device, with a similar approach to the retractable stairs in the *Maison de Verre*.

In the two semi-detached homes designed by Iñaki Carnicero in the mountains north of Madrid, with a program similar to that of Le Corbusier, two interesting questions were considered regarding transformability: one was the functional program, and the other was communication with the immediate surroundings. In the former case, according to the architect, “besides satisfying the client’s requirements, we offered the possibility of eventually transforming both houses into one, and so had to consider a wider scenario of adapting to future needs. It was thus a case of re-formulating the commission and designing a single-family home for two families”. (Carnicero, I., 2007).

This original idea of re-inventing the commission gave rise to a two-fold modular arrangement of the floor area, with two well defined longitudinal zones, in the rear with stairs and a service area, and in the front with a daytime zone on the ground floor and bedrooms on the first level, with a total of 6 transversal modules, 3 in each house.

We can also highlight the arrangement of the ground floor, with an open plan in the front, and clear access to the outside terrace, dedicated to the daytime common areas.

This involved a new approach to domestic transformability: the possibility of total integration with the immediate exterior, together with maximum dilution of the physical internal spatial limits. (see Fig. 8).

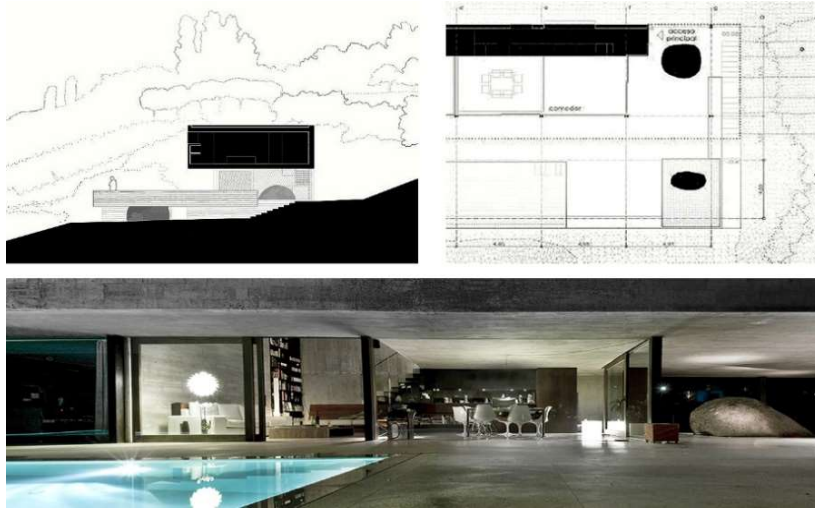


Fig. 8. *Casa Pitch*, Iñaki Carnicero, 2012. Cross-sectional view of the ground floor (with three modules) and night-time view of dining zone and terrace. The black areas with white lines in the plan outline the rear stairs and service zone, and contrasts with the open space of the other areas. There is a clear boundary between the living areas and the front terrace. The composition in series in both directions, clearly favours the intention of ordering the ambivalent internal organisation, with the option of either one or two dwellings, and coincides with the approach used by L. C. in Weissenhoff, as we have seen, although with a different intention as regards spatial flexibility.

Also worthy of note are another two examples of contemporary Spanish architects in favour of domestic utopia, as the changeable identification of the individual with the forms associated with contemporary living: the *Metropolitan Loft* by Vicente Guallart (see Fig. 9), which decontextualises this open-plan urban style, and the prototype of the *Rolling House* designed by Andrés Jaque (see Fig. 10), which includes a mutant “intimacy capsule” in another mobile installation, thus multiplying the adaptable effect.

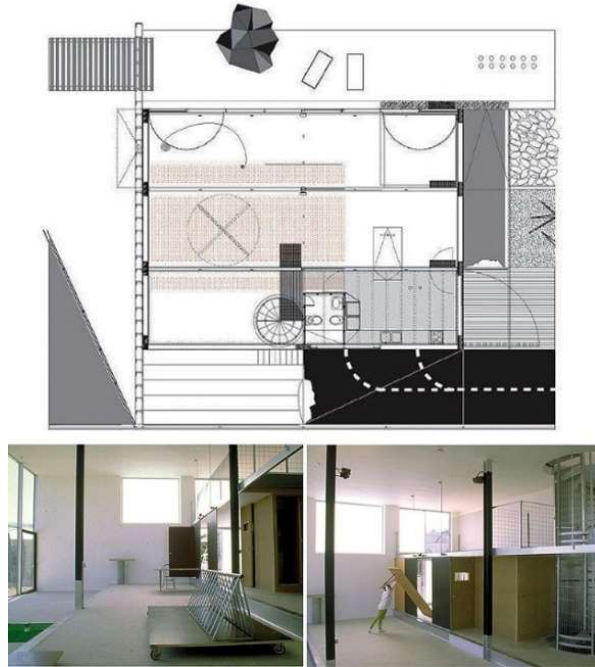


Fig. 9. Metropolitan Loft, Liria, Valencia (Vicente Guallart, 1994). In a highly symbolic drawing, with inexplicable suggestions that populate the living-room, an elaborate attention to lines can be appreciated, with different types of stripes, line patterns and shaded areas, which together with other features, express the profusion of mobile elements (pivoting, foldable, etc.) that can transform the open space that invades all the interior. (Guallart, V., 1994).

3. Conclusions

Transformable domestic space, i.e. its ability to assume configurations and even real or visual changeable limits, has been part of the modern concept of a dwelling house from the beginning, as we have seen. To the traditional elements that sustain it, such as curtain walls and adaptable furniture, we can add more recent features, such as elevating platforms, an ambiguous functional program, the physical limits themselves, or the mobility associated with the concept of a rolling home, among others, as we have just seen.

At the same time, the graphic language by which it is expressed, has evolved from the traditional drawings of the early stages, passing through the important turning point of the New York neo-vanguard, to the present time, in which architects, conscious of the role of drawings as “thought-provoking elements” (Alba, M.I., 2016), aim to anticipate hypothesis on the perception of a building, by means of images that are composed as highly symbolic graphic manifestos, full of suggestions. (see [3]).

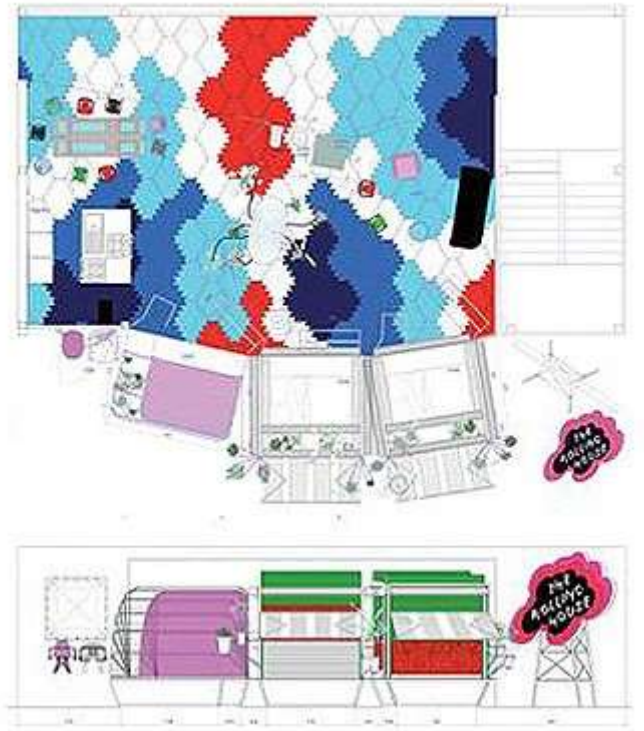


Fig. 10. *Rolling House for a Rolling Society* (Andrés Jaque, 2009). The projections of the prototype, which include concepts such as an “intimacy capsule”, extensions, or shared equipment, are drawn alternating recognisable elements, such as the kitchen and bathroom/shower, together with others symbolic, such as the Hallmark-type greeting card on the outside water tank, or the decorative panels of walls and floor. The result is very eloquent, full of visual values, such as the colour palette, which suggests a new format of changeable rolling domestic space, anticipated, in addition, in its real perception. (see [8] and [11]).

Reflecting on this question also implies an approach to the renewed concept of a home, as in the Bauhaus ideals, committed to contemporaneity: a sustainable house framed within the present pattern of the concept of the family, in which the three dualities of its traditional features “work-leisure, public-private, exterior-interior”, are again combined. (Amman, A., 2019).

Therefore, “the universalist attitude of the Modern Movement is no longer a viable position in front of the challenges of contemporary society”, as regards the present situation, in which “the domestic space-time is increasingly urban and expanding in the city” (Amoroso, S., 2017). In fact, this new identity of private space, physical ambit of the family model of our times, is essentially based on a more intense interaction with the city, through a wide sense of its poly-functionality, and the subsequent adaptability of its elements: the house that assumes new public uses, such as working-from-home, and, at the same time, other private uses, such as restoration or care of clothes, take

place in the urban scene. The examples we have treated here clearly represent responses to these challenges.

To conclude, we have tried to analyse and describe how the present architectural avant-garde is able, for the first time, to combine the ideals of domestic space related to spatial transformability, that represent an essential quality of the contemporary concept of private space, with all the values pertaining to conscious graphic expression, full of resources and with highly symbolic contents.

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