

# ‘Lost Space’ Found: Reconsidering Functional Ambiguity as a Strategy for Housing Design

## El ‘espacio perdido’ recuperado: Reconsiderando la ambigüedad funcional como estrategia para el proyecto de vivienda

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### Abstract

The current response to housing issues, undoubtedly a pressing problem of our time, implies an acceptance of the diversity of ways of living and their transformation over time, in addition to factors such as demographic movements, the ageing of the Western population, and climate change, which call for a thorough review of housing types and their implementation. A review of this calibre cannot be conducted without the awareness that the problem, despite its current nature, has persisted over time, and given rise to an extensive body of knowledge. This paper aims to highlight the innovative design strategies geared towards a more open configuration of the dwelling and which are supported by theoretical research. The text opens by revisiting the free plan in its multiple configurations as the seed of adaptable design and advances to offer a more in-depth examination of the case of Portugal in the 1960s, a period in which the construction of affordable housing underwent considerable development. The notions of lost space, superfluous space, circulation and functional ambiguity emerge in this context of scarcity with great critical acuity. A short selection of contemporary case-studies, included in the last section of the paper, lead to a renewed reflection on the pertinence and relevance of these notions applied to current housing design.

### Keywords

Portugal; Housing; Free Plan; Adaptable Design; Lost Space; Functional Ambiguity.

### Resumen

La respuesta actual al problema de la vivienda, sin duda una cuestión apremiante de nuestro tiempo, implica la aceptación de la diversidad de formas de vida y su transformación a lo largo del tiempo, junto con factores como los movimientos demográficos, el envejecimiento de la población occidental y el cambio climático, que exigen una revisión en profundidad de los tipos de vivienda y su implementación. Una revisión de este calibre no puede llevarse a cabo sin ser conscientes de que el problema, a pesar de su naturaleza actual, ha persistido en el tiempo y ha dado lugar a un extenso corpus de conocimiento. Este artículo pretende destacar estrategias de diseño innovadoras orientadas a una configuración más abierta de la vivienda y que se apoyan en investigaciones teóricas. El texto empieza por revisar la planta libre en sus múltiples configuraciones como germen del diseño adaptable, y a continuación ofrece un examen más profundo del caso de Portugal en la década de 1960, periodo en que la construcción de viviendas asequibles tuvo un desarrollo considerable. Las nociones de espacio-perdido, espacio superfluo, circulación y ambigüedad funcional emergen en este contexto de escasez con gran agudeza crítica. Una pequeña selección de casos contemporáneos, incluida en la última sección del artículo, conducen a una reflexión sobre la pertinencia y relevancia de estas nociones aplicadas al diseño actual de viviendas.

### Palabras clave

Portugal; Vivienda; Planta libre; Proyecto adaptable; Espacio perdido; Ambigüedad funcional.

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## Introduction: the “free plan” as a paradigm of adaptable design

The challenges facing contemporary housing design are diverse, complex, and multidimensional. For example, the configuration of the new space for living and working poses questions regarding the spatial arrangement and the social, legal, and financial spheres, forcing architects to redefine the boundaries between private and public. Given the diversity of family structures and living dynamics, it is also imperative to conjugate and innovate housing types against a monoculture of living with little resilience to the changes in progress.

In this process, a critical consideration of the freedom of the “free plan” in its multiple configurations is essential, mainly for the development of design strategies anchored on the adaptability of domestic space to different demands of use over time: the changes in family structures, the ageing phenomenon and energy efficiency urgencies<sup>1</sup>; unique or degenerative circumstances related to the health of the inhabitants, and the variation in their physical and mental health. Even the transformations resulting from the inhabitants’ need to identify with the inhabited environment may fall within this scope.

The *plan libre*, formulated by Le Corbusier and Pierre Jeanneret in *Les cinq points d’une architecture nouvelle* (1927), had already been envisaged in 1914, in the “Maison Dom-ino”, the inaugural type of what would become the principles of modern architecture. Determined by the autonomy of the partition wall system, this plan provided a new freedom of organisation of the domestic space. In addition to being a plastic exercise, the “free plan” is the formulation of a fundamental idea for architectural adaptability, allowing for the differentiation of space according to lifestyle.

The exploitation of direct and indirect flexibility, polyvalence, and reversibility resources, enabled by Le Corbusier’s free plan formulation, gave rise to architectural solutions and theoretical discourses that acknowledge change and indeterminacy<sup>2</sup> as part of inhabiting, in pursuit of adaptable solutions from the outset. Examples across Europe from the mid 1930s onwards may be considered paradigmatic realisations encompassing adaptive design potential, stimulating a questioning beyond the conquest of the constructive dimension, and the design of plan conceptions that explored freely positioning the partitions.

Exemplary buildings can be mentioned, such as the Vestersøhus (Copenhagen, 1935-1939), a large housing project designed by Kay Fisker and C. F. Møller. The design principles of this building enable considerable freedom in the apartments’ organisation, but mainly in the flexibility of use: multiple circulations, interconnection of rooms, interchangeable functions, dissolution of segregated service/night/day, and shared versus private areas (figure 1). Also, the solutions by Atelier Perret (Le Havre, 1945-1960) are a paradigmatic example of openness to different ways of inhabiting, supported by the structural design and strategic location of the service areas. The apartment layout is rational, designed to be modular, with doors and sliding partitions opening or closing access to adjoining rooms. The load-bearing structure is limited to one single column in the hall of each apartment<sup>3</sup>. The double circulation provides for spaces of ambiguous use connected to the living room, and the deconstruction of the rigid day-night distribution reinforces the topicality of the proposed typological model (figure 2).

The potential of the “free plan” was fully explored when the apartments were organised around the core of the facilities<sup>4</sup> – the determined part – where the kitchen, bathroom, and toilet were located, an idea put into practise in the *Maisons Loucheur* by Le Corbusier and Pierre Jeanneret (1929). A canonical example of this widely disseminated “free plan” arrangement is the *Casa Patriziale* by Luigi Snozzi and Livio Vacchini (Carasso, 1963-1970), in which the modulation of the 95 cm grid and the free-standing metal supports allow for the flexibility of the partitions’ positioning<sup>5</sup>.

1 Gisela Lameira et al., “Good Architecture Matters: The Architect’s Perspective on Design for Ageing and Energy Efficiency”, *Buildings* 13, 4 (2023): 1067-1104.

2 Xavier Van Rooyen, “Free Plan versus Free Rooms. Two Conceptions of Open Architecture”, *Footprint* 16, 2 (2022): 85-104.

3 “Le Havre, World Heritage site. The Perret show flat”, <http://unesco.lehavre.fr/en/discover/the-perret-show-flat> (consulted the 10 of October of 2023).

4 Bruno Marchand, “Le noyau central comme vecteur de transition entre le plan libre et le plan flexible”, *Matières* 11, (November 2014): 33-47.

5 Alberto Franchini, “Luigi Snozzi and Livio Vacchini Casa Patriziale in Carasso”, in *A Historical-Critical Guide to 20th-Century Architecture in Canton Ticino*, N. Navone, ed. (Balerna: Archivio del Moderno, 2021): I.MB.4.01-06

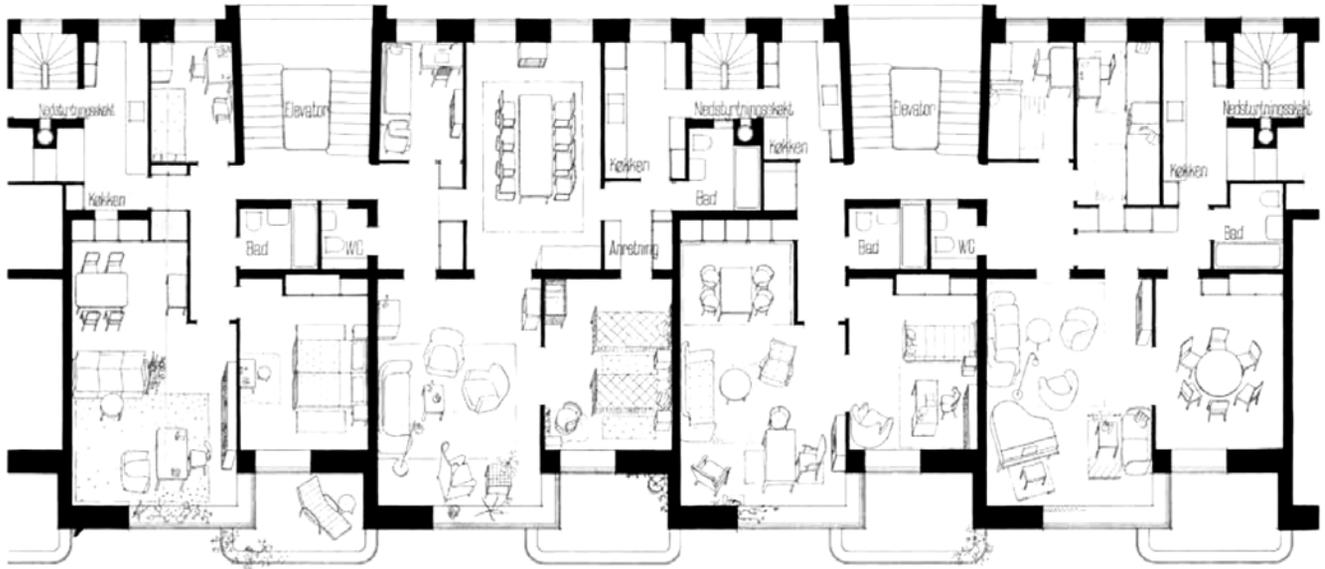
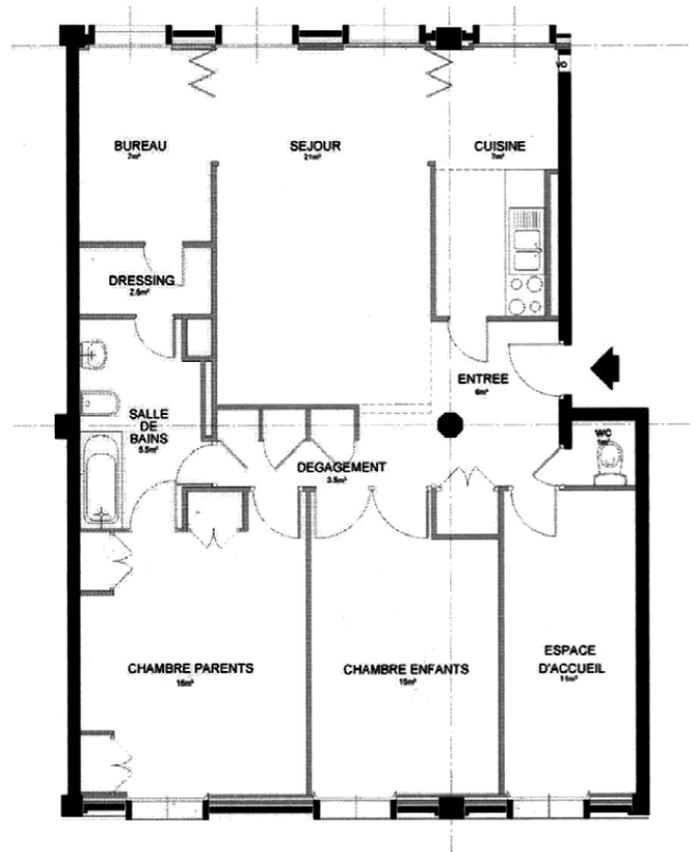


Figure 1. *Vestersøhus housing*, Copenhagen, Denmark, Kay Fisker and C. F. Møller, 1935-1939 (partial plan).

Figure 2. *Appartements at Place de l'Hôtel de Ville*, Le Havre, France, Atelier Perret, 1945-1960 (partial plan).



### From the “free plan” to the freedom to interpret the plan

As already noted<sup>6</sup>, the “free plan” was adopted on a massive scale, although some spatial devices experimented in modern prototypes, such as Le Corbusier’s Villa Savoye or Mies van der Rohe’s Brick House, were never really applied in collective housing. In the post-war European reconstruction however, priorities changed. Almost everywhere, affordable housing solutions were implemented on a large scale, following minimum space standards, and taking functionalist precepts as models.

6 Jacques Lucan, “Le plan paralysé (du logement) contre le plan libre (de la maison): L’antinomie de l’architecture moderne”, *Matières* 16 (September 2020): 103-111.

7 Tiago Castela, “Cidadania Proprietária e Emergência da Financeirização da Habitação em Portugal Após 1968”, in *A Nova Questão da Habitação em Portugal*, Ana Santos, ed. (Coimbra: Actual Editora, 2019), 259-274.

8 Gisela Lameira, Luciana Rocha and Rui Jorge Garcia Ramos, “Affordable Futures Past: Rethinking Contemporary Housing Production in Portugal While Revisiting Former Logics”, *Urban Planning*, 7, 1 (2022): 223-240.

Portugal was no exception. The launch of several state-subsidized housing programmes led to an intensive period of housing design that necessarily addressed reduced built areas and simplified construction systems, but which, at the same time, amplified the debate around the need for adaptable solutions. In 1960s Portugal, under an authoritarian and corporative regime that was grappling with the economic strain of a colonial war that would determine the opening to the financialization<sup>7</sup> of State activity through private funds, architects began to address the housing problem more systematically<sup>8</sup>.

A case of particular interest is that of Nuno Teotónio Pereira's activity, both as an employee of the government agency Affordable Houses of the Federation of Provident Funds (*Habitacões Económicas – Federação das Caixas de Previdência / HE-FCP*), and as an architect with an independent practice. Teotónio Pereira's studio, based in Lisbon, brought together some of the most talented architects of that time and functioned as a site for disciplinary and political debate. Such architects included Manuel Tainha, with whom he briefly shared the studio, Vítor Figueiredo, with whom he occasionally collaborated, Bartolomeu Costa Cabral, one of his first partners, and also a younger generation of collaborators, including Nuno Portas and Pedro Vieira de Almeida. In the late 1950s, the studio received its first commissions for large-scale housing complexes, namely in the urbanisation of the Olivais area in Lisbon, which was divided into North and South areas. This was seen as an opportunity to further develop a critical revision of some of the Modern Movement's precepts on housing and urbanism, with the valuable input of the "youngsters".

At a time when the achievements of the "free plan" and functionalism were taken for granted, the debate on adaptability and appropriation of space found support in theory as well as in ideology. Nuno Portas and Pedro Vieira de Almeida were the protagonists of this debate. Both were aware of the architect's social responsibility, in the sense that his design choices condition the way users inhabit and appropriate space. While the former initiated a research project at the National Laboratory for Civil Engineering (LNEC, Lisbon) which aimed at a realistic approach to households and their needs based on the empirical observation of the occupancy process, the latter developed an in-depth study on the autonomous qualities of space, through notions such as "transition-space", "nucleus-space" and "lost space"<sup>9</sup>. Both aimed for a critical review of functionalism, a fundamental post-war debate that went beyond the strict scope of the discipline and of which both were well informed<sup>10</sup>. The studies led by sociologist Paul-Henry Chombart de Lauwe on inhabited residential buildings in France<sup>11</sup>, from which the distinction between "mandatory needs" and "aspiration needs" emerged, and Louis Kahn's quest for architecture thought in terms of space rather than function<sup>12</sup> (*space transcends functions*) were two major influences for Portas and Vieira de Almeida respectively.

The notion of "lost space", on which this paper will focus, was introduced by Vieira de Almeida in 1965 as a critique of functionalism and the scientific method of the sociological-based surveys conducted by the LNEC from 1962 onwards. Vieira de Almeida analysed its possibilities in three different programmes (schools, housing and churches) and admitted that in housing its evolution was less clear and more problematic since it collided both with functionalist assumptions and real estate speculation. He questioned the progressive scrutiny that had, since the 18th century, been assigning specific functions to each room of the house, to the point of disturbing the global understanding of dwelling in all its complexity. By the 20th century, when the lack of housing for the working class became a major problem in industrialised countries, this process led to studies focused on minimum standards such as the *existenzminimum* and subsequent research which, to use his own words, the "incipient sociological technique adopted and a less committed and perhaps less demanding architectural criticism did not help to correct"<sup>13</sup>.

Vieira de Almeida's proposal was a reaction to this process of "atomisation" and shifted the emphasis on the potential of spaces such as halls, vestibules, corridors, patios, and roofed or glazed balconies, when articulated with the main rooms. Spaces that can hardly have a predetermined and invariable function, providing therefore a small margin of freedom for households to adapt to the house.

9 Pedro Vieira Almeida, *Ensaio sobre o espaço da arquitectura* (Porto: CEAA, 2013 [first edition 1963]).

10 Tiago Lopes Dias, "Teoria e desenho da arquitectura em Portugal, 1956-1974: Nuno Portas e Pedro Vieira de Almeida" (PhD thesis, Department of Theory and History of Architecture, Polytechnical University of Catalunya, 2017).

11 Paul-Henry Chombart de Lauwe, ed., *Famille et Habitation*, vol. 1 and 2 (Paris: CNRS, 1959/1960).

12 Alessandra Latour, ed., *Louis I. Kahn: escritos* (Madrid: El Croquis editorial, 2003).

13 Pedro Vieira de Almeida, *O espaço perdido e outros textos críticos* (Porto: CEAA, 2018), 27.

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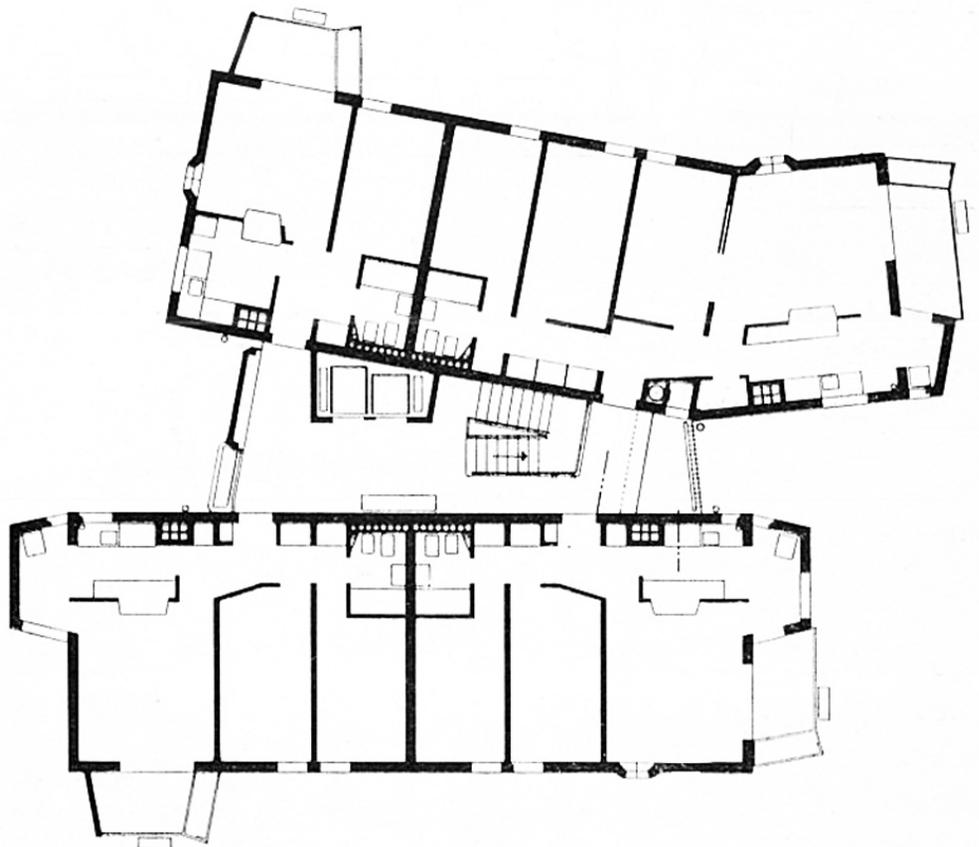
## The notions of “lost space”, “superfluous space”, circulation, functional ambiguity

By the early 1960s, there were around 9,400 dwellings being built or designed in Lisbon's Olivais area alone. Most were subsidized by the state, and the analysis of the adopted space standards show that the floor area ranged from 20% to 40% less than that observed in European subsidised housing developments<sup>14</sup>. Indeed, the Portuguese official standards were overly strict and far from satisfactory. This, added to the rigid construction systems that were being employed, was giving rise to dwellings with no possibility of further improvement. A considerable increase in floor areas was a main recommendation of the reports published by the LNEC, which Portas sought to integrate in new housing projects (by providing information such as data related to the functions and requirements of housing areas).

However, it was not only a matter of square meters: according to Vieira de Almeida, no economic criteria could justify a prescriptive method by which a specific function was assigned to each space of the house, constraining the freedom of the households to appropriate space and to create a “home”. The need for individual affirmation within collective housing constituted a challenge for the architect, who was expected to design for appropriation. The question Vieira de Almeida wished to highlight was how an architect could imprint a guiding intervention in the design phase to enhance a multiplicity of personal interventions. He did so through the notion of “lost space” and with the support of projects which he knew well.

Vieira de Almeida associates the idea of “lost space” with that of malleability, distinguishing between “organic malleability”, related to the “evolution of a household in the successive progression and regression of its needs”, and the “malleability of anonymous or statistic bias”, related to generic social changes<sup>15</sup>. An example of this is evident in the tower in North Olivais, designed by Teotónio Pereira, Pinto de Freitas, and Portas (1959-1968). The design solution, particularly in the dwellings where the balcony connects the kitchen and the living room, is suggestive of various possibilities for inhabiting, which, in his opinion, lays bare its pedagogical value (and which may now be interpreted as a first step towards rethinking gender roles within the house) (figure 3).

Figure 3. Towers in cell A, North Olivais, Lisbon, Portugal, Teotónio Pereira, Pinto de Freitas, and Portas, 1959-1968.



14 Nuno Portas, *Estudo das funções e da exigência de áreas de habitação*, vol. 1 (Lisboa: LNEC, 1964), 20.

15 Vieira de Almeida, *O espaço perdido e outros textos críticos*, 30.

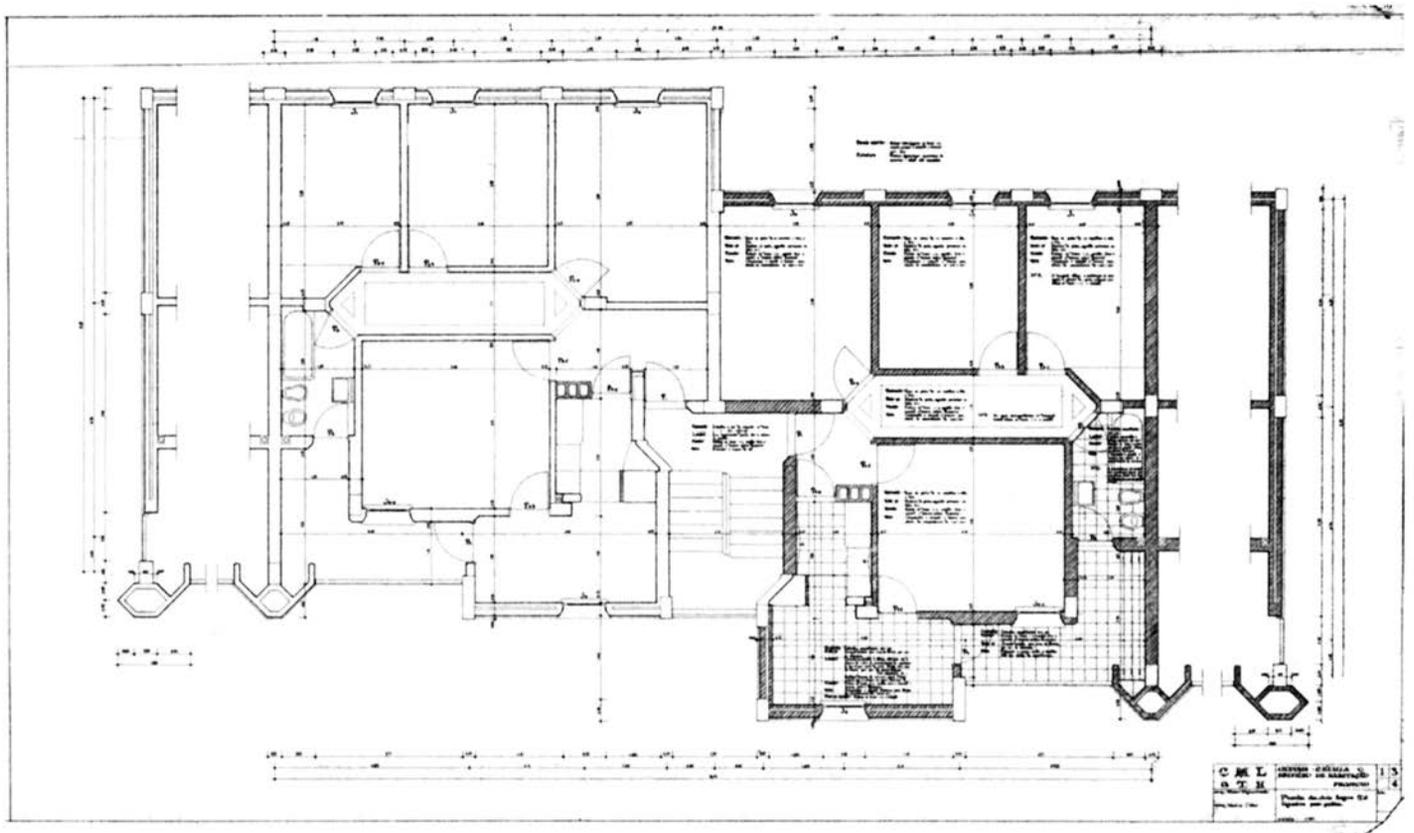


Figure 4. Four-storey buildings in cell C, South Olivais, Lisbon, Portugal, Vitor Figueiredo, 1960-1966 (partial plan).

As far as “organic malleability” is concerned, Vieira de Almeida refers to two main options: the consideration of a multifunctional extra room and the reassessment of distribution spaces. The former took shape in the post-war period in the “all-purpose room”, whose Italian version (*stanza di lavoro*) was tested in projects built under the INA-Casa programme, which was well known in Portugal. In his degree thesis, Portas demonstrated the full potential of the *stanza di lavoro* when inserted as an articulation between the night-time area and the day-time area, which were often rigidly separated<sup>16</sup>. Vieira de Almeida countered this argument by noting that once its use is chosen (working room, playing room, storage, etc.), the extra room remains untouched for a long period of time. The users’ intervention was limited to that choice; and even if one accepts that flexibility of use was possible, it would be a “circumscribed flexibility”, restricted to a single room when it “should animate the spirit of the whole house”<sup>17</sup>. The three-bedroom typology of the tower in North Olivais allows us to understand what Vieira de Almeida was referring to: the bedroom adjoining the living room is inserted in a concatenation of spaces that may work both interconnectedly and in isolation.

Although this project was considered exemplary in terms of malleability of use, Vieira de Almeida made the corridor the defining element of the “lost space”. The corridor served to enhance the function of “circulating”, which in his opinion, should be equally taken into consideration like any other, albeit non-restrictively, and might even include “the possibility of a ‘stroll’”<sup>18</sup>. In his view, the corridor had not yet been assigned a formal value, but he found a similar understanding of circulation in Vitor Figueiredo’s work. In the four-storey buildings for South Olivais (1960-1966), Figueiredo (with Vasco Lobo) placed the main living room in a central position, surrounded by a series of spaces (hall, corridor, kitchen, balcony and even a bathroom) that can be traversed, lending the psychological sensation of a larger house (figure 4). According to the author, this arrangement, that enhanced circulation without jeopardising the peacefulness of the living room, was relevant in dwellings with very small areas. It was just a question of strategically adding a door: “I always tried to avoid the *cul-de-sac* in the indoor circulation, thus giving another dimension to the house”<sup>19</sup>. Nuno Portas and Bartolomeu Costa Cabral tried the

16 Nuno Portas, *A Habitação Social. Proposta para a metodologia da sua arquitectura*, vol. 2 (Porto: FAUP, 2004 [first edition 1960]).

17 Vieira de Almeida, *O espaço perdido e outros textos críticos*, 30.

18 *Ibid.*, 32.

19 Nuno Arenga, ed., *Vitor Figueiredo: fragmentos de um discurso* (Porto: Circo de Ideias, 2012), 72.

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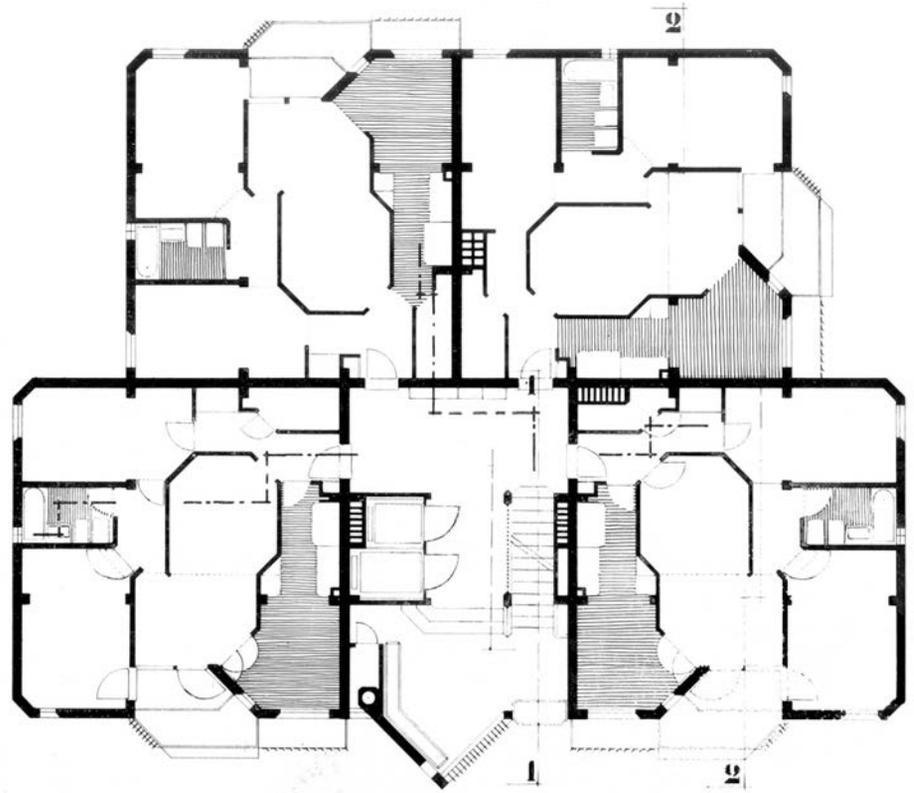


Figure 5. Towers in cell C, South Olivais, Lisbon, Portugal, Nuno Portas and Bartolomeu Costa Cabral, 1960-1966.

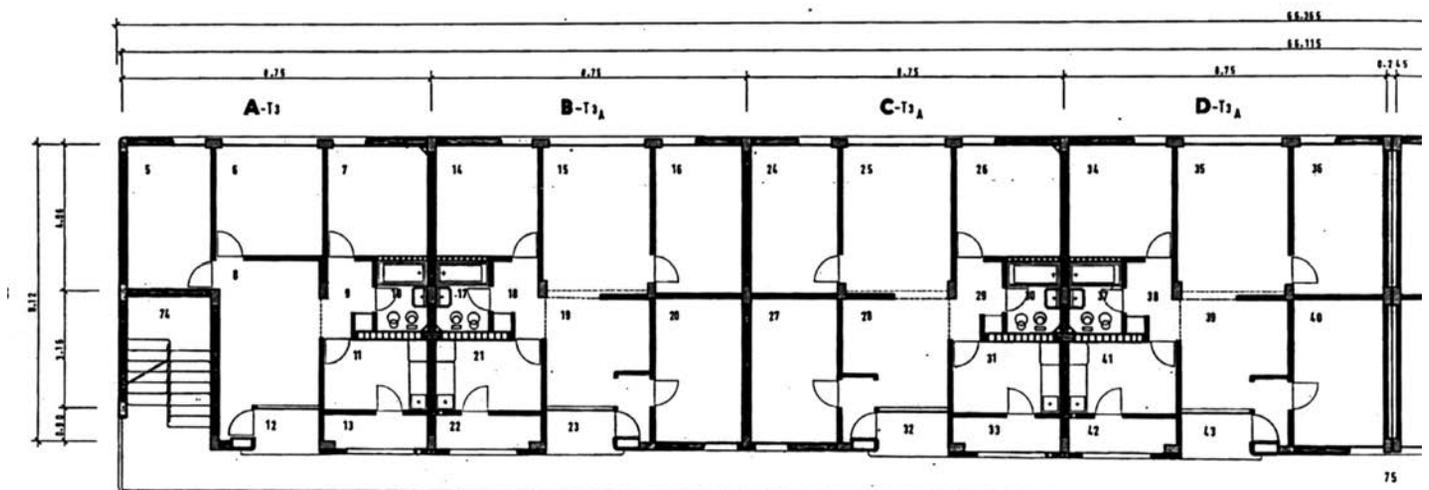
Figure 6 (abajo). "The five fingers", residential building in Chelas, Lisbon, Portugal, Vítor Figueiredo, Eduardo Trigo de Sousa, Trigo Gil, 1973-1975 (partial plan).

same, both in the four-storey buildings and the towers for South Olivais "cell C" (1960-1966). The central living room is subtly divided into two areas, one connected to other spaces and therefore "traversable" and the other more removed (figure 5).

These were not minor issues in affordable housing. Vieira de Almeida and Figueiredo were in agreement regarding the corridor: this distributive solution, popularised in the 19th century, was banished due to economic and speculative pressures, and the increase in price per square meter contributed to the depreciation of any space without a clearly defined function. However, in Figueiredo's view, this kind of space was the only thing that could "redeem and add something to the world of minimums"<sup>20</sup>, the latter typical of state-subsidized housing in Portugal. "Superfluous space" had, paradoxically, a moral and ethical function<sup>21</sup>. It could be a simple entrance hall, like the one designed by Figueiredo and Lobo in the seven-storey buildings in South Olivais (1960-1966), which acts as a transition between the dwelling and the collective gallery. Indeed, this design strategy is repeated in Chelas, in the residential building known as "the five fingers" (1973-1975). The entrance to the dwelling is set back from the gallery and gives access to a central room whose function is left completely open. Additionally, the structure of the house does not differentiate between day and night areas. It is subdivided into six parts, four of which are similar. In the centre, there is a suggestion of a dining area and a living area, onto which two bedrooms open directly and may be used for another purpose (figure 6).

<sup>20</sup> Ibid.

<sup>21</sup> Figueiredo did not write about the theoretical potential of the "superfluous space" given that, as noted by Duarte Cabral de Mello, its awareness was developed in the continuous practice of building. See: Duarte Cabral de Mello, "Vítor Figueiredo: La misère du superflu", *L'Architecture d'Aujourd'hui* 185 (May/June 1976): 30.



Figueiredo recognised that there was nothing functionalist or rationalist about this scheme, nor was there anything new. He associated it with the “old houses whose functions were vaguely defined”, in which “there was a frequent rotation in the use of space”<sup>22</sup>. This allowed the household to make choices, for example deciding which room would best serve for gathering the family or for sleeping. Figueiredo was referring to pre-functionalist housing schemes, i.e., those prior to the mass dissemination of models such as *siedlungen*, *hofs* and *unités d’habitation*, in whose critical review his generation and those that followed would be deeply involved. He often referred to the “charm of old houses” and related it to the existence of halls, corridors, and glazed balconies, “superfluous spaces” that he sought to reinterpret in affordable housing.

These case studies reflect a period in which the Portuguese state played a major role in housing construction. However this situation changed from the 1980s onwards, when the housing stock was left, almost entirely<sup>23</sup>, in the hands of private investors (coinciding with the international awakening of neoliberal policies). This partly explains why those ideas had no continuity: *lost* or *superfluous* spaces were, after all, unprofitable for those who wanted to sell a “product”. The increase in space standards, on the one hand, and the re-adoption of functionalist precepts, on the other, progressively led to more homogenised housing solutions. This situation has remained unchanged over time, with a few exceptions within the scope of new state-subsidised housing programmes, which is not a coincidence. It is the case of the buildings designed by João Álvaro Rocha for the Special Rehousing Programme (*Programa Especial de Realojamento*, PER, 1993) in Maia and Matosinhos, in the Oporto Metropolitan Area (1995-2004), in which the dwellings include a room that can function as an extension both of the kitchen and the children’s room, and which may be considered a reinterpretation of the *stanza di lavoro*.

### Contemporary concerns within a broader perspective

Recent times have seen solutions for collective housing being awarded and critically acclaimed for the degree of flexibility and adaptability granted to the use of the dwelling. In our opinion, this is achieved through a strategy focusing on spaces that do not have a univocal interpretation, despite their fully controlled formal definition, which is embodied in works that reintroduce the notions of “lost space”, circulation and functional ambiguity into the discourse on housing.

Lacaton & Vassal’s intervention in three inhabited buildings in the Gran Parc district, Bordeaux (2014-2017), is an exemplary case of low-income housing rehabilitation. Contrary to the logic of demolishing to build again, their proposal was to enlarge the existing volumes with large, glazed balconies, built in light construction systems. Designed as winter gardens, these spaces increase the thermal and acoustic performance of the dwellings, as well as the useful area; they act as an extension of the living room, as an “all-purpose room” which can be transformed into a semi-exterior space (figure 7). They illustrate the authors’ concept of “free space”, which retrieves the premise of “lost space”: unlike that which is programmed, responding to rules, norms, and basic needs, “free space” is about vital freedom. Lacaton & Vassal consider housing standards to be too tight and restrictive, and the strict application of norms leads to homogenised dwelling types. Their approach is “to shake free from budgetary constraints, minimum-standard programmes, efficiency coefficients, urban regulations”<sup>24</sup>.

Lacaton & Vassal’s anti-functionalist point of view is emphasised in their assertion that the best housing unit is the one that offers “the same facilities as a house surrounded by a garden”, and that this model should be reinvented for urban contexts in order “to create very fine conditions for *habiter*”<sup>25</sup>. This demand is in tune with some social studies from the 1960s advocating the detached house to the detriment of the housing block<sup>26</sup>. The argument was that the detached house,

22 Arenga, Vitor *Figueiredo: fragmentos de um discurso*, 70.

23 With exceptions such as the Affordable Housing Cooperatives (whose greatest interest lies in the issues of participation, urban contextualisation and typological association) and the Special Rehousing Programme (PER).

24 Anne Lacaton and Jean-Philippe Vassal, *Lacaton & Vassal, free space, transformation, habiter* (Madrid/Barcelona: Fundación ICO/ Puente editores, 2021), 45.

25 *Ibid.*, 157, 59.

26 Henri Raymond et al., *L’Habitat Pavillonnaire* (Paris: Centre de Recherche d’ Urbanisme et Institute de Sociologie Urbaine, 1966).

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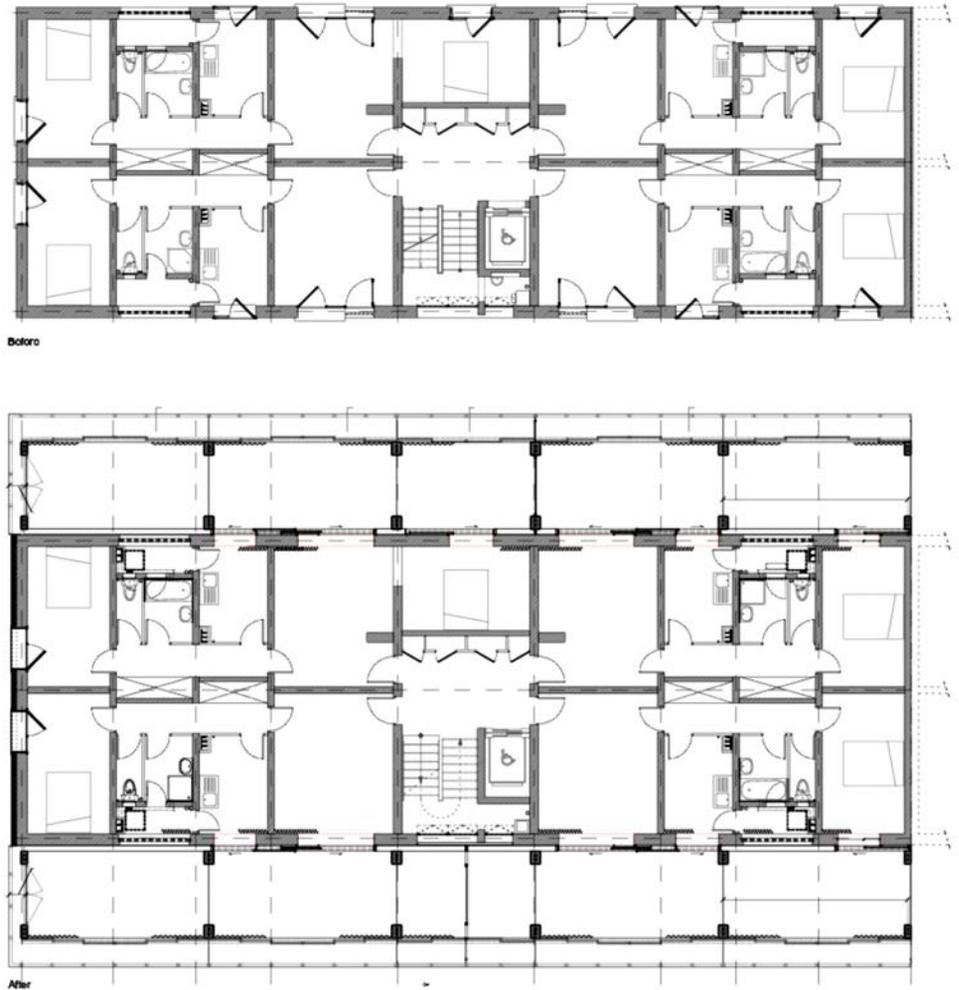
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Figure 7. *Quartier du Grand Parc*, floor G before and after transformation, Bordeaux, France, Lacaton & Vassal, 2014-2017 (partial plan).

with its fences, gardens and outbuildings, encouraged appropriation practices considered symptoms of a limited but real process of inhabiting (*habiter*). The notions of “free space” and “lost space” seek to recover this vital attitude for a context of density and scarcity, extending such practices. According to Pedro Vieira de Almeida the loss of the ability to appropriate space means the loss of the sense of an intrinsic, vital freedom and democracy.

The intervention by Lacaton & Vassal was based on the strategy of conserving the existing buildings without making relevant changes, “doubling” the area through the winter gardens. Although flexibility of use seems to have been successfully achieved<sup>27</sup>, it may be said that it is circumscribed to a part of the house (the extension), since the existing structure remained unchanged. Taking advantage of different commissioning circumstances, Sophie Delhay advanced a design strategy for Dijon’s Unité(s) (2017-2019) in which flexibility is meant to *animate the spirit of the whole house*, to pick up on the words of Vieira de Almeida. The base unit consists of five identical rooms arranged in a very rational layout in which the structural pillars are inserted in a 2:3 ratio grid. In the central part of the grid there is a room in a central position, displaced by an intelligent insertion of a small kitchenette and the bathroom. It is the most indeterminate part of the house: it functions as an extended entrance hall, as a dining area and also as a multifunctional *stanza di lavoro* and articulates the two frontage areas. An adjacent singular room —the exterior one— has an equally indeterminate function. The option of assigning the same configuration of the interior rooms to the outdoor living area is symptomatic of a tendency to re-evaluate its importance within the private sphere, a tendency that has been gaining traction in the post-pandemic period (figure 8).

27 See the photographic report that accompanies the publication of the rehabilitation works displaying different occupations by the users. See also: Josep Maria Montaner, “The legacy of collective modern housing”, *ZARCH* 5 (2015): 24-39.

At a structural level, this arrangement of the domestic space does not differ from what Figueiredo proposed in Chelas. Delhay’s design is more refined and rigorous in terms of spatial modulation and introduces substantial improvements (the



Figure 8. *Dijon's Unités*, Dijon, France, Sophie Delhay, 2017-2019.

exterior space) however, in essence, it is the same idea as functional ambiguity. The three main configurations presented by Delhay as possible forms of occupation do not necessarily correspond to three different user profiles; perhaps what these diagrams best illustrate is the possibility of changing the function of each room after a period of time - a rotation in the use of space deemed by Figueiredo as one of the advantages of “old houses” and a quality to be recovered in social housing. After all, by moving a set of armchairs and settees and exchanging them for a dining table or a bed, the household was taking an active role and enjoying a certain degree of freedom. It is not hard to imagine other types of reversible actions (glazing the outdoor living area or tearing down the partition wall between rooms in the opposite frontage) that foster adaptive reuse. The diagonal configuration of the family spaces, advanced by Delhay as an alternative to the *enfilade*, brings another issue dear to Figueiredo: the psychological feeling of relief, in this case provided by the diagonal connection that creates the illusion of a space that is larger than it actually is.

The idea of organising a residential building into a matrix of rooms of undifferentiated use and size was taken to the limit by Marta Peris and José Toral. The housing building in Cornellà de Llobregat (2017-2021) is an innovative wooden structure that houses 114 modules per floor and integrate the collective vertical accesses. The base unit is accessed through a private gallery positioned on the internal side of the central patio and consists of six modules. The central modules correspond to the kitchen, the dining area and a bathroom, as in Dijon's Unité(s), although Peris and Toral enhance the importance of the kitchen in the house (figure 9). According to the latter, “the open and inclusive kitchen is located in the central room, acting as a distribution piece that replaces corridors, while making domestic work visible and avoiding gender roles”<sup>28</sup>. This is an improvement compared to Figueiredo and Delhay's proposals, in which the kitchen plays a somewhat secondary role.

28 Marta Peris and José Toral, “85 viviendas sociales en Cornellà, 2021”, <https://peristoral.com/proyectos/85-viviendas-sociales-en-cornella> (consulted the 10 of October of 2023).

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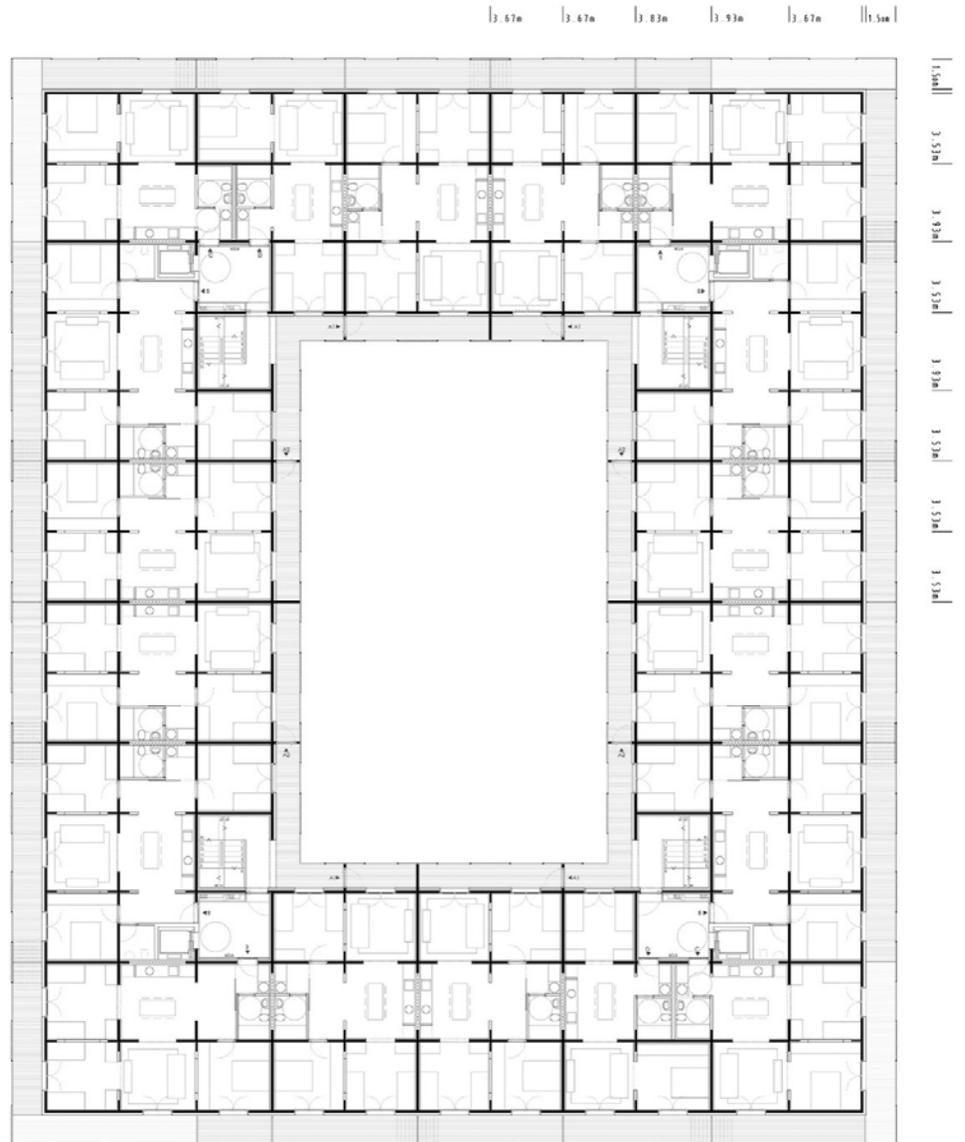
'Lost Space' Found:  
Reconsidering Functional Ambiguity  
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Figure 9. *Viviendas Sociales en Cornellà*, Barcelona, Spain, Marta Peris and José Toral, 2017-2021.

The form of occupation is equally left open to different interpretations and temporary arrangements. Given that the areas and proportions of the rooms are equivalent, the adjacent spaces are decisive: in Cornellà, the access gallery and the balcony facing the city define opposing conditions of privacy, views and solar orientation that help to differentiate the uses. The dual-orientation favours thermal regulation, while the two balconies foster continuous circulation: the sequence of balconies and modules suggests a “circuit” with a psychological effect of spatial expansion that revisits the concerns of Figueiredo, Portas, Costa Cabral et al. in the design of social housing in the 1960s.

These contemporary examples raise very pertinent questions regarding the conception of housing. What can be said about the current panorama in Portugal? Between 2020 and 2023, IHRU<sup>29</sup> launched twenty-six competitions for controlled cost housing, corresponding to a total of 2,816 dwellings. It is impossible, at the time of writing this paper, to have a consistent overview of the winning entries, most of which have not been built yet. In a cautious approach from which we do not intend to infer general trends, it may be said that some of these design proposals address the ambiguity of use in the dwelling. The winning entries by Fala, Experimental, and MassLab studios have a central distribution piece in common which, due to its size and relationship with the adjacent rooms, expands the uses of a conventional entrance area. It is inserted on a transverse axis (with dual-orientation and cross-ventilation) that reduces the segregation of day/night and adult/children areas and calls gender roles into question.

29 Institute of Housing and Urban Rehabilitation in the Portuguese acronym.

## Final notes

The cases studies analysed in the main sections of this paper are related to state-funded housing projects with very small areas and budgets. Although they belong to different periods and geographic contexts, a similar urge to introduce quality factors into highly controlled programmes can be detected in all of them. The work at the level of quality is the architect's specific contribution, using his own working tools and specific knowledge (which in no case means acting on his own). Our aim was to highlight very clear design strategies that embody some of the fundamental achievements of the 20th century – such as simple, modular building techniques (among which the Dom-ino system) and the separation between structure and infill (the “free plan”) – and likewise seek to surpass economic and technical constraints (legislation, safety, thermal optimization, etc.) to provide a better house.

The contemporary interventions in Bordeaux, Dijon and Cornellà achieve this by exploring, on the one hand, qualities in distribution spaces and semi-outdoor spaces, often considered secondary or “lost” areas. Whether due to resizing, strategic location, or adjacency, the balcony and the distribution hall have expanded possibilities of use. The hall can be a central room, equivalent to any other, the core of domestic life. Both are considered, simultaneously, as a servant and a served space, a familiar terminology rooted in the dichotomous conception of the bourgeois house. This dichotomy is now sought to be eliminated, along with the gender roles within the house and the segregation of night and day areas. On the other hand, even without the physical presence of the corridor, circulation and perspective expansion are reinterpreted and reincorporated as important psychological and well-being issues.

The attenuation of the hierarchy in the house is achieved through another design strategy, adopted by Delhay and Peris-Toral: a structural and spatial grid that defines a series of equivalent rooms without functional distinction. A neutrality that fosters functional indeterminacy, which in turn allows the domestic space to be more adaptive in the face of expected and unforeseen changes in use. While the “free plan” fostered this adaptability from self-build practices (albeit limited to a narrow scope), these proposals seem to depend less on the do-it-yourself logic, evoking pre-functionalist typologies in which uses changed over time without major physical changes.

These contemporary interventions call for a revalidation of the notions of “lost space”, “superfluous space”, circulation and functional ambiguity (or functional equivalence) in housing solutions. Indeed, such notions were explored, with greater or less theoretical consistency and practical accuracy, in another context – pre-democratic Portugal –, thereby leading us to believe that the answer to the great challenges of housing goes far beyond the proposal of new housing models. The fact that these challenges have existed throughout history needs to be fully acknowledged. Thus, the response to today's indisputably pressing problems gains depth when elaborated in the *longue durée* of the experience of modern housing construction in the 20th century and in the understanding of its foundations and logic.

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## Authorship

Conceptualization: TLD, RR, GL; Metodology: TLD; Validation: TLD, RR, GL; Research: TLD; Writting (original): TLD; Writting (revision and edition): TLD, RR, GL; Supervision: RR. The authors declare that there is no conflict of interests.

## Image Sources

Figure 1. Functionalism - apartment buildings in Copenhagen in the 1930s, Danish Architecture and Design Review (2017), <http://danishdesignreview.com/apartment/2017/1/13/functionalism-apartment-buildings-in-copenhagen?rq=Functionalis> (consulted the 10 of October of 2023).

Figure 2. Endry Van Velzen, "Tussen Traditie En Vernieuwing, Een Ensemble in Le Havre", *OverHolland* 13, 21 (2021): 195.

Figure 3. Olivais Norte, "Categoria II, projecto-tipo IIC", *Arquitectura* 81 (1964). Edited by the authors.

Figure 4. Vanda Maldonado, Pedro Namorado Borges, eds., *Vitor Figueiredo. Projectos e obras de habitação social 1960-1979* (Porto: Circo de Ideias, 2015), 44.

Figure 5. Viviendas economicas em Olivais-Sul. *Hogar y Arquitectura* 62 (1966): 35.

Figure 6. Vanda Maldonado, Namorado Borges, eds., *Vitor Figueiredo*, 208.

Figure 7. Lacaton & Vassal website, <https://www.lacatonvassal.com/index.php?idp=80> (consulted the 10 of October of 2023).

Figure 8. Christophe Hespel, "40 logement sociaux, Dijon: Sophie Delhay", *AMC* 281 (October 2019):10.

Figure 9. Peris and Toral website, <https://peristoral.com/proyectos/85-viviendas-sociales-en-cornella> (consulted the 10 of October of 2023).

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