II.4 *Radieuse Peripheries: A comparative study on middle-class housing in Luanda, Lisbon and Macao*

Building the periphery of the Portuguese and colonial city

Between the 1960s and 1980s Luanda, Lisbon and Macao saw the emergence of a number of residential complexes that had a shared matrix: privately developed high-rise buildings aimed at the middle-classes and located on the periphery. The three cities had different urban histories, even if they were united by the common denominator of being under Portuguese political and administrative control. Lisbon was a European capital made up of successive strata and occupation phases with ancient and mediaeval predecessors. Luanda was an old outpost on the west coast of Southern Africa that gradually took on the status of main city in Angola in the course of the 19th century and, in 1960, was in an ongoing process of rapid population growth and was expanding through its many areas of informal occupation. And Macao, an Asian city within the confines of a peninsula and the boundaries that separated it from continental China, was in a process of self-renewal and permanent reutilisation of the space, with the urban transformation processes being characterised by a speed that set it apart from the conventional European city. It is in this context of diversity of backgrounds and conditions that an analysis of these residential complexes takes on particular importance, by applying residential models with a common urban, architectural and social matrix.
This article stems from a wider research project on the “Homes for the biggest number: Lisbon, Luanda, Macao” and its main intent is to analyze the residential models that were applied in the construction of the peripheries of cities of a Portuguese background from the 1960s onwards, focusing on the role held by middle-class housing in the processes of development of these urban sectors in Portugal, colonial Africa and China.

The project focuses in particular on the production of privately developed mass housing, with one of the objectives being to identify some of the urban planning and architectural schemes featured in the models that were replicated throughout the various urban territories.

The theme of middle-class housing was until now maintained in oblivion, since Portuguese studies on housing had long since favoured the theme of high class single-family houses and on the other extreme the social housing for the low-income families. Only recently some attention has been pointed to the specific phenomena of middle-class housing in Lisbon, while former Portuguese’s African and Asian territories had only occasional mentions.

The time arc extends until the mid-1980s, taking in a key period in Portuguese history: the revolution of April 1974, a political development that still has significant repercussions in contemporary Portugal and marked the end of the dictatorship and the beginning of the decolonisation processes. The impacts of this event were also reflected in the very significant changes that these three cities’ different societies of the three cities underwent. In the Portuguese case, Lisbon welcomed an estimated 138,000 new citizens returning from the former African colonies. In Luanda, the urban space and housing previously occupied by the colonists were taken over by local population groups. The Civil War that followed independence and was to last until 2002, led to a wave of migration to the Angolan capital, which grew from 600,000

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1. “Homes for the Biggest Number: Lisbon, Luanda, Macao”, research project coordinated by Ana V. Milheiro and funded by the FCT (PTDC/ATP-AQI/3707/2012).
inhabitants in 1974 to 2,500,000 in 2000. In Macao, the granting of
gaming licences in 1961 led to ever growing migration flows from
mainland China, the migrants being attracted by the new economic
activities (leisure and tourism), and giving rise to a growing housing
problem. In 1999, the year in which the Macao Special Administrative
Region was created, the population was estimated at 430,500, of which
23,621 were foreigners with residence permits.

The three cases analysed herein (Neighbourhood Unit no.1 in the
Prenda district, Luanda; the Portela development in Lisbon; and the
housing block for rehousing developed by Sociedade de Turismo e
Diversão de Macao) take on particular importance because of several
reasons: the influence each one had on the development of a replicable
model, one that could be reproduced elsewhere, which was indeed to
take place, with the construction of many similar complexes3; their
considerable size; the high population density they introduced into their
respective urban contexts at the time; and the distinctive architectural
quality they showed. These characteristics distinguished these devel-
opments from the urban forms that had been built previously in their
respective cities.

Their architects (Fernão Lopes Simões de Carvalho, Fernando Sil-
va and Manuel Vicente), whilst they had pursued different professional
careers, shared ample experience in acting as coordinators between the
public powers and private developers, thanks to previous projects that
united these not always easily compatible interests. Their experience
came not only from the construction of facilities but also from their
housing projects. The three architects had previously been responsible
for designing important residential complexes in Lisbon, Luanda and
Macao, where they frequently worked. Despite this shared background,
the three designers were separated by significant generational differenc-
es, with their work reflecting different understandings of the city and
housing, as we will see further on4.

3 B. Ferreira, *informar a Cidade Contemporânea: a criação de uma imagem/
modelo de periferia com a obra do arquitecto Fernando Silva* [Master thesis],
4 A. V. Milheiro, “Simões de Carvalho, o arquitecto de Béton Brut”, *JA – Jornal
Movimento Moderno em Luanda (1950–1976)* [Master thesis], São Paulo, FAU-
The conditions under which each of these projects were designed and built were also very different, giving an insight into the work conditions that prevailed in each of the regions at the time – at the design level and also in terms of the urban planning and construction.

In Luanda, the urban development plan for the Prenda District, Neighbourhood Unit no.1, was drawn up by the city’s Planning Office in 1963. At the time, Luanda was entering a phase of strong population growth, going from 189,500 inhabitants in 1960 to 475,318 in 1970\(^5\), a growth rate that ranges between 200 and 250\% per decade and has continued until today (5,500,000 inhabitants in 2010). One consequence of this increase was the need to build new housing. This development ran concurrent to the war of independence (1961–1974), leading to considerable public and private investment in the former Portuguese colony\(^6\).

The high demand for private investment in the city was initially stifled by the lack of a planning instrument that regulated new construction, a gap that the establishment of the Luanda Planning Office sought to fill.

The office benefited from the presence in the city of Fernão Lopes Simões de Carvalho, who had specialised in urbanism at the Sorbonne during a four year period in Paris. Whilst there, he interned at André Wogenscky’s atelier, a satellite to Le Corbusier’s firm. His time in Paris allowed the young Portuguese architect, who had graduated in Lisbon in 1955, to become well acquainted with the urban practices and housing solutions of the French-Swiss master, a learning experience that was reflected in the residential buildings he was to design later in colonial Angola, both on his own or in partnership with other architects\(^7\).

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The Prenda neighbourhood was part of a strategy of urban expansion southwards that was designed by Simões de Carvalho himself when he worked for Luanda City Council. The aim was to incentivize private developers to exchange small inner-city plots of land for parcels of municipal land with greater development potential on the periphery, with the urban plans for the parcels being developed by the council. Each developer, or group of developers, was then responsible for hiring the architects, who drew up their architectural designs based on the respective urban plans.

As a member of the architectural design team working on the Prenda project, Simões de Carvalho sought to demonstrate what the future growth of Luanda should look like and also consolidate modern architecture as the image of these new residential areas. The new housing project was to consist of 28 slab and point blocks, a total of 1,150 apartments for a population of 3,300 residents occupying an area of 30 hectares. However, not all the residential structures were actually built and the whole facility programme was abandoned. The construction of the Prenda neighbourhood was interrupted by the Angolan independence process and the whole complex was never completed.

The apartments in the slab and point blocks were occupied above all by middle-class European families during the colonial period. This was the same population group that was to mostly abandon Luanda during the de-colonisation and independence process, returning to Portugal between 1974 and 1976, leaving the apartments vacant. They were part of a wave of colonists returning to the Metrópole that was, curiously enough, to constitute an important part of the residents of Lisbon’s periphery and the Portela development. After being abandoned, Prenda became a densely occupied neighbourhood, a reality on which the ongoing research into the current residents will no doubt unearth new information as to the processes of occupation and substitution in the complex in the post-colonial period.


9 Only 19 housing blocks were completed, while in three others only the concrete structure was built and then occupied and transformed by inhabitants.
In addition to the Prenda neighbourhood, the research in course also made it possible to identify some 14 plans developed by the Luanda Planning Office, some of which were similar to Prenda, even though they did not reach an advanced state of realisation. Today these slab and point blocks are visible in the south and southwest of the city, revealing the same modern affiliation as Prenda, albeit without its design quality\(^\text{10}\) (fig. 1).

Since then, the informal city – known locally as the *musseque* – expanded considerably, surrounding these buildings that had set out to change the periphery of colonial Luanda. In the Prenda district, the *musseque* is an extremely strong presence due to the fact that it predates the modern

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structures and has enveloped them and occupied the interstices between them. To some extent it was the informal structures built by the indigenous population that ended up occupying the voids of the areas reserved for facilities, fulfilling, at least in part, a socialisation function that the neighbourhood had been deprived of because it hadn’t been finished. Despite these vicissitudes, it is still possible to see Prenda as a model that met some of the aspirations of colonial society in terms of the building of new urban frontiers between 1961 – the year the colonial war in this future independent African country commenced – and 1974, the year it gained independence.

A similar process was outlined with Portela de Sacavém development project in the Lisbon Metropolitan Area (AML). The lack of quality housing for the middle-classes in the centre of the Portuguese capital rendered occupation of land pockets along the city’s northern periphery a necessity. A number of factors contributed to this process – from private property speculation to the definition of new metropolitan strategies in the form of Lisbon Region Master Plan (1964)\textsuperscript{11} and the fact that the city was hemmed in by the River Tagus to the south (it was only in 1966 that the 25\textsuperscript{th} April Bridge was opened and it remained the only connection to the southern bank until 1998).

This situation made the northern periphery the natural and preferred place for urban expansion devoted to the middle-classes, with a number of old rural land parcels being transformed into plots for future development. This was precisely the case in Portela, with land from the Vitória, Casquilho, Ferro, Carmo and Alegria farm estates in the parish of Sacavém being acquired for construction of the Portela development. Here, the initiative – both for the initial acquisitions and the design and construction – came from the private sector, with the developer Manuel da Mota commissioning the urban plan and

\textsuperscript{11} B. Ferreira, \textit{Plano Director da Região de Lisboa – o primeiro instrumento de planeamento territorial para a Área Metropolitana de Lisboa. Quando as acções do GPDRL transformaram o urbanismo numa disciplina burocrática e operacional}, AEULP, 2014. In the Lisbon Region Master Plan was foreseen an increase of 352,000 new dwellings from 1964 to 1985.
architectural design of the buildings. Beyond what had been outlined in the municipal and metropolitan strategies, there was no state participation.

In terms of prior experience, Fernando Silva brought to the Portela de Sacavém development significant know-how in building housing for the middle and upper classes in the traditional urban context. The Portela project was, however, about building a new urbanity, taking inspiration in the models that had emerged in cities across Europe in a wave of late post-war reconstruction and based on the experiments such as the New Towns in Britain, which the Portuguese had begun to study in the previous decade and that they knew not only from the international publications available in Portugal, but also from taking specialisation courses at British schools12.

The new Portela development in Lisbon’s northern periphery was designed in 1965 for a total of 18,500 residents. The plan covered an area of 50 hectares, with 196 plots reserved for the construction of 4,503 apartments (the final version of 1969 had 199 plots with 179 slab blocks and 20 point blocks). At the time, Lisbon had a population of roughly 802,250, while the administrative district of Lisbon was home to a total of 1,382,959 people. During the project’s formation and construction process the 1974 revolution took place. This event was to affect the relations with the municipal powers, giving rise, in particular, to ambiguous and permissive legislation that took powers away from architects and gave them to private developers. This situation weakened Fernando Silva’s position and was reflected by the fact that it became impossible to apply certain urban planning and technical principles that had been the basis for the project13 (fig. 2).

Nevertheless, any deviations and inflections from the initial project did not negate the fact that the Portela development became an important benchmark for other private developers who began operating in Lisbon’s periphery. We have been able to identify some 30 projects that

12 Amongst the Portuguese architects who studied the British New Towns in the UK were Fernando Schiappa de Campos, António Saragga Seabra and Rafael Botelho.

were influenced by the Portela plan, underlining its important role in creating a decisive image for the urban periphery. That image was reflected not only in the centralised character of the development plans, but also in the abstract and programmatic architecture itself. Some of these projects were also developed by Fernando Silva, who thus set a standard for the middle-classes living in the suburbs of Lisbon. But most were designed by other architects and engineers who proved unable to maintain the same quality, which, despite criticism of the uniform and abstract nature of Silva’s slab and point blocks from Portuguese architectural circles, marks his work.\(^{14}\)

\(^{14}\) B. Ferreira, [in]formar a Cidade Contemporânea, cit.; S. Menezes, Não me tragam estéticas, cit.
In Macao, Manuel Vicente designed the STDM complex in 1978 as part of the trade-offs for the gaming monopoly granted to Stanley Ho. The design project revealed continuity with the principles he had outlined in his first collective housing project in Macao (designed with Natália Pereira) in 1963, which was for 90 apartments for rehousing purposes. This fact allowed the establishment of a chronological link between the STDM complex and the Portela and Prenda neighbourhoods, since in 1963 Manuel Vicente was dealing with some of the issues. The size of the complex, which is made up of one compact L-shaped block topped by a tower, was obviously more modest than that of other neighbouring units and complexes. The structure was divided into three parcels designed for 625 families. In 1980 Macao had an estimated population of 250,000. The complex was built on the Ferreira do Amaral isthmus in the extreme north of the Macao peninsula, which, up until the 20th century, had been a small strip of marshy land that linked Macao and mainland China and was home to Portas do Cerco, an old border post between the two territories.

The STDM project was a pioneer in the trend towards the “verticalization” of construction along the border to mainland China, a process that led to the re-design of the city’s skyline in this pivotal geographic zone. In this sense it built and re-defined a new urban periphery in relation to the old historic nucleus further to the south in the peninsula, constituting a clear and identifiable visual reference, both through its design and height, close to the border zone. In addition to this territorial presence, it also showed its trailblazing character through the establishment of new urban forms and structures, in the form of a shopping arcade on the ground floor and the corner plot design. These elements were later taken up again in other designs by Vicente, and also in buildings by other architects, such as Vicente Bravo, who, along with Manuel Vicente, introduced and helped to establish a number of typological models for apartment buildings that are still replicated today throughout the quadrilateral grid of the city as it consolidates itself (fig. 3).

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15 The complex was named after the leisure company Sociedade de Turismo e Diversões de Macau.
16 STDM written memo.
The three cases display some features that establish a clear dividing line from contemporary housing projects for low-income families. The modern high-rise buildings (with elevators), surrounded by green areas and served by a functional layout of roads, the apartments’ area standards, the oversized windows, and a general concern with quality of construction, were in all signs of distinction regarding the social housing where a maximum of four floors were the rule, the exterior areas were left “at will”.

Fig. 3: Macao’s urban expansion (1912–2006) with case studies highlighted (drawing by João Cardim, 2014, after J. Botas, Evolução da área de superfície ao longo do séc. XX, 01–03–2013 <http://macauantigo.blogspot.pt/2013/03/evolucao-da-area-de-superficie-ao-longo.html>).
Designing the neighbourhoods

The construction of these residential complexes took place in very distinct contexts, each one corresponding to different phases in the expansion of their respective cities, given that the urban growth was down to an effective rapid increase in the population in Luanda and Macao, whereas in Lisbon, the growth was more moderate and, in particular, revealed a trend towards leaving the consolidate city to occupy its periphery. To these trends one can also add, as far as the planning is concerned, very distinct understandings of urban design for the peripheries. Each of the complexes embodies its own process of reflecting on the future of the periphery that was mirrored in the urban layout and the design decisions made. Each of the architects brought in a different background that was manifested in the urban planning discourses that provided theoretical support for the strategies implemented in the terrain. The base options ranged from the utilisation – albeit critical – of the Athens Charter in Luanda to the re-design of the continuous urban front, including also hierarchies in the façades depending on the location, as was the case in the STDM project, and to the recovery of the idea of a civic centre that created a counter-weight hub to the anonymous and homogeneous aspect of the Portela de Sacavém development. All three cases also show the presence of a “strong” and readily identifiable architectural idiom: the inspiration from Brutalist models in the Prenda Neighbourhood Unit; the anonymous late International Style architecture of the Portela complex; and the presence of some archetypal Louis Kahn-like elements in the STDM project.

The Prenda Neighbourhood Unit clearly reveals Simões de Carvalho’s French training. The complex is organised in accordance with the Athens Charter principles, but opts for more humanised assumptions by proposing a freer design that integrates services and facilities in a more open and fluid structure\textsuperscript{17}. The urban plan was designed by Simões de Carvalho himself, together with Luiz Taquelim da Cruz, and the architectural design was made in partnership with José Pinto da Cunha and Fernando Alfredo Pereira, both architects in the Luanda Planning Office. The residential buildings were organised around open squares, in the case

of the seven-storey slab blocks – or as more isolated elements, as was the case for the ten-storey point blocks. All the buildings were built on *pilotis*, freeing up the ground level for circulation and leisure activities.

The layout and design of the two types of building were based on the assumption of an orientation in relation to the variety of the family structure in colonial society. The traditional, large families were housed in the lower slab blocks, and in the four-towered block around a square in the south-east corner of the complex. On the opposite west side, three tower blocks apartments were reserved for singles, people who lived alone, the displaced and married couples with no children. This decision derived from a vision based on sociological rationale and the creation of urban environments that were more apt for socialisation, as oppose to the anonymity associated with high-rise building. Simões de Carvalho referred more than once in conversations to Prenda as a realism-based counterweight to the artistic and plastic urbanism of Le Corbusier. Sociological issues, which were probably inspired by the theories of Robert Auzelle, who was frequently cited by Simões de Carvalho, formed the basis for the various surveys of the population and the local activities that the latter demanded be carried out in the preparation phase for the partial urban plans that his team drew up at Luanda City Council.

The importance of social issues and sociological studies extended beyond the Prenda plan. They later formed the basis for organisation of the city into neighbourhood units and residential quarters and for the creation of a facility network that was hierarchized in terms of importance and catchment area: from the central hospital on the regional and city level to the health centre serving a particular neighbourhood; or, in the field of education, from the university (which was founded in Luanda in 1962) down to the primary school, taking in all intermediate, secondary and technical schools.

The Prenda project also introduced the novelty of racial integration, which was particularly significant in this case because it was a large-scale, localised operation in the Angolan capital. This was made possible through two design strategies. Firstly, the reservation of pockets of land within the neighbourhood for self-building, in the knowledge that the city’s population at the time was two-thirds African in origin. Secondly, the urban layout that maintained a relationship of fluidity and permeability with the surrounding areas.
Simões de Carvalho originally proposed to the developer (PRECOL – Predial Económica Ultramarina) an occupation of the site on the basis of 2/3 indigenous population and the rest being made up of Europeans and other migrants. This ratio was, however, inverted. This probably had to do with the fact that the building model corresponded to a European housing image that not only did not appeal to the African inhabitants but was also beyond their economic means, which was the main reason they preferred housing in the musseque areas. Nevertheless, the Prenda development was a victory for the urban planner over the then existing city in the sense that it transformed the colonial urban space into a territory that was more open to inclusiveness for the various communities.

In the ideal case, Prenda would have been a multi-racial and economically inclusive neighbourhood that anticipated the integration of less privileged groups. These groups, which were normally not even taken into consideration in colonial development planning, were to begin a process of mixing with the European society through the proximity services, particularly in the primary schools, which the architect regarded as integration programmes. This vision reflected the general trends in the political regime, which, from the early 1950s onwards, had been promoting the integration of the various ethnic realities in the Portuguese empire towards an envisioned multi-racial society.

The transformations Luanda underwent after 1974, the fact that the Prenda complex was never completed and its sudden occupation by new population groups brought a new reality to the development. In a way, today it conserves a strong image and readable presence that results from its clear spatial organisation and architectural design that is easily identifiable with the international Brutalist movement, which had a significant impact in the Portuguese-controlled tropical regions in the late 1960s. The permeability of its layout furthermore facilitated

interaction with the surrounding constructions and continuity with the surrounding spaces that was to be accentuated by the appropriation by the indigenous population (fig. 4).

As far as Portela is concerned, permeability of the development in relation to the surroundings was practically non-existent. At the time the surroundings were relatively anonymous in urban planning terms, consisting of military, industrial and religious structures (such as the Olivais seminary) that presented self-contained units, meaning that they could easily detach themselves from their environs. The decision to opt for a plan with a central services and facilities hub indeed reflects the difficulties in finding reference elements outside the development, so that it ended up functioning as an autonomous and homogeneous unit in the periphery’s landscape. This trend towards the development of new autonomous neighbourhoods that were detached from the consolidated city and followed a neighbourhood design model that set them apart from the more opportune types of occupation on the periphery, was to be replicated in a number of other neighbourhoods built at a later date along Lisbon’s northern periphery.
In Portela the horizontal slab blocks and towers were set on platforms, with the first forming parallel lines that emphasised the design’s rigidity. All have theirs 12 storey height align by the top, the topography variability being absorbed by ground-level variations. The exception in terms of building height in the southeast of the plan area was due to the proximity of a catholic seminary complex, which was successful in imposing restrictions on Fernando Silva’s urban plan that was based precisely on an image of very high density. The abstract character of the buildings and the affiliation in an International Style-influenced architectural trend that was already in decline in European culture – not distinguishing the specificities of the interior functions and using an outer covering of mosaic tiles, windows that emphasised horizontality and the elementariness of the colours used in the continuous horizontal stripes and slab blocks – was to influence solutions adopted for other neighbourhoods in the outskirts of Lisbon such as Cidade Nova or Santo António dos Cavaleiros, both in Loures. The aim was to find a standard for the middle-class, an objective that was clearly achieved, given the sales success among middle-class that lead to multiple replicas in several neighbourhoods in the Lisbon suburbs\(^2\).  

The use of a building technology that was innovative in Portugal – tunnel formwork – would contribute to ensure a homogeneous and, thus, faster and with lower cost, execution of the whole complex. However, the later parcelling of the various plots, which were then sold by Manuel da Mota (the complex owner and developer) to other private developers – a total of 134\(^2\) –, was to compromise this type of execution, leading to a greater degree of variation both in terms of the interior organisation of the dwellings and some exterior elements.

The urban layout was also very ambitious, including a hierarchized road system that derived naturally from Le Corbusier and the Athens Charter principles. A number of exterior primary roads provided access


to the different zones within the development with the help of a main road around the civic centre and the more localised access roads. To this were added elevated pedestrian walkways that provided for clear separation of the pedestrian from vehicle traffic. This option, whilst not realised in the end, was most likely influenced by the British models that featured increasingly in the European publications that circulated in Lisbon architectural circles of the day\textsuperscript{22}. These networks provided the connection to the commercial structure which functioned as a civic centre, as it integrated proximity facilities such as schools, sports facilities, church, parks, etc. (fig. 5).

Fig. 5: Portela neighbourhood, 1965–79 (source: Bing Maps).

\textsuperscript{22} In addition to the private architectural firms, from 1960 to the middle of 1980 the four main public agencies for housing – GTH (Technical Agency for Housing), FFH (Fund for Housing Development), INH (National Housing Institute) and LNEC (National Laboratory of Civil Engineering) – were located in Lisbon and had specialized libraries subscribing the major European architectural magazines; each of them included a permanent staff of several dozens of architects, most of which had a parallel architectural practice.
In the STDM development in Macao, Manuel Vicente explicitly tackled the question of the traditional city by combining the high-rise construction typical of the peripheral context with a continuous urban front and a shopping arcade with some 50 shops on the ground floor, which liberated it from the purely residential function at the same time as accentuating its urban character through daily life experience and public use. Modern anonymity here gave way to an expressive rigidity in the design of the diverse elements that are seen as structuring the composition, seeking to anticipate and oppose the considerable changes in the façades of residential structures in Macao resulting from the interior appropriations of the dwellings and their external projection.

Whilst taking inspiration from Louis Kahn and his experiences in Pennsylvania, Vicente also referenced the inventive post-modernism of Robert Venturi and worked with vertical elements to organise the complex’s exterior image: a superstructure in concrete intercalated with colourful vertical strips corresponding to the balconies of the housing units. The former – hard and impenetrable – ensured the compositional stability of the complex through its rigidity and unassailable aspect, while at the same time conferring a monumentality that was sure to mark the presence of the complex in the maelstrom of on-going urban transformation in Macao. The latter – softer and more flexible – broke the traditional framework cages that were invasively taking over residential buildings in Macao. With a view to improving readability of the blocks, they were each identified by a primary colour (yellow, magenta and blue) in a clear allusion to Le Corbusier's use of colours in a number of his buildings.

Vicente used some of his previous experiences to anchor the solution found, namely his work on the Portugal Novo neighbourhood in Lisbon as part of the SAAL operations, where he had used the traditional model of the urban block as a way of ensuring compositional unity in the public/private gradations in the façades and in adapting it to the topographic differences.

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24 SAAL (*Serviço de Apoio Ambulatório Local*) was a support service to provide housing for underprivileged groups between 1974 and 1976. It consisted of teams of architects, engineers and other specialists who drew up plans for housing complexes on land occupied or claimed by the people during the revolution process in Portugal in 1974–75.
The precariousness of the operation and the unpredictability of the future development of the area also had an influence on the strong design of the buildings. They did not have the function of configuring the public space, the development and future form of which could not be anticipated at the time. Thus there was no aspiration to design with the city in mind, at its various levels – building, streets and public space – or to determine its overall form. The awareness of the speed of urban transformation in Macao and the limits of the operation meant that the project accepted that the public space would remain open to future transformation. The buildings proposed a certain compositional self-sufficiency, in that they did not depend on public contextualisation, the execution of which was unpredictable. Thus, the design of the complex – with the layout defining a continuous front, the façades with their vertical elements “set” in concrete and the arcade at the ground level – guaranteed a strong visual presence. Intensity in the design of the project’s elements served to guarantee visual and experiential presence without depending on elements external to the complex. This approach to designing and building was to become one of the main trends in Macao, both in the works of Manuel Vicente and other architects (fig. 6).

Fig. 6: STDM Tower, 1977–84 (left) and later-day tower buildings showing the same verticalization process; current state in 2014 (photograph by A. V. Milheiro, 2014).
The apartments

The importance that Neighbourhood Unit no. 1 in the Prenda district had in the context of Luanda’s urban expansion, led Simões de Carvalho to assume his project as a model for other interventions. It is in that sense that he exceptionally agrees to participate in the architecture project of the buildings together with José Pinto da Cunha and Fernando Alfredo Pereira. His reluctance was due to professional ethics questions, since he believed that architects engaged in public services should refrain from working in private developers’ projects. However, Prenda was an exceptional situation. It was the largest privately developed housing estate to be carried out in the city until that moment. This singularity demanded, in addition to the overall layout, that the internal arrangement of the apartments had a degree of coherence and experimentation in harmony with the urban plan, while at the same time should integrate the contribution of sociological studies and realistically respond to the issues raised by the specificity of the several sections of Luanda’s population which would inhabit the Prenda district.

In addition to an urban arrangement and a strong architectural image, the goals also implied the development of housing models reflecting the more modern and cosmopolite ways of living offered by the African vastness, taking advantage of the opportunities offered by the periphery, given its release from the constraints of the traditional city. In this context, the typological structure of the apartment was essential since it consolidated transformations and living habits already underway in other parts of the city. One of the fundamental questions was established through the articulation between the sociological survey and the built typologies, with the architects associating the point blocks to elementary family nuclei, and leaving the slab blocks to households with more individuals. In the same way, only two basic apartment typologies were conceived – two-level units and single-level units –, whose variants, dimensions and interior complexity would be

configured in accordance with the expected number of residents per dwelling. The two-level apartment represents a more ambitious typology, being an evident reflection of Simões de Carvalho’s Parisian apprenticeship with Wogenscky in the end of the 1950s. In that period, he worked on Berlin’s Unité d’Habitation (Le Corbusier, 1957), learning in a pragmatic way the logic inherent to the intersection of two and single-level apartments and their combinations. The corbusian internal street is one of the structuring elements of the different Unités d’Habitation which Simões de Carvalho reproduces in the slab blocks and towers of the Prenda project. But it is the two-level typology that adapts, in an extremely ingenious way – through a half-level dislocation –, a solution which, allowing cross-ventilation, ensures the efficient adaptation of the apartments to the tropical climate of the city.

The separation between social types and families by point and slab blocks results in an internal layout of the dwellings in accordance with the different human activities predicted for those distinct types of residents. Thus, each kind of building had a basic internal arrangement whose variations arose from the number of rooms. Equally, the common service circulations – the “internal street”, stairwells and lifts – introduced some changes to the basic scheme. In the whole estate four block types were created – Type A, B1, D1 and D2 –, resulting from two basic apartment configurations. In the first, the rooms are located in only one floor and have a single frontage, resorting to a linear arrangement with or without a balcony. In the second, the several internal spaces are distributed between two half-floors. It is in this last solution, a very clever sort of semi-duplex, that is reflected the study of the human dynamics, with the living room and the kitchen connected with the balcony, and the bedroom area with the living area through a mezzanine where all the spaces are linked. This is obviously a conception derived from the principles of European functionalism, from the Athens Charter and from the tradition of the minimum house, relocated here to answer to the living specificities of the multiracial African society (fig. 7, 8).
Fig. 7: Prenda’s apartment typologies (drawing by Débora Félix, 2014).
In 1970, in the Portela development, Fernando Silva works on the same urban typologies that Simões de Carvalho had used in Luanda some years before: the tower and the slab block. He does not associate, however, each of these typologies to a specific family type, seeking instead to develop apartment models sufficiently appealing to a relatively standardized middle-class and in which the different apartment typologies only corresponded to families of smaller or larger dimensions.

In the initial project of 1970 six basic typologies were designed, five to be included in slab blocks (I, II, III, IV and VI) and one – with a variant – (Type V and V later variant) in point blocks. Denoting a comprehensive vision, the apartments reflect a modernization of the habitable space of the house. The general basic concepts that guide the project are the common circulations in stairways with a traditional scheme of two apartments per floor, cross ventilation, and the internal separation between daytime and night-time uses, with the bedrooms and the living areas located in opposite façades.

Despite the referred modernization of the house, the persistence of traditional habits of the Lisbon’s middle-class was quite evident in the existence of a maid’s room (Type II apartment), contiguous to the kitchen, with the possibility to transform it in a dining area, even if
that broke the spaces sequence and the separation between living and sleeping.

The use of conventional accesses – ordinary stairways and lifts – was a response to the demands and habits regarding privacy in the access to the apartments, a situation taken to a greater extreme in some cases (Type III), where the individual accesses are even more reserved, with the left-side and right-side apartments served by separated entry halls and lifts. This situation is clearly opposite to what happens in the Prenda development, where the corridor street provides a “collective living” within the buildings.

While the six apartment typologies can be understood as part of the same design process, the point block typology is clearly distinct. In this case, the entry hall is suppressed – with the separation between the entrance and the living room achieved via a fixed piece of furniture –, the kitchen is reduced to a minimum – almost like a corridor – and, in the bedroom area, a conventional distribution hall is used. This layout was changed in 1973 due to new market demands and the inevitable answer from the real estate developers. The point blocks designed in that year had two apartment types per floor – two and three-bedroom typologies –, instead of the previous situation with two equal and symmetrical dwellings per floor. This proposal (Type V, variant) intended to be a more flexible response to the different households, reflecting, in some way, a “regression” in the arrangement of the rooms, returning to more partitioned spaces.

What can be seen in the typological work of Fernando Silva is an efficient simplification of the middle-class housing in the centre of Lisbon to a more schematic approach where the oversized areas from the 19th and early 20th century – the dining room, the living room, the piano room, the library, etc. – were reduced to a basic division in night and day areas. From the entrance the dwelling is split in two halves with rooms on one side and living and kitchen on the other. This basic division will be transformed by latter promoters in a social-intimate sequence, with the rooms not anymore on one side but on the ‘end’ of the corridor/hall and the kitchen-living located at the entrance (fig. 9, 10).
Fig. 9: Portela’s apartment typologies (drawing by Débora Félix, 2014).
This issue is also present in the alterations promoted by the developers in the apartment types designed in 1970 and that were built in the subsequent years. In fact, from one single owner, the complex ownership was suddenly scattered between 134 developers, each one bringing their own alteration. These alterations almost always reveal a much more hierarchized vision of the different functions in the apartment. It is significant that the apartment which presented a more progressive layout (Type III), and which had a more homogenous and open spatial articulation, became the one with more variants that systematically replaced the original by others of a more conventional and partitioned nature.

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Paradoxically, it was precisely the open and flexible character of the initial layouts that facilitated its alterations by the developers even before the construction began\textsuperscript{27}. The initial six typologies, were transformed in a total of 104 variants, ranging from minor reconfigurations in the dwelling space or ground floor access to much deeper transformations such as new schemes for stairwells and lifts, three dwellings in each floor (instead of two) and major reconfigurations in the apartments. Thus Types II and IV were never built as planned in the Fernando Silva’s project, and from the 199 plots only six were built according to the original plan – Types I, V and VI with one plot each, and type III in three plots (these owned by the same developer)\textsuperscript{28}.

Similarly to the Prenda district and to the Portela development, the STDM complex, in Macao, although intended for a lower social class, also tried to solve the problem of housing shortage in the periphery of the consolidated city, in this case close to the Chinese border. The estate is composed of 625 dwellings distributed between three parcels, linked by a central gallery and with a tower closing lot C. Planning in accordance with the principle of cross ventilation, the architect devised a scheme in which the efficiency of the ventilation implied that the front door opened to the access gallery, which in turn is open to the outside in the stairwell area. The permeability between the internal space of the apartments and the common gallery implies a notion of intimacy – highlighting the idea of “collective living” – different from the Western one, and which is not present either in Prenda or in Portela.

The STDM apartments are designed from the combination of minimal units of a single room each, and the space organization is grounded on the differentiation between the different activities of living and sleeping. The variants of this basic layout are few and correspond to flanks, lot transition and street corner situations. Nevertheless, nine typologies – four of them corresponding to duplex apartments – were designed, representing variants of the basic layout. The most common apartment, while having only a single room, is equipped with a kitchen, a bathroom and a balcony. The variants of this typology are always located in the street corners, where a bedroom is designed, or where the area

\textsuperscript{27} D. Félix, \textit{Apartamentos para a classe média}, cit.; I. Miguel, \textit{Portela entre o Projetado e o Construído}, cit.

\textsuperscript{28} I. Miguel, \textit{Portela entre o Projetado e o Construído}, cit.
of the single room takes a new configuration. The duplex apartments are located in the 9th and 10th floors. In their first level there is a single compartment similar to the basic typology and in the second level there is one or more bedrooms and a bathroom.

The elementariness of the spaces is grounded in principles common to the real estate promotion in Macao and in Hong-Kong. The acceptance of these principles and the adequacy to them meant that alterations in the apartments’ layout were usually difficult, with exception of the appropriations and expansions with the already mentioned exterior cages. This is indeed the issue that alters more the unity of the housing space, since the distinction between the internal space of the apartment and the external space of the balconies almost vanishes (fig. 11, 12).

Fig. 11: STDM’s apartment typologies (drawing by Débora Félix, 2014).
Conclusions

The three cases presented here cover a period of almost twenty years, showing how a similar model was used to answer also analogous problems, but in very different contexts. Despite the use of high-rise buildings and the high density of occupation, the three operations feature highly diverse responses regarding the internal space as well as the urban plan design. While Prenda and Portela present an urban layout far from the continuity system of the traditional city, the high-rise buildings of the STDM complex resume that system with its arcade and with its continuous façade. In relation to the apartment typologies, the Prenda is where the modern matrix is more clearly displayed. In Portela one can see the recovery of more conventional layouts in an updated form, while the Macao operation becomes permeable to the Asian way of life.

The diversity of results in the three cases can be explained by several factors. They were both a local and a personal declination of a common idea. In a way, these proposals reflect the evolution of the architectural
culture between 1960 and 1980, the different training of its authors, and
the relation proposed, in each case, with the respective physical and so-
ciological context. The buildings in Luanda were left isolated to allow a
greater permeability with the indigenous surroundings, while in Lisbon
it was a real detachment from the surroundings that was pursued. In
Macao the compression of the city, lead to an approach where the street
met the high tower as a response to the spatial constraints. On the other
hand, the three cases take advantage from undefined policies and local
codes. In fact Portugal had a single building code from 1953, already
then considered as outdated and full of voids due to inapplicability. This
allowed a great fluidity and flexibility on the design as each case should
answer to different contexts, thus opening the way to the diversity in
spatial organization of the dwellings. Also the deeper transformations
of the interior space has different origins. In Luanda and Macao one
can see an appropriation after the initial building leading to sometimes
dramatic turns in the use of space. In Portela instead, the changes were
mainly before the construction itself due to the fact that the different
plots were sold to different developers that brought their own specific
demand and market vision, eventually causing major changes in the
building types and the vanishing of some of the technical innovations in
the air of the new times. Despite the multiplicity of variants with each
developer unfolding a new building type, the overall sense is one of a
strong unity given by the repetitive image of the blocks and by the clear
shaping of the buildings.

These diversities ended up transmitting itself to the various ways
of use and of spatial appropriation given by the different populations,
challenging the notion of middle-class housing. In fact, if one can
recognize that in each city the occupation was by a middle-class, the
three together present very different populations. Also in Luanda and
Macao they suffered sometimes overwhelming changes, with lift holes
being used as spare bedrooms (Luanda). Somehow is clear that this
middle-class housing can be a very changing concept when later uses
and urban evolutions create an altogether different situation. A condi-
tion that somehow is still under evaluation.