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The standardization of projects of apartment buildings: notes on marketing, funding, and architecture

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Abstract

The aim of this article is to link certain funding rules of *Banco Nacional de Habitação-BNH* (National Housing Bank) to projects of apartment buildings constructed in São Paulo City with its financial support. During the period that BNH operated in Brazil (from 1964 to 1986), real estate entrepreneurs in the city connected project possibilities proposed in their ventures to legislative constraints imposed by BNH. These technical standards, resolutions, instructions, manuals, and so forth, determined how the general characteristics of the apartment building should be. As a result, this action contributed significantly to the standardization of spatial solutions of apartments. This article also identifies some of the interests of property developers, BNH, and architects, who somehow participated in this funding system of public housing.

Introduction

Recent research conducted at Nomads.usp - Center for Interactive Living Studies (QUEIROZ, 2008; TRAMONTANO, 2004; PINHO, 2004; VILLA, 2002) has shown that there are fewer architects and more real estate entrepreneurs every day, i.e., those who determine the project of apartments offered to São Paulo City consumers. An indication of this situation is the absence of author names of architectural projects in advertising campaigns to market apartment buildings. Author names are rarely mentioned, with the exception of projects in which renowned architects participate and lend their prestige to the venture. As regards property development, few significant changes in the configuration of housing units of apartments occurred during the last three decades of the twentieth century. A preliminary empirical verification is sufficient to indicate that changes are confined primarily to the introduction of façade details and materials, without making any adaptations that could bring them closer to the social and behavioral transformations that Brazilian society has undergone.

The funding system organized around *Banco Nacional de Habitação*-BNH (National Housing Bank) has conditioned apartment production in São Paulo since 1964, especially after 1968, when BNH was restructured on a sounder administrative and financial basis. This system indicated how real estate entrepreneurs were to operate and, consequently, how the final product should be. BNH issued rules, instructions, manuals, and resolutions that restricted features of buildings. These rules brought significant constraints to architectural design and resulted in the consolidation of a standardized floor plan. Important architects, who in different ways had previously participated in the conception of buildings from the early twentieth century onward, would no longer participate in this production because of difficulties and limitations imposed by BNH. By delimiting the project characteristics according to its own interests, BNH contributed to the spatial standardization of apartments, which is an important research finding.

This study assumes that the design of apartments became standardized. The floor plan of housing units underwent a process that standardized the solution adopted by most buildings. Its general characteristics were:

- Three areas, separated according to their use: Social area: social entrance, living room, dining room, sitting room, and the like; Private area: living rooms, suites, bathrooms, hallway; Service area: laundry room, kitchen, bathroom and bedroom of employees, service entrance;
- A list of activities was predicted for certain rooms by the housing program;
- The existence of mono-functional rooms;
- Hierarchical arrangement of rooms. Distinction between social entrance and service entrance; from the former, the living and dining rooms and kitchen could be accessed; from the living and dining rooms, the hallway could be accessed; from the hallway, the

bedrooms and bathrooms could be accessed; from the kitchen, the service area could be accessed; from the service area, the bedroom and bathroom of domestic employees and service entrance could be accessed;

- Employment of hallways as a circulation solution;
- Distinction between social entrance and service entrance.

Although this floor plan might present changes according to the apartment size, social class, targeted buyers, epoch, and so on, its general diagram, as shown in the figure below, appears in some apartments of the 1920s, in a good part of apartments in the 1930s and 1940s, in most apartments in the 1950s and 1960s, and in virtually all apartments from the 1970s onward. Apart from the 1910s, when a floor plan based on colonial houses predominated, in all remaining decades there are apartments with all or most of the features on the above list.

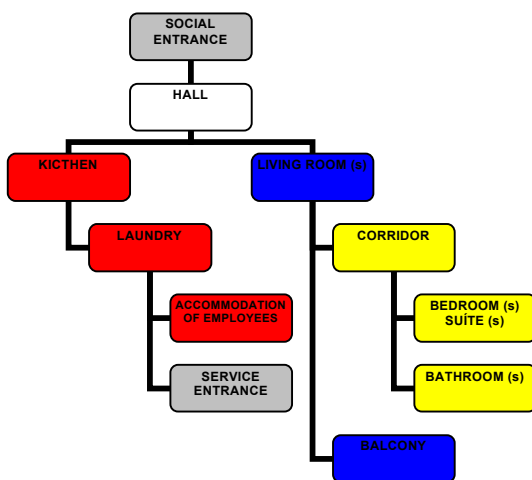


Figure 1: General diagram of standardization of a housing unit floor plan of an apartment building (Source: author, 2010).

Spatial standardization is also visible outside the housing unit, on the type floor. The solution frequently found, which has become part of most projects from the 1970s onward, was to implement four housing units per floor with centered, vertical, and horizontal circulation, as shown in the diagram below. Standardization may also be understood differently from what has been presented here. There is indication that frames were also standardized, as well as façade elements, finishing details, materials employed, and so forth. In spite of that, this essay will only focus on the spatial aspects of standardization.

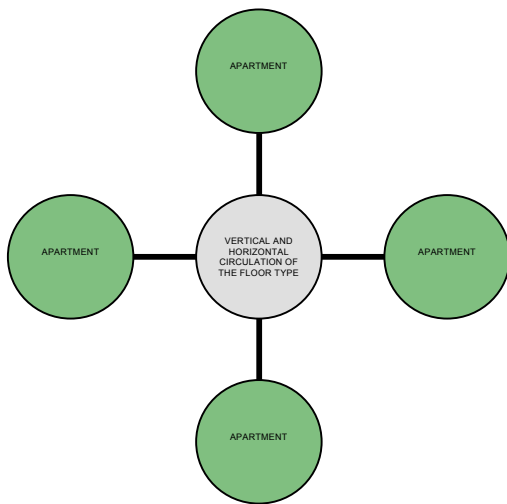


Figure 2: Schematic floor-type plan of São Paulo apartments (Source: author, 2010).

The creation of a funding model: BNH and its actions

The housing production funded by *Banco Nacional de Habitação*-BNH (National Housing Bank) was extensive. According to data presented by Taschner (1991), 3.2 million housing units intended for middle and upper class families were built. As the Brazilian government, especially by means of *Companhias de Habitação Popular*-COHABs (Social Housing Companies) and cooperatives, funded housing production to meet social demands, it may be concluded that these 3 million housing units were built by private enterprises. The annual average during the twenty-two years of BNH existence, almost 150,000 housing units were built for the middle and upper classes. If we consider that many of them were built during the five years of the so-called "economic miracle" (from 1968 to 1973), a period of great economic development with positive repercussions on the construction industry, this production becomes even more significant. It can be said that the number of BNH-funded housing units produced by private companies was numerically superior to that of housing units intended for the lower classes produced by the government. For example, due to its size and materials employed, a housing unit built for the middle or upper classes was much costlier than that built to meet social demands because of the diminutive size of the latter and its use of less sophisticated materials. This fact distorts even further the destination of BNH resources.

There is evidence¹ that only after 1964 did the purchase of housing units in apartment buildings become popular and that before then most of them were still rented. BNH is believed to have popularized the purchase of apartments by means of several funding alternatives

¹ In the 1940s, 1950s, and beginning of the 1960s, resources for the purchase of apartments in São Paulo were limited. The payment deadline was short, usually restricted to the time that construction work lasted. As the number of installments was reduced, the monthly values were high. It is probably that only a few people with sufficient income bought apartments through this system. Moreover, the number of apartments built was considerable. So, there remains a question as to how these housing units were occupied: Through purchase or rent?

offered to consumers, with up to 20-year mortgages. In addition to popularizing the purchase of housing units, the government influenced the housing construction market, which had become increasingly professionalized since the 1940s. According to Lago and Ribeiro (1996), this is precisely when the shaky figure of the developer was consolidated, whose practice had been constrained until then by the lack of a mechanism capable of centralizing savings for the purpose of funding construction projects. During the existence of BNH,

“the built space of Brazil’s larger cities is transformed under the impact of construction of a large number of apartment buildings. Some existing construction companies undergo extraordinary growth and many others are established.” (LAGO; RIBEIRO, 1996, p. 136)

At the time, real estate entrepreneurs began to adapt construction and project possibilities to funding restrictions imposed by BNH. The study of Leite (2006) shows how some developers, e.g., the construction company Hindi, entered the competitive real estate market, which was being reorganized.² Hindi used to adopt strategies to increase its efficiency, based on an “extremely rationalized project and detailed implementation, which allowed the reduction of construction time and cost,” which was a deliberate option to serve the governmental housing funding system (LEITE, 2006, p. 136). When Hindi projects are compared to numerous other projects from the 1970s, carried out by other major developers (e.g., Lindenberg, Sobloco, Paulo Boghosian, and Cury), most of the projects appear to have similar solutions. It is assumed that this was “the” way found to suit project principles to the system norms. This example as well as the analysis of the funding norms employed by BNH suggest some characteristics of enterprises that received BNH’s financial support:

- The need for typologies of adequate floor plans to get BNH’s approval;
- From this observation, the existence of spatial solutions that, regardless of their qualities, would be inadequate and could not be implemented. At least not with BNH’s financial support of;
- Hindi found in this standardized floor plan “a way to entering” the system;
- Hindi’s solution was also adopted by other developers of the time.

² The numbers are considerable: over 130 buildings built, over 6,000 apartments, 80% of which in São Paulo. It served the middle class housing market by producing apartments with two, three, and four bedrooms, with four housing units per floor. This type of implementation of housing units in the floor-type in addition to the number of buildings built, as mentioned by Leite (2006), indicate that the average building was tall: eleven, twelve floors.

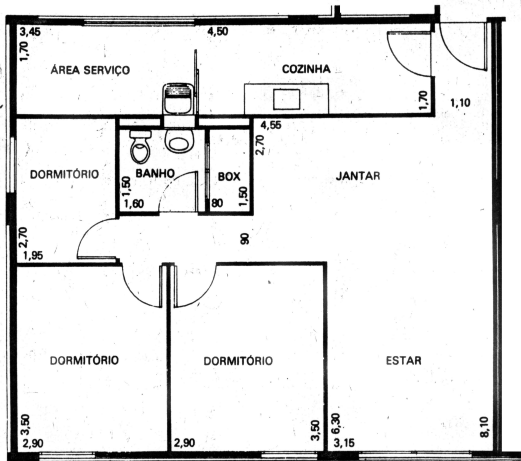


Figure 3: Floor plan of building constructed by Hindi in 1982 in Jabaquara, São Paulo, by unknown author (Source: *Folha de São Paulo*. In APARTAMENTOS database – Nomads.usp).

Sobloco is another company cited by Leite (2006). According to its owner, Luiz Carlos Pereira de Almeida, his company entered housing production when he realized that the government intended to foster the development of this market. To Almeida, the product was defined by maximizing its cost-benefit, i.e., by taking the most advantage of the lot and constructing without architectural sophistication: "We chose to have an in-company architect as solutions proposed by architecture offices used to be too expensive and superfluous" (LEITE, 2006, p. 161). Apparently, what the owner of this large construction company is trying to convey is that architects working for the company were more suitable for the production of profitable projects, and the opposite: that self-employed architects or architecture offices used to submit expensive proposals. The company owner does not qualify the two projects, only distinguishes them as more or less profitable, in his company's best interests. Therefore, architects employed by real estate entrepreneurs were more susceptible to their superiors' orders. In this case, the resulting product was much closer to market interests of developers than aesthetic and functional predilections of architects. It is possible to imagine that architects working for property developers had little freedom to design projects. On the other hand, it seems that self-employed architects and architecture offices stood little chance of being commissioned to design a building, according to developers like Luiz Carlos Pereira de Almeida.

As regards the 1962-1976 housing production in Belo Horizonte, Passos (1998) claims that this was a period when settlement models were established, models with architectural design and material standards that favored the replication of economically viable forms. According to the author, BNH-funded production contributed to an increase in the number and size of buildings and, as a result, "the implementation of large-scale production processes, based on the standardization of elements and construction procedures" (PASSOS, 1998, p. 120).

Although the capital of Minas Gerais State, Belo Horizonte, is not included in the geographical scope of this article, it is interesting to find similarities between strategies employed by its construction companies and those adopted by São Paulo companies: replication of

economically viable forms, standard models, and so forth, besides the link between the product configuration and BNH's funding requirements. In Passos' study (1998), it is possible to find several floor plans of apartments built in Belo Horizonte at the time. Most of them follow the same spatial standardization of São Paulo apartments. The funding agency was the same, so funding conditions and norms were also the same, i.e., in spite of their being in different cities in different states, their formal and spatial results were the same. Hence, the use of this model floor plan must have been an excellent alternative for access to credit. The author also emphasizes that the standardization of internal spaces of apartments and the design of façades indicating technological indexes, through the use of exposed concrete structures or in recurring compositions, in which it is possible to identify "the typical production and consumption features of architectural objects during this period" (PASSOS, 1998, p. 120).

The manner of operation of BNH

In addition to compulsory savings via *Fundo de Garantia por Tempo de Serviço*-FGTS (Working Time Count Guarantee Fund), the government had to raise funds by means of voluntary savings, within *Sistema Brasileiro de Poupança e Empréstimo*-SBPE (Brazilian Savings and Loans System). BNH also controlled SBPE by advancing rules and supporting the agencies that comprised the system (BORGES, VASCONCELLOS, 1973). By imposing rules for obtaining resources, it determined the kind of productive activity that could be carried out by real estate entrepreneurs. SBPE was basically structured into three main institutions: *Caixas Econômicas* (Federal and State Savings Banks), *Sociedades de Crédito Imobiliário* (Property Loan Societies), and *Associações de Poupança e Empréstimo* (Savings and Loans Associations).

Prior to 1964, some of the leading property developers constructed their housing units with their own resources or with the financial support of the apartment buyers themselves. From the creation of BNH onward, the production mode changed. The government was now responsible for housing loans. The focus of real estate entrepreneurs was no longer to make housing units viable, but to adapt them to constraints posed by the new system.

In the same direction, the government funded housing for buyers and payment deadlines were longer. This long period to pay off debts enabled the values of installments to be smaller. Moreover, the decrease in construction costs by means of construction and space standardization became a goal for entrepreneurs. The manpower employed was less qualified and cheaper and basically composed of migrants from other regions of the country. All these factors contributed to reducing the overall cost of apartment buildings. Cheaper buildings, hastily constructed in large scales in regions distant from the city center may have been consumed by an increasing fraction of the population: more families living in buildings, people with lower incomes. At last the purchase of residential apartments was within the financial reach of a significant number of city dwellers.

From the 1960s onward, housing production focused more on quantitative aspects, since the number of housing units built was much larger than before. Provided that funding, administration, construction, and project conditions established by BNH were met, developers had unlimited access to capital to invest in apartment buildings. In this sense, projects submitted began to repeat proposals, and the architect became, well, just another agent conceiving their proposals. The scale was different, and the project development process also changed.

Much of the funding via SBPE came from capital accumulation in savings accounts of banking institutions pertaining to the funding system, such as the *Sociedades de Crédito Imobiliário* (Property Credit Societies). Some funding came directly from BNH. Financial transactions that resulted in credit for housing production were primarily aimed at the middle and upper classes. The government, in this case, did not produce housing. Sometimes it did not fund it either, but every transaction had to follow BNH regulations, which verticalized decisions on funding methods and conditions for approval of projects that would have credit for their completion.

This entire system of access to capital for investment in construction influenced Brazilian economy for decades. For example, according to a World Bank report, the average growth rate of Brazil's construction industry was 9.9% in the 1970s alone (SOUZA, 1994). However, data presented by the architect Erminia Maricato (1983) specifically for the years 1968 to 1973, during the so-called "economic miracle," show a 10.9% growth in the sector. According to these indices, the increase during the "miracle years", as compared to the decade average, would be only one percentage point, indicating that this industry underwent significant growth. This 10% increase shows that the industry had doubled its production at the end of just one decade. This growth coincides with the expansion of credit offered by SBPE and the crisis in the stock market, thus making investment in property more attractive.

This money ended up supporting the production of apartment buildings for the middle and upper classes, distorting the initial investment purpose, i.e., investment in the poorest strata of the population (AZEVEDO, 1996). The property developers were the ones benefiting from and misappropriating this capital. The idea was that each investment should bring a return on the capital employed so as to increase the production capacity of the housing construction sector. In the beginning, BNH produced by means of *Plano de Habitação Popular-PLANHAP* (Social Housing Plan) over 300,000 housing units for low-income families, but it lost its momentum over time, one of the reasons being the high volume of late payment of installments. The actual value loss of the minimum wage, which was 30% in the 1960s, was one of the reasons for borrowers' difficulty in honoring their debts (AZEVEDO, 1996). The government then began to prioritize income ranges in which insolvency was lower; thus, the production of social housing lost ground. According to real estate entrepreneurs, over 90% of apartment buildings at the time were funded by *Sistema Financeiro de Habitação-SFH* (Housing Financial System), thus explaining the success of this system. BNH turned its back on "the lower income sectors of the population and (...) [viewed] housing as a commodity to be

produced and marketed in a strictly capitalist mode” (MARICATO, 1983, p. 83). Considering the cost of social housing, which is much lower than that intended for more affluent social classes, the distortion in investment decisions is even greater.

Configuration of a project approval and standardization procedure

BNH’s rules for projects funded via SFH were not restricted to agencies, departments, and institutions directly connected to it. Developed by *Fundação Prefeito Faria Lima* (Mayor Faria Lima Foundation) in partnership with BNH’s research department and with its support, guidelines were developed to control the work carried out by local authorities. Their objective was to provide subsidies for the elaboration of specific legislation regulating the construction of buildings and housing developments (BNH; FUNDAÇÃO FARIA LIMA, n.d.).

With regard to the spaces within a given apartment, the guidelines stated that the uses within the housing unit would be resolved through functionally-specific rooms. For this reason, funding of projects that provided opportunities for space integration (common in modern apartments from the 1940s and 1950s) would not be approved under this rule. One example is the apartment designed by Jacques Pilon (Fig. 4) in 1941, at Praça da República, São Paulo, in which all spaces are integrated: the living room is separated from the bedroom by a small retractable partition, and the bedroom is separated from the balcony by a large glass door, which, when open, fully integrates both spaces, and the kitchen is connected to the living room, implying the possibility of making meals on a bench located on the axis that divides the two spaces.

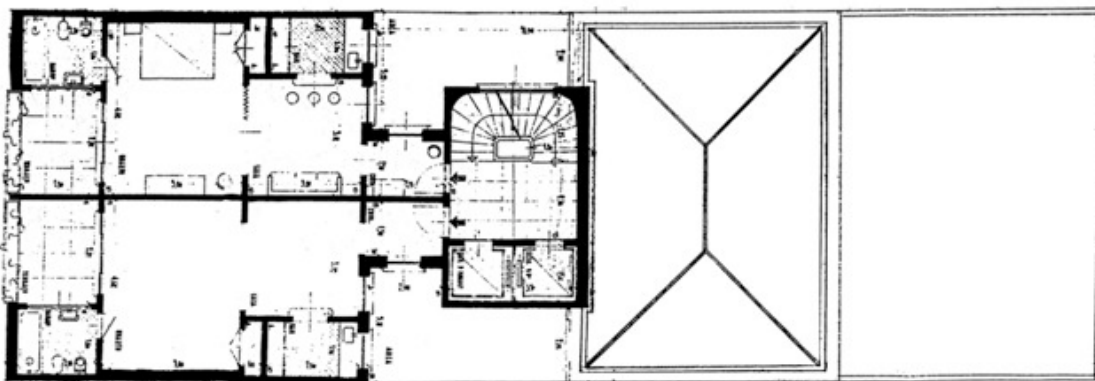


Figure 4: Apartment floor plan of a building designed by Jacques Pilon in 1941 (Source: FAU-USP archives. In APARTAMENTOS database – Nomads.usp).

The issues addressed in this study were not restricted to apartments, but also determined the organization and uses of collective spaces of buildings. For example, BNH recommended that offices could only be connected to a residential complex if there were independent access to public streets. In the 1950s, several buildings were built with great diversity of uses within

them: in addition to housing units, shops and service providers were located on the ground or first floor. Some of them do not have independent access to public places, such as Rangel Pestana Bldg., designed by Carlos Lemos on a street of the same name in São Paulo in 1956 (Fig. 5). Four stores were designed on the ground floor, and two of them are accessed through the same hallway that residents use to reach elevators leading to the upper floors. The entrance on the street serves both purposes - residential and commercial. If Lemos had designed this building in the 1970s, with BNH funding, its ground floor would have required another solution. In other words, modern ideas of multiple-use buildings, like Le Corbusier's housing unit, would not receive funding. Another example is a project undertaken by Gregori Warchavchik on Rua Araujo, São Paulo, in 1947 (Fig. 6). Each of its housing units is divided into two related parts: home and work. The home nucleus is composed of interconnected living room and bedrooms, a bathroom, a kitchen, and a laundry area. The work nucleus consists of one management room, a multi-purpose room, a reception lounge, a bathroom, and a terrace. In the floor hallway, each nucleus is independently accessed, but inside the housing unit they interconnect to form a house-office. Was it a commercial building with housing in the back or a residential building with a work area? The multi-purpose room faces the street. At any rate, this floor plan solution would not have been approved by BNH.

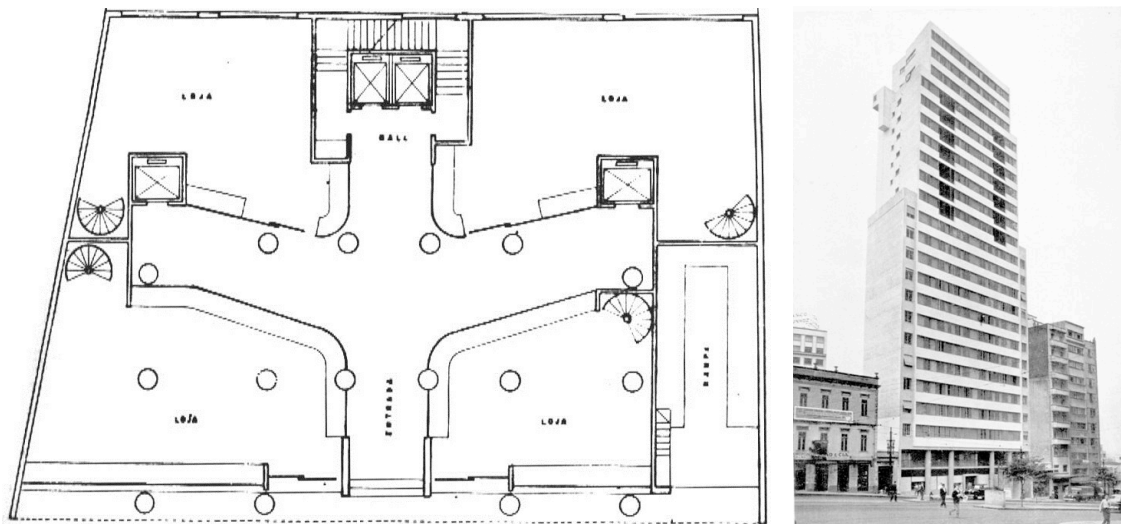


Figure 5: Floor plan and photograph of Rangel Pestana Bldg., designed by Carlos Lemos on the street of the same name in São Paulo in 1956 (Source: Acrópole, n. 211, 1956. In APARTAMENTOS database - Nomads.usp).

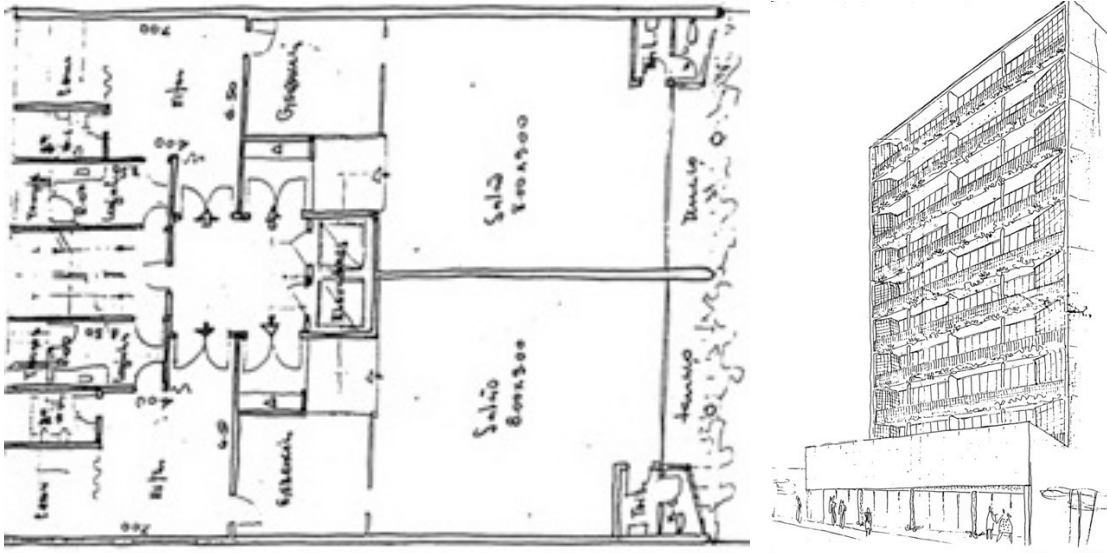


Figure 6: Floor plan and perspective view of building designed by Gregori Warchavchik on Rua Araujo, São Paulo, in 1947 (Source: FAU-USP archives. In APARTAMENTOS database – Nomads.usp).

COE-CHP 1-68, another regulatory norm addressing aspects of collective areas of buildings, called for the construction of a wall at least one meter high at the front of lots where isolated housing units would be built. The norm also describes the possibility of using fences, but specifies that “there must be employed five strands of wire and concrete fence posts no more than two meters apart from each another” (BNH, 1968, p. 1). Until then, buildings integrated in different ways into the urban space did not use to have boundary walls at the front of their lots. This permeability favored the use of the ground floor of buildings, under their pillars or in their side yards. These areas would contain rich landscaping and furniture, e.g., outdoor sitting benches, suggesting the use of spaces located between the public space of a street and the private housing space. Examples of this type of solution are Lugano and Locarno Bldgs. designed by Franz Heep on Avenida Higienópolis, São Paulo, in 1962 (Fig. 7), which have a plaza between them. Today, there is a fence closing the lot and preventing its use by non-residents. Due to this BNH norm and in its interest, this type of solution was outlawed.



Figure 7: Photographs of Lugano and Locarno Bldgs. Designed by Franz Heep on Avenida Higienópolis, São Paulo, in 1962 (Source: author, 2009).

The designs studied for this research indicate the recurrence of a model that was used in the design of almost all buildings surveyed from the 1970s onward. These features can also be identified from the systematization carried out by Queiroz and Tramontano (2009) on the constitution of São Paulo apartments:

- Division of floor plans into functionally specific rooms as an strategy to organize the use of spaces;
- Existence of a hierarchical order among spaces; floor plans display the same sequence in space arrangement;
- Tripartition housing, with grouping of rooms into social, private, and service areas;
- Rooms articulated by hallways adopted as circulation devices;
- Existence of a hierarchical relation between circulations as well, separated according to their use by householders and domestic employees, which encompassed collective spaces of buildings.

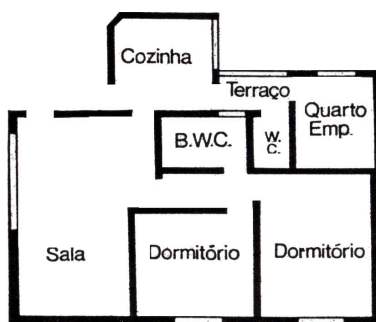


Figure 8: Example of floor plan with the aforementioned standardized features: apartment building by unknown author constructed by Planorte Construtora e Comercial on Rua Santa Cruz, Vila Mariana, São Paulo (Source: Folha de São Paulo, 1972. In APARTAMENTOS database – Nomads.usp).

These five features found in apartment floor plans seem to have been also recommended by BNH technicians as good spatial solutions for housing projects. For example, considering the limitations and differences of housing typologies, built areas, different locations, and destinations for other social classes, three projects developed by BNH are presented (Fig. 9), which indicate ideal features that floor plans should have. They have the same structure listed for apartments.

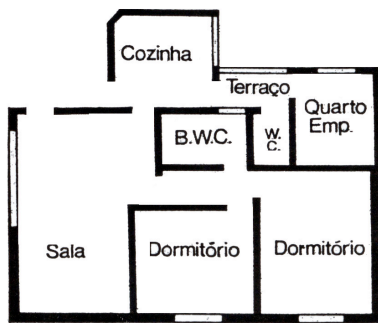


Figure 9: Floor plans proposed by BNH (BHH, n.d.) for three hypothetical, ideal housing units.

Conclusions

BNH structured private housing construction on an unprecedented scale. Many government bodies and agencies were created with the purpose of conducting the developments in order to subsequently convert BNH financial support into profit for real estate entrepreneurs, who would then have no trouble returning borrowed capital. As stated by their own CEOs, their management prioritized quantitative aspects in order to complete a significant number of housing units. According to them, two Brazilian problems were to be solved by means of BNH's actions: housing shortage and unemployment. The construction industry capacity was then strengthened. The property developers did no longer invest their own resources in the construction of buildings; nor could they: data collected by this study suggest that entrepreneurs from previous years would be unable to produce on the scale observed in the 1960s and 1970s. Until the 1950s, the number of apartment buildings built was comparatively low; they were located only in downtown areas and areas of major urban expansion and were intended for higher income classes due to limited funding. After 1964, the number of housing units produced increased considerably, now located in various regions of the city and in suburbs far from the city center; funding increased significantly, and so did payment deadlines, thus reducing the value of each installment.

Funding was now carried out by an agency outside the production process: the government. Construction companies, which had previously prioritized fundraising and opted for building "low-cost condominiums," were now concerned about their products meeting the funding

restraints imposed by BNH. From that moment onwards, virtually all buildings were financed by BNH, which would only approve projects whose features closely abided by its rules. This was accomplished in several ways: study, survey and analysis of market conditions, norms, guidelines, manuals, and so on. Finally, they were institutionalized by means of resolutions, instructions, recommendations, and laws. In general, it is possible to notice that the purpose of these rules was to make projects feasible from a financial standpoint, especially when the housing units were marketed. Unsold housing units would compromise corporate profits, which would in turn delay payment, or cause insolvency, of property developers. Without this revenue, BNH would be unable to reinvest capital into other projects. Less investment would reduce the number of housing units produced and, consequently, slow down the achievement of its original goal, i.e., to reduce the existing housing deficit and create jobs.

BNH's guidelines and procedures for project approval indicate that it was important to standardize the spatial solutions of projects. A traditional floor plan was supposed to promote greater acceptance amongst the general public and, consequently, a faster sale of housing units. These rules interfered with the definition of the spatial structure of housing units, with the way the building was placed on the lot, with construction techniques, finishing materials, built areas, and so forth. Since there were no other funding agencies equivalent to BNH, real estate entrepreneurs were forced to participate in this system if they were to get financial support to construct buildings. Ultimately, property developers ended up following BNH's norms to the letter, thus promoting the standardization of the project.

The paradox of this system is precisely that the design, which indubitably underwent aesthetic and spatial impoverishment during this period, became the key element in the approval of its funding.

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