

CONFERENCE: HOUSING – A CRITICAL PERSPECTIVE

Architecture_MPS; Liverpool University; Liverpool John Moores University

Liverpool: 08—09 April, 2015

UNDETERMINED SPACES

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1. INTRODUCTION

Most of contemporary housing offer is still marked by the understanding of the house as a machine, aimed at responding to a list of predetermined functions (the modern matrix of housing), focused on a given model of social fabric and of family structure and values which if coincident with statistical data (averages), hardly ever match the real people.

Functionally predetermined housing does limit the occupant's freedom to interpret, use and reorganize the space in accordance to his/hers ethos.

Rather than continue to build social housing in terms of quantity, how to develop housing that is sustainable, that has the ability of interacting with its occupant?

To understand what this alternative housing might be, this paper will study the evolution of the domestic interior's matrix, from the house formed by functionally undetermined spaces to the epistemological rupture that will culminate in the Modern Movement, and which will, until the Present, affect the way of thinking and designing the domestic interior.

2. UNDETERMINED SPACES IN HOUSING UNTIL THE END OF THE NINETEENTH CENTURY

2.1. Udine

The Antonini Palace, of Palladio (figure 1), is an example of functionally undetermined spaces – one can only tell which function was assigned to each space through the history of its use.

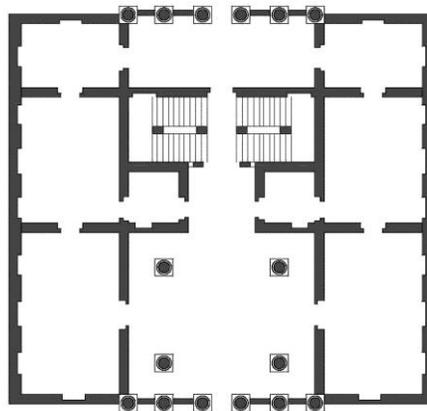


Figure 1. – Antonini Palace, Udine, 1556. Andrea Palladio.

CONFERENCE: HOUSING – A CRITICAL PERSPECTIVE

Architecture_MPS; Liverpool University; Liverpool John Moores University

Liverpool: 08—09 April, 2015

It can be observed a **physical and visual continuity between all compartments**: the doors are located in the same visual axis - if they are all open, a visual continuity from the first to the last bedroom is created. Physical in that there is not just one way to go from one room to another; there are a number of possible routes, of movements that intersect. This liberty of movements is possible because **each room has more than one door to access it**; one can go directly from one room to the other. **The rooms are interconnected: the modern concept of privacy was unknown.**

The fact that each room opens to the other eliminates the need for corridors. In fact, the corridor will be a space / function invented later, as an answer to privacy issues.

The house isn't divided in public and private spheres; as much as one can imagine, one can move from one compartment which is the living room to another that is a bedroom.

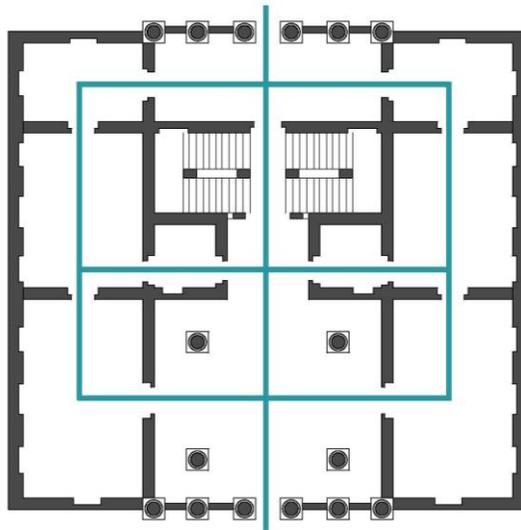


Figure 2. – Antonini Palace, Udine, 1556. Andrea Palladio – circulation matrix – physical continuity between the spaces.

Until the sixteenth century rooms were connected with each other through passages and doors, which contributed to the **space's functional uncertainty**. The house was formed by **multipurpose spaces** - they were all **public areas, not serving any functional hierarchy**. There was no permanent furniture arrangements inside the house, there **wasn't any specificity of use**.

2.2. The Introduction of the Corridor

From the end of the XVI century it begins the insertion of the corridor, while at the same time there are still houses with interconnected spaces. The corridor came from the purpose of making independent routes for the servants (who used the corridor, very narrow) and the owners of the house (family), which were established directly between compartments. **This marks the birth of spaces with a specific function (circulation), something that, until now, was unknown for housing.**

CONFERENCE: HOUSING – A CRITICAL PERSPECTIVE

Architecture_MPS; Liverpool University; Liverpool John Moores University

Liverpool: 08—09 April, 2015

The introduction of the corridor brings a very important consequence: the **specialization of the route**. One of the first homes in England to include the corridor dates from 1597 and was designed by John Thorpe - Beaufort home in Chelsea (figure 3).

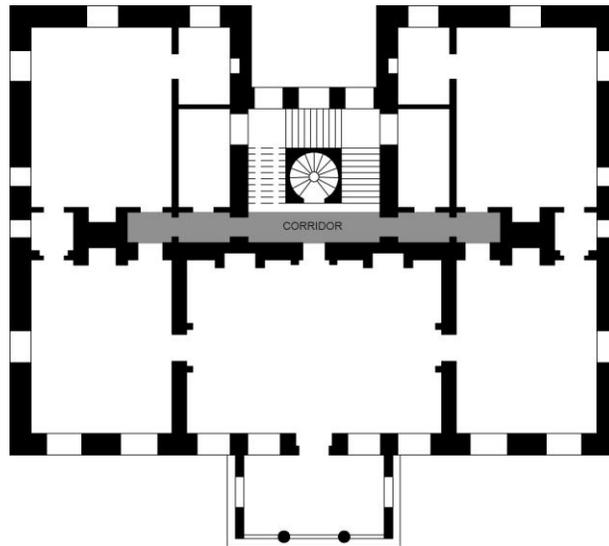


Figure 3. – John Webb, Amesbury House, Wiltshire, 1661.

From functionally undefined spaces, linked through doors, with several possible paths to be made within the house (there wasn't any route hierarchy - **each route had the same relevance as the other**), one passes to the example of an English house from the XVII century (Figure 3) in which there is a **hierarchy of movements**: the path of the house owners and their guests is the most important; the route of the servants is secondary and should remain hidden. **A functional zoning appears** as a consequence of this division of routes: the area of the servants (servants' spaces) and the area of the owners of the house (spaces served). **The corridor serves the purpose of making the social distinction within the dwelling** and nothing else. Spaces are not yet functionally pre-determined.

This division is a consequence of a conscious need to **incorporate privacy** - need formulated from the conclusions of the Council of Trent. Not only should each family have its own privacy, but so should each member of the family.

CONFERENCE: HOUSING – A CRITICAL PERSPECTIVE

Architecture_MPS; Liverpool University; Liverpool John Moores University

Liverpool: 08—09 April, 2015

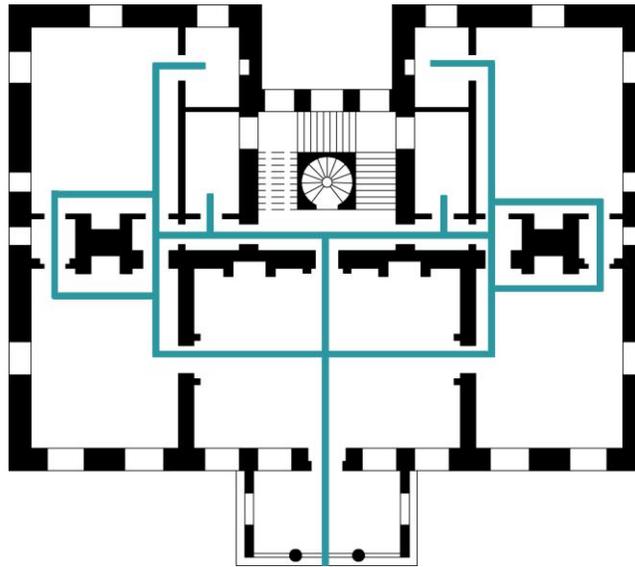


Figure 4. – John Webb, Amesbury House, Wiltshire, 1661 – circulation matrix.

2.3. The Transition from the XIX to the XX Centuries in Lisbon - Avenidas Novas

Despite the existence of the corridor as an element of circulation within the house, it does not separate movements, i.e., it does not yet segregate the apartment into private and public spaces. Here the corridor takes on a different social significance – it only serves as a mean of access to different spaces.

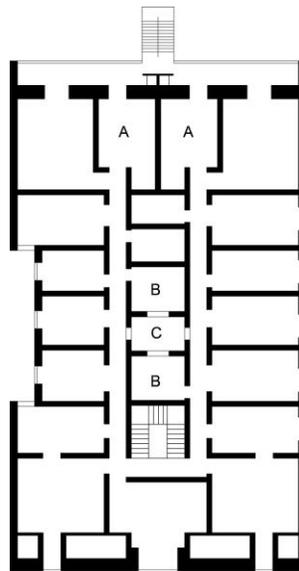


Figure 5. – Typical apartment from the Avenidas Novas, Lisbon, XIXth century.
A – Kitchen; B – bathroom; C – Internal courtyard.

CONFERENCE: HOUSING – A CRITICAL PERSPECTIVE

Architecture_MPS; Liverpool University; Liverpool John Moores University

Liverpool: 08—09 April, 2015

There is no functional pre-determination of spaces, instead there is a functional indeterminacy. The break with functional indeterminacy and the introduction of the corridor and functional pre-determination is not something that comes at the same time and everywhere. It is something that will start from the XVII century, as a consequence of a growing need for privacy and intimacy within the house.

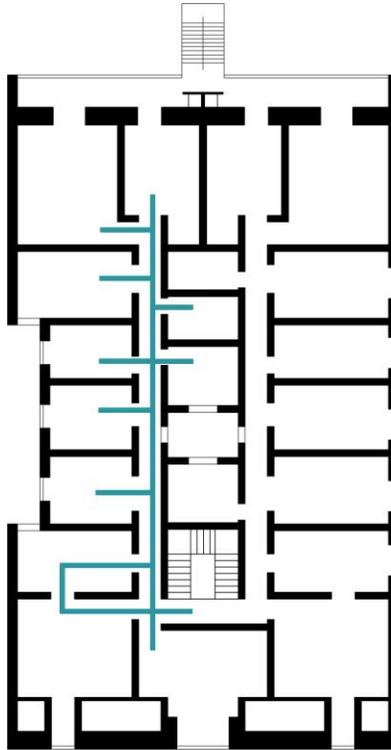


Figure 6. – Typical apartment from the Avenidas Novas, Lisbon, XIXth century – circulation matrix.

3. THE FUNCTIONALISM IN THE TWENTIETH CENTURY – THE APPLICATION OF BEHAVIOURIST THEORY TO THE ORGANIZATION OF THE HOUSE

The Industrial Revolution of the XIX century will worsen the population's well-being: there is not enough housing to accommodate all the people who have moved from the countryside to the city. A single room is shared by more than one family: **there is no sense of privacy**, and promiscuity prevails inside the house. In 1840 **the architecture is considered to be the main culprit of all the immorality that characterized the interior of the house**, and blamed for all the ill health that was observed in cities². The moral reform would be made through the house's interior reorganization - the fact that the rooms communicated with each other and thus had access in many ways, was seen as an incitement to immorality and a lack of privacy, since what was done in a room could be observed by a number of others, unknown.

Henry Roberts presents at the Great Exhibition of 1851 a model house for 4 families – this is the turning point, where the **reform of morality through domestic architecture** begins, through the specialization of movement and functions.

CONFERENCE: HOUSING – A CRITICAL PERSPECTIVE

Architecture_MPS; Liverpool University; Liverpool John Moores University

Liverpool: 08—09 April, 2015

The interior of the housing unit (Figure 7) focuses on the living room, the larger space, around which are organized 3 bedrooms (one for the couple, one for girls and one for boys - children have now their own rooms) – it proceeds to the separation of gender. Each room has only one door and the children's bedrooms are accessed through a common space, where parents can control it - the living room; there is no longer any connection between rooms (this link was considered a contribution to the moral degradation).

This example is a turning point in the history of domestic interior: functional pre-determination was implemented, consciously, for moral reasons: it arises to ensure the absence of promiscuity within the housing unit.

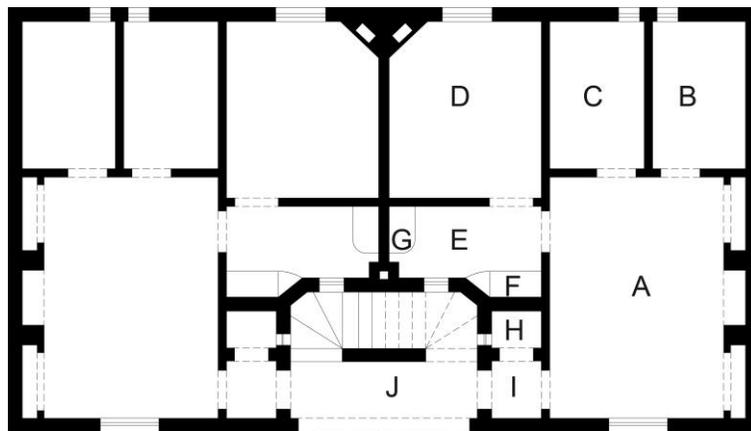


Figure 7. – Model house for 4 families, Henry Roberts, 1851.

Legend: A – Living room; B – Boys bedroom; C – Girls bedroom; D – Parents bedroom; E – Scullery; F – Safe; G – Sink; H – W. Closet; I – Lobby; J – Gallery

The **notion of privacy** reigns in housing, **reshaping the way to think its interior and its spatial organization**. The primacy is now given to the introduction of independent access to each different space that constitutes the house - **each room has now only one door**.

A conscious hierarchy of movement begins to be developed, the definition of destinations within the house, a hierarchy of rooms' location. **The movement becomes the shape generator**.

From this moment on, the organization of space within the house is made in order not only to achieve the separation of family and servants, but to achieve as well a separation between the family members themselves. Each person has their own place in the house.

After the First World War, there is a need to respond quickly to housing shortage, since most of it has been destroyed.

Alexander Klein develops the rationalist's ideals, and becomes adviser of the edification in Berlin³. His function is to study the house and develop economic and rapidly achievable proposals. He begins a series of scientific studies on the housing unit, creating a method to build an economic housing type. This method will be first presented in Paris in 1928 and the following year in the CIAM II, in Frankfurt.

CONFERENCE: HOUSING – A CRITICAL PERSPECTIVE

Architecture_MPS; Liverpool University; Liverpool John Moores University

Liverpool: 08—09 April, 2015

In 1930 the government of the Reich decided to finance the construction of housing, and provides that the area of the housing unit must be kept between 32 m² and 45 m².

“The justification for Klein’s plan was the metaphor hidden in its title, which implied that **all accidental encounters caused friction and therefore threatened the smooth running of the domestic machine**: a delicately balanced and sensitive device it was too, always on the edge of malfunction. But however attenuated this logic appears to be, it is nevertheless **the logic now buried in regulations**, codes, design methods and rules-of-thumb which account for the **day-to-day production of contemporary housing**.”

Evans⁴

For Klein, **the organization of the activities in plan is the starting point for reaching an economic and efficient house**. Therefore, the circulation spaces acquire great significance (they should be as concentrated as possible) - if the functions inside the dwelling are not well organized, this will result in a housing with wide corridors (which will result in an area larger than really necessary) or a housing in which there are intersecting movements, which, for Klein, prevented the proper functioning of housing⁵. The kitchen should be separated from the dining space (this is the most hygienic and aesthetic solution for Klein), as small as possible, since the smaller it is, more space is left for the other rooms.

Klein makes the separation of functions within the housing unit through **binomials**: cooking/eating; sleep/body treatment; leisure/rest. Furthermore, it can be observed a **division into two more general parts**: a **private** part / night zone (comprising bedrooms and bathrooms – figure 8 blue area) and the **public** part / day zone (consisting of the living room, dining room and kitchen – figure 8 grey area). These two different parts can be directly accessed from the entry hall, without any intersection between the two – for Klein, **the intersection of routes would promote a negative effect on its inhabitant**. The functions must be capable of being carried out without having any intersection between them.

There is a new reading of the house internal layout: having to be reduced to the minimum possible size, Klein believes that there must be a **maximum of functionality**, within each compartment as well as in the relationships between each of them.

The architect has now the duty to educate the public; he must teach them how to live in the unit. To each space it is assigned a specific function, which can not be changed. **There is therefore a limitation and reduction of the possibility of space ownership by its inhabitant**.

CONFERENCE: HOUSING – A CRITICAL PERSPECTIVE

Architecture_MPS; Liverpool University; Liverpool John Moores University

Liverpool: 08—09 April, 2015

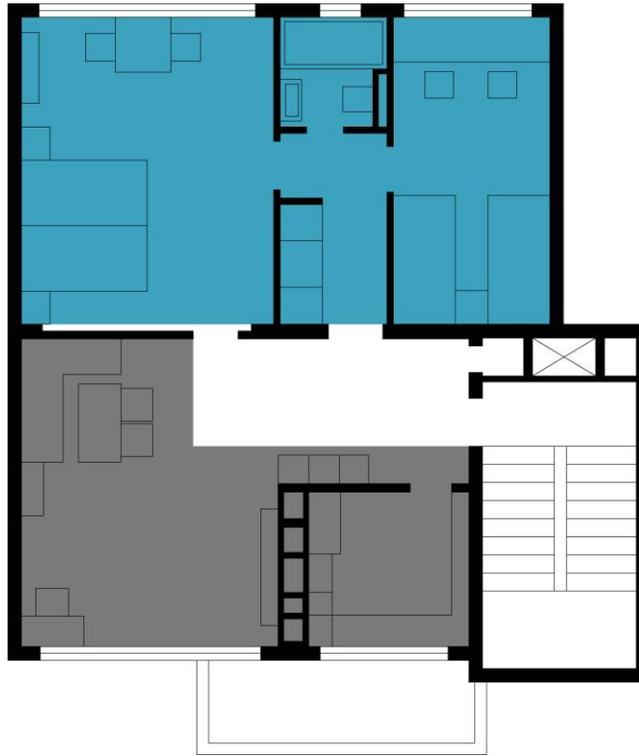


Figure 8. - Alexander Klein – division of the house in 2 parts.

In 1929 it is presented in the II CIAM the principles of the '**Existenzminimum**': the housing unit is now composed of a large living / dining space, with double height, with a kitchen with minimum dimensions, understood as an appendix to this large space (designed only to prepare meals and wash the dishes, such as the kitchen of a train) - the Frankfurter kitchen, designed by Greta Schütte-Lihotsky (Lawrence⁶); the bedrooms, with minimum dimensions, enough to hold a bed and a wardrobe; and a bathroom.

As a result of the need for massive housing construction (due to the massive destruction of buildings on the Second World War), **the architecture will be based on a set of rules** (housing division in night area and day area, etc.), **minimum dimensions** (living room maximized at the expense of minimizing the kitchen) **and invariant relations for the spaces of the house**. These are the rules that still persist in most of the architecture of social housing today: **quality housing is understood as a synonym of functionality**.

4. Conclusion

From an understanding of the house formed by functionally undetermined spaces, the transition to the twentieth century is characterized by a scientific approach (very influenced by theories of behaviour), **giving rise to a house comprising functionally predetermined spaces**. This thinking was based on the anticipation of the needs of its future occupant, shaping the way to inhabit the house - the dimensions of the spaces are a direct result of the function that each one of them should accommodate.

If, by one hand, **the anticipation of the needs allowed the conviction of an optimized home**, on the other hand **it resulted in a limitation of the possibilities of appropriation of the space by its occupant**,

CONFERENCE: HOUSING – A CRITICAL PERSPECTIVE

Architecture_MPS; Liverpool University; Liverpool John Moores University

Liverpool: 08—09 April, 2015

as well as a **limitation of the interpretation and use of space**, leading to a **decreased level of interactivity between the two**. It is an architecture that gives primacy to function (providing the spaces with the minimum areas for its proper functioning) and results in a functionally rigid house.

In order to respond effectively to social housing shortage, it is imperative to think of a model that counteracts modern living. Described below are some points, based on the early examples shown on this article, which could characterize the **sustainable house**:

1) **Undetermined / generic spaces** - the functionally undetermined house, in which **functions are to be established through usage**.

As Hertzberger advocates⁷, whenever a space is too specific in terms of use, the possibility of being interpreted in other ways is very limited. The spaces of the dwelling should be polyvalent - it is this polyvalence that allows its occupant to interpret the space, to question himself about which use he wants to attribute. This **value of use** can be changed at any moment (contrary to a house formed by functionally predetermined spaces).

According to Lerup⁸, there is an interaction between people and space, and this relationship can only be established through use. If the use is predefined, this relationship can not take place. The sustainable house **reacts and responds** to its occupants' necessities.

2) **Homogeneous spaces** – the sustainable house is formed by **rooms with similar areas and dimensions** and which are structurally identical – homogeneous spaces. The rooms are not predetermined neither in terms of function or location (abolition of hierarchies), creating multifunctional spaces. **The house isn't divided in public and private spheres**.

3) **Rooms with different types of access** – the corridor isn't the only way to access a room; some rooms can be accessed through others. The routes/movements will be determined by its occupant, according to the uses he gives to each space. **Rooms with more than one door**, which allows the combination of two rooms, for ex., to create a new room, a big one, with a different function. Interconnected spaces. Visual and physical permeability.

4) **Possibility to add space** – not just through combining rooms within the same apartment but, for ex., adding rooms that may belong either to an apartment or to another.

5) **Neutral façade** - the façade that is independent of the interior functions/layout of the house. This is one way to ensure both the versatility of the housing unit as the building itself.

6) **A house like the office building, with false ceiling and pavement** (the interior layout becomes very easy to reorganize at any moment, since the kitchen and the toilets are no longer fixed elements), increasing the possibilities of space appropriation.

7) **An unfinished house**, defended by Ignacio Paricio⁹ - the house is sold with filling according to the economic capacity of its occupant (it may be sold without a finished kitchen, for ex.).

CONFERENCE: HOUSING – A CRITICAL PERSPECTIVE

Architecture_MPS; Liverpool University; Liverpool John Moores University

Liverpool: 08—09 April, 2015

A house, like Habraken¹⁰ suggested, formed by two independent parts: the **support**, comprising the permanent, which includes infrastructure, structure and access, and the **infill**, the changeable part, which is left to the care and choice of its owner. Housing must be able to receive and reflect the identity of its occupant.

8) Exploration of the **Japanese house, embracing a different understanding of the private and public spheres**. The space is changed throughout the day through the participation of its occupants, according to their needs - a place that in the morning was the bedroom, by simply packing the *futon* it can become a study space in the afternoon or a space to have dinner at night¹¹. The size of each room is not fixed (one can increase or decrease the size of the spaces through the shoji panels), as well as its function – the Japanese house is therefore formed by multipurpose spaces, becoming a polyvalent unit.

Housing sustainability can be achieved more successfully with an **interactive approach**, through **spaces that give back to its occupants several spatial interpretations, allowing the space to be appropriated in different ways** - this is the undetermined, the adaptable house.

House is no longer defined by the modernist list of functions: eat, sleep, work, treatment of the body, cook. Hierarchies are abolished. A rethinking of the uses and the way home is used will have to take place. It is up to its occupant to interpret the polyvalent space and give it its own **value through usage**. This quality and understanding of the space should not be lost in the urge to answer quickly to a housing construction need.

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ENDNOTES

¹ Bernard Leupen, *Frame and Generic Space – A Study into the Changeable Dwelling Proceeding from the Permanent*, (Rotterdam: 010 Publishers, 2006), 122.

² Robin Evans, *Translations from Drawing to Building and Other Essays*, (London: Architectural Association Publications, 1996), 96.

³ AA. VV. and Alexander Klein. *Vivienda mínima: 1906-1957* (Barcelona: Gustavo Gili, 1980), 31.

⁴ Robin Evans, *Translations from Drawing to Building and Other Essays* (London: Architectural Association Publications, 1996), 85.

⁵ AA. VV. and Alexander Klein. *Vivienda mínima: 1906-1957* (Barcelona: Gustavo Gili, 1980).

⁶ Roderick J. Lawrence, *Housing, Dwellings and Homes – Design Theory, Research and Practice* (Chichester: John Wiley & Sons Ltd., 1987), 135.

⁷ Herman Hertzberger, *Lessons for Students in Architecture* (Rotterdam: 010 Publishers, 2005), 152.

⁸ Lars Lerup, *Building the Unfinished – Architecture and Human Action* (California: Sage Publications, 1977), 132.

⁹ Ignacio Paricio, SUST, Xavier, *La vivienda contemporánea – programa e tecnología* (Cataluña: ITEC, 2004), 81.

¹⁰ N.J. Habraken, *SUPPORTS: An Alternative to Mass Housing* (Mumbai: Urban International Press, 2000), 79.

¹¹ Tatjana Schneider and Jeremy Till, *Flexible Housing* (Oxford: Architectural Press, 2007), 55.

BIBLIOGRAPHY

CONFERENCE: HOUSING – A CRITICAL PERSPECTIVE

Architecture_MPS; Liverpool University; Liverpool John Moores University

Liverpool: 08—09 April, 2015

- Allsopp, Bruce. *Towards a Humane Architecture*. London: Frederick Muller Limited, 1974.
- Arendt, Hannah. *The Human Condition*. Chicago: Chicago University Press, 1958.
- Bernet, Reinald. trans. *Alexander Klein. Vivienda Mínima: 1906-1957*. Barcelona: Gustavo Gili, 1980.
- Evans, Robin. *Translations from Drawing to Building and Other Essays*. London: Architectural Association Publications, 1996.
- Habraken, N.J. *SUPPORTS: An Alternative to Mass Housing*. Mumbai: Urban International Press, 2000.
- Hertzberger, Herman, *Lessons for Students in Architecture*. Rotterdam: 010 Publishers, 2005.
- Lawrence, Roderick J. *Housing, Dwellings and Homes – Design Theory, Research and Practice*. Chichester: John Wiley & Sons Ltd., 1987.
- Lerup, Lars. *Building the Unfinished – Architecture and Human Action*. California: Sage Publications, 1977.
- Leupen, Bernard, *Frame and Generic Space – A Study into the Changeable Dwelling Proceeding from the Permanent*. Rotterdam: 010 Publishers, 2006.
- Paricio, Ignacio. SUST, Xavier, *La vivienda contemporánea – programa e tecnología*, Cataluña: ITEC, 2004.
- Rybczynski, W. *Home - A Short History of an Idea*. London: Penguin Books Ltd, 1987.
- Schneider, Tatjana and Jeremy Till. *Flexible Housing*. Oxford: Architectural Press, 2007.