Pedro P. Palazzo

Vernacular Patterns in Portugal and Brazil: Evolution and Adaptations

Patrones vernáculos en Portugal y Brasil: Evolución y adaptaciones

Padrões vernaculares em Portugal e no Brasil: Evolução e adaptações

Keywords | **Palabras clave** | **Palavras chave**

Traditional Architecture, Urbanism, Urban Form, Architectural Composition, Typology

Arquitectura tradicional, Urbanismo, Forma urbana, Composición arquitectónica, Tipología

Arquitectura Tradicional, Urbanismo, Forma Urbana, Composição Arquitectónica, Tipologia

Abstract | **Resumen** | **Resumo**

Traditional towns in Portugal and Brazil have evolved a finely tuned coordination between, on the one hand, modular dimensions for street widths and lot sizes, and on the other, a typology of room shapes and layouts within houses. Despite being well documented in urban history, this coordination was in the last century often interpreted as contingent, a result of the limited material means of pre-industrial societies. But the continued application and gradual adaptation of these urban and architectural patterns through periods of industrialization and economic development suggests that they respond both to enduring housing requirements and to piecemeal urban growth. This article surveys the persistence of urban and architectural patterns up to the early 20th century, showing their resilience in addressing modern housing and urbanization requirements.

Las ciudades tradicionales de Portugal y Brasil han conseguido una coordinación perfectamente ajustada entre, por una parte, las dimensiones modulares de la anchura de las calles y el tamaño de las parcelas y, por otra parte, una tipología de formas de habitaciones y distribuciones dentro de las viviendas. A pesar de estar bien documentada en la historia urbana, durante el siglo pasado esta coordinación a menudo se interpretó como algo contingente y resultado de los limitados recursos materiales de las sociedades preindustriales. Sin embargo, la aplicación continuada y la adaptación gradual de estos modelos urbanos y arquitectónicos en periodos de industrialización y desarrollo económico indican que responden tanto a requisitos persistentes de las viviendas como a un crecimiento urbano gradual. Este artículo estudia la persistencia de los modelos urbanos y arquitectónicos hasta principios del siglo XX, mostrando su capacidad para solucionar las necesidades de la vivienda y la urbanización modernas.

As cidades tradicionais em Portugal e no Brasil desenvolveram uma coordenação bem sintonizada entre, por um lado, dimensões modulares para a largura das ruas e tamanhos dos lotes, e por outro, a tipologia das formas e disposições dos quartos no interior das casas. Apesar de bem documentada na história urbana, esta coordenação foi, durante o século passado, frequentemente interpretada como contingente e como resultado dos recursos materiais limitados das sociedades pré-industriais. No entanto, a contínua aplicação e adaptação gradual destes padrões urbanos e arquitectónicos ao longo de períodos de industrialização e desenvolvimento económico sugere que eles respondem tanto às necessidades habitacionais persistentes como ao crescimento urbano fragmentado. Este artigo analisa a persistência dos padrões urbanos e arquitectónicos até ao início do século XX, mostrando a sua resiliência no que toca a fazer face às exigências da habitação moderna e da urbanização.

Introduction

In this article I examine patterns of urban development in the traditions of the Portuguese-speaking world. I seek to identify bodies of knowledge, practices, and regulations prevalent from the 13th to the mid-20th century offering examples of decentralized economic and regulatory controls over urban space, resulting in emergent systems of urbanism. These decentralized processes are not entirely at odds with the design of new towns, however. The interaction between vernacular development patterns and planned urban forms is a recurring feature in Portuguese and Brazilian towns and cities.

As of the mid-19th century, these systems have contended with fast, overarching changes in regulation and theory that have put their resilience to the test. The rapid urban growth in the global South since the 20th century has been addressed predominantly through theories and policies stressing centralized planning and economies of scale, by both governments and the private sector. In Brazil, the enactment of a "one size fits all" federal law on urban policy nearly twenty years ago is acknowledged to have resulted in the spread of boilerplate zoning codes across medium-sized towns as well as in massive public-private partnerships that have effectively outsourced urban planning to large corporations or even to banks. This has come at the expense both of democratic policymaking and of the agency of peripheral actors, such as small builders and communities excluded from formal land ownership.

In contrast, traditional Portuguese urbanism is predicated on few abstract regulations and, more importantly, a shared body of knowledge made up of both vernacular and "classical" principles. Most planning decisions are of necessity entrusted to engineers and builders on the ground acting on general guidelines provided by local or central authorities, especially in the broad expanses of colonial Brazil. Standard modules for such design measures as the laying out of street widths or block and lot sizes were widely understood by builders. In spite of the high-profile urban renewal and expansion projects of the late 19th century, modelled on Haussmann's Paris or Anglo-Saxon garden cities, much of the urban fabric in Portugal and Brazil continued to be laid out in the piecemeal fashion of Portuguese tradition well into the 20th century, if not up to the present.

Rather than considering the peripheral survival of traditional urbanism as an inconsequential remnant on the sidelines of progress, I assert its legitimacy as a means of achieving resilient and sustainable cities within the socioeconomic reality of peripheral building cultures. I do so by documenting its historical patterns with an emphasis on vernacular and decentralized knowledge being leveraged by centralized planning measures, as well as on working-class housing programs from the mid-19th century onwards. This general aim is pursued by establishing a typological series of traditional urban fabrics evidencing the persistence and slow transformation of urban forms and building patterns.

Methods and sources

This study takes a cue from Miguel de Unamuno's concept of "intrahistory", translated into architectural scholarship in 1947 by Fernando Chueca Goitia and akin to Fernand Braudel's concept of *longue durée*: not just a description of events taking place over long periods of time but a methodological emphasis on the slow unfolding of social processes over the fast motion of discrete "facts". Trends in art and architectural history have since rather belied Chueca Goitia's assertion that "art history (...) is purely intrahistory" (1981: 45), but this study is a reminder that the continuity of traditions is one such long-term unfolding of historical processes, and thus a legitimate aspect of architectural history, theory, and practice.

The empirical methods of the British and Italian schools of urban morphology are promising for the reconstruction of genealogies of the patterns and processes of typological development over long periods, beyond the conventional periods defined by changes of style in "high art". These methods can provide indirect hints as to poorly documented features such as socioeconomic arrangements, and in turn establish the continuity and resilience of urban patterns (Oliveira 2016). The Italian school of procedural typology provides a large part of the theoretical groundwork regarding the possibility of establishing morphological genealogies of vernacular and traditional urban patterns (Cataldi 2015).

The analysis presented here thus assumes that making sense of typological continuity over centuries is both possible and legitimate as an endeavor in architectural history. In the methodological framework of urban morphology and procedural typology outlined above, prevalent urban and architectural forms can be discerned through visual analysis of plans. Tabulating abstract measurements for statistical analysis is not only unnecessary in this method but also risks obscuring a concrete understanding of the urban space focused on the clustering of patterns and the emergence of morphological districts (Raspi Serra and Acconcia, 1990). The persistence of spatial and topological relationships among elements – general lot shapes, block arrangements and configurations, and street and square hierarchies – may be inferred by visual inquiry with documentation (Conzen 2018). The goal of this analysis is not only to derive local morphological and syntactic patterns but also to pinpoint similarities and typologies prevalent among urban developments across time and space.

This study draws mainly on graphical evidence of urban areas in Portugal and Brazil. These graphical sources were collected from earlier research, municipal planning offices, and extant historic drawings from original plans or later surveys preserved in archives. A number of new towns and urban extensions from the mid-to-late 19th century, laid out by engineers, surveyors, and builders, provide evidence of the continued use of traditional modules and their adaptation to local conditions. Because there are few extant drawings from much of the 19th century, discerning these modules involves reconstructing original land subdivision patterns from present-day conditions. Yet many towns in Brazil lack reliable cadastral maps, hampering our ability to conduct statistical analysis and error estimation from a set of precise measurements. In any case, the assumption that there may somewhere be historical towns preserved in a mythically pristine condition has led many architectural interpretations astray; even such iconic heritage sites as Ouro Preto, in Brazil's Minas Gerais state, underwent significant rebuilding and lot consolidation in the 19th century (Vieira 2016).

Vernacular roots of Portuguese urban traditions

This study evidences a significant continuity in urban and building modules used in Portuguese and Brazilian towns from the 13th to the 20th centuries. As of the origins of modular urban design in Portugal in the 13th century, a limited set of lot and street dimensions dominated town planning. A first major inflection in these standards occurred in the third quarter of the 18th century with an attempt to shape urban form in response to systematic spatial planning. But lot dimensions and house types underwent little change until the late 19th and early 20th centuries, when the adoption of the metric system as well as the advent of positivist ideals of urban hygiene caused major changes in lot sizes and plan layouts. Even so, some aspects of traditional house types subsisted until the 1960s.

Portugal was part of the Roman imperial province of Lusitania, later ruled by successive waves of Germanic and North African nobility. It is thus quite representative of the broader trends in urban history across the western Mediterranean region. Roman agrarian colonies (Caniggia 1997) did not make enough of an imprint on the Portuguese landscape to condition later development, so as in most of western Europe, the default Portuguese urban type is the linear village around a high street (Panerai 2012).

In Fernandes's reconstruction of the ideal type, the village coalesces around a focal point or landmark, such as a church, market, or entrance to a castle (Fernandes 2014). In the high-street scheme (Fig. 1 [a]), the very deep lots around the main thoroughfare (*rua da frente*) and secondary axes (Fig. 1 [b]) have secondary frontages resulting in a back street (*rua de trás*) on either side, as described by Teixeira (2012). A sequence of cross streets develops to link these parallel roads, forming large urban blocks (Fig. 1 [c]). These blocks are eventually threaded by alleys (*travessas*) linking the cross streets (Fig. 1 [d]), leading to the mature, dense build-up of the

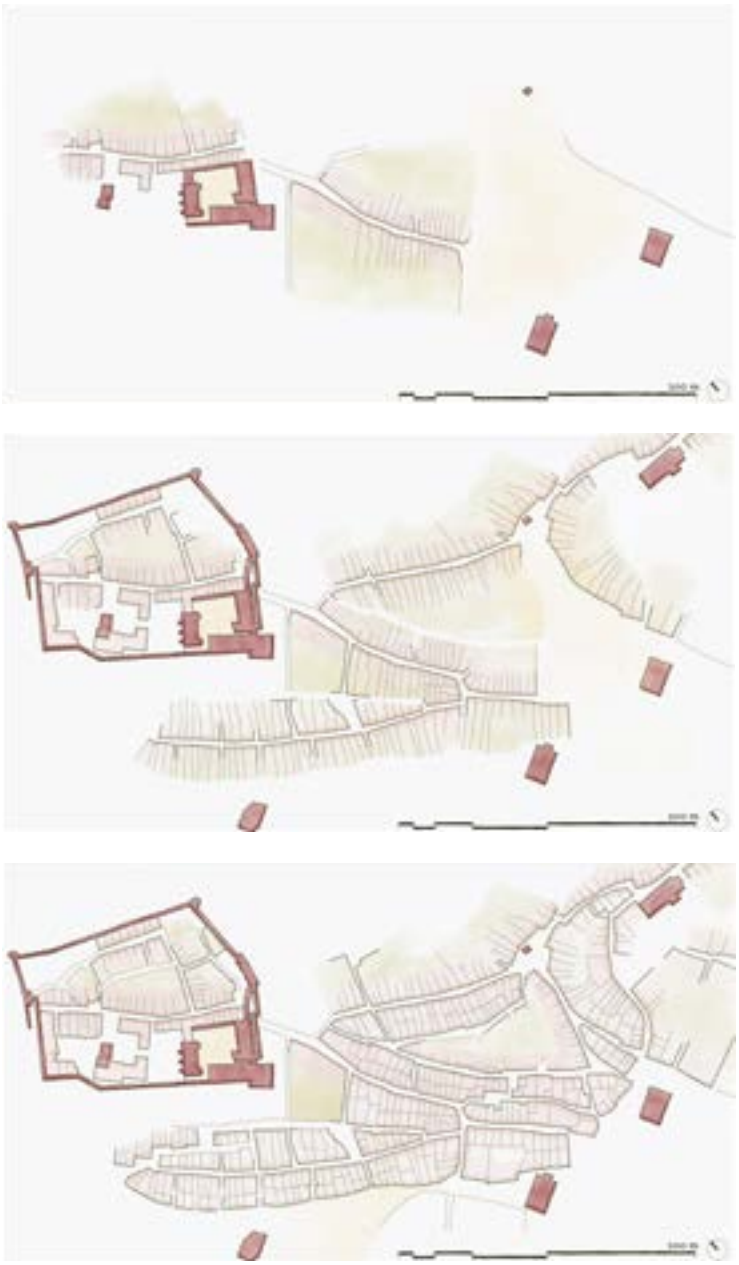


Figure 1. Reconstructed urban plan of Castelo de Vide, Portugal. a: initial development along the high street before the 13th century; b: opening of secondary and cross streets, late 13th century; c: development along back alleys and perimeter blocks, 14th century; d: threading of perimeter blocks with alleys, 15th century or earlier

town core (Fernandes 2014). Since most Portuguese urban areas originated as hill towns, the high street often takes the form of a spindle, with a binary network of main thoroughfares adding further diversity to the fabric. This system forms hierarchical networks of streets and districts – each one a "block of blocks", as it were, according to Robert Orr (2018)[1] – able to support diverse uses and social classes within relatively small areas.

Alongside the "organic" high-street village type developing through Portuguese and Brazilian history, there were three major episodes of centrally mandated urban planning and design, quite evenly spaced in time, each prompted by the crown's drive to defend, populate, and manage Portugal's growing territory:

1. Mid-13th century: *bastide*-type new towns were designed to secure Portugal's borders with the kingdoms of Castile and León, as well as to promote food security in the young realm;

2. Early 16th century: urban growth and overseas expansion promoted new standards of parcel planning by both the crown and private developers;

3. Late 18th century: the recognition of Portugal's independence and of its colonial possessions required an efficient and graphically "rational" new town planning policy.

The cumulative effect of these three episodes was not only to establish a Portuguese and Brazilian tradition of planned yet adaptable new towns (Lobo and Simões Júnior 2012), but also that the modular dimensions of these new-town lots became standard in vernacular building practice. This is likely to have occurred because such measurements were widespread to begin with and so were adopted in planned towns, although the present state of archaeological knowledge does not allow us to make assumptions about this.

Portuguese urban development modules up to the 18th century

In the 13th century, Portuguese kings began a policy of populating and fortifying their borders through the foundation of new towns – *vilas novas* or *vilas reais* – akin to the French and English *bastides* in southern France and to the *villas reales* in Castile and León. Luisa Trindade has shown that these Portuguese new towns operated on similar planning principles as their better-known European kin (Trindade 2009). The Portuguese *vila nova* can be said to be a fortified high-street village with a regular geometric plan and controlled allotment of land. Caminha, on a promontory at the northern border, one of the earliest and best-preserved examples, is organized around a straight high street, two back streets and two

cross streets. The whole is encircled by a wall. As in many *bastides*, the church is sited away from the central crossing near one of the gates, where it can be reached easily from the environs. The market square and town hall are located at the opposite end of the high street (Fig. 2). Though there is a geometric principle behind the plan, its implementation is clearly dictated by expediency rather than any strict observance of orthogonality, and the edges of the town are required to bend to the military requirements of fortifications fitting the terrain.

The *vila nova* layout established and observed certain geometric procedures so as to ensure regularity and equal distribution of urban lots. These urban plans were executed in a modular scheme based on whole-number ratios of the traditional Portuguese measurement unit: a hand span or *palmo* (abbreviated to "p."), equal to about 22.5 centimeters. 5 p. is equal to one Portuguese yard or *vara*, measuring 1.12 meters. The *vara* seems, in fact, to be the least multiple actually used in most urban plans. At Caminha, according to the reconstruction proposed by Trindade (Fig. 3), the basic elements of urban design are streets 15 p. wide (3.4 meters) and lots 25 p. (5.6 meters) wide by 60 to 75 p. (13.5 to 16.9 meters) deep (Trindade 2009: 323–28).

Other commonly used lot frontage dimensions are 20 p. (4.5 meters) and 30 p. (6.75 meters). This range offers lot sizes convenient for a diversity of use cases, from tiny houses – often with no more than one or two square rooms – to stately terraces or flats. As is the case in many Mediterranean building traditions, Portuguese urban house types consist of various arrangements of roughly square cells, up to 30 p. in length. The most common plan types for a lot 20 to 25 p. wide are either simple dwellings or shops with a longitudinal *enfilade* of up to three cells or a differentiated arrangement of two large rooms at the front and back, with a string of small rooms in between, accessed from a side hallway (Fig. 4).

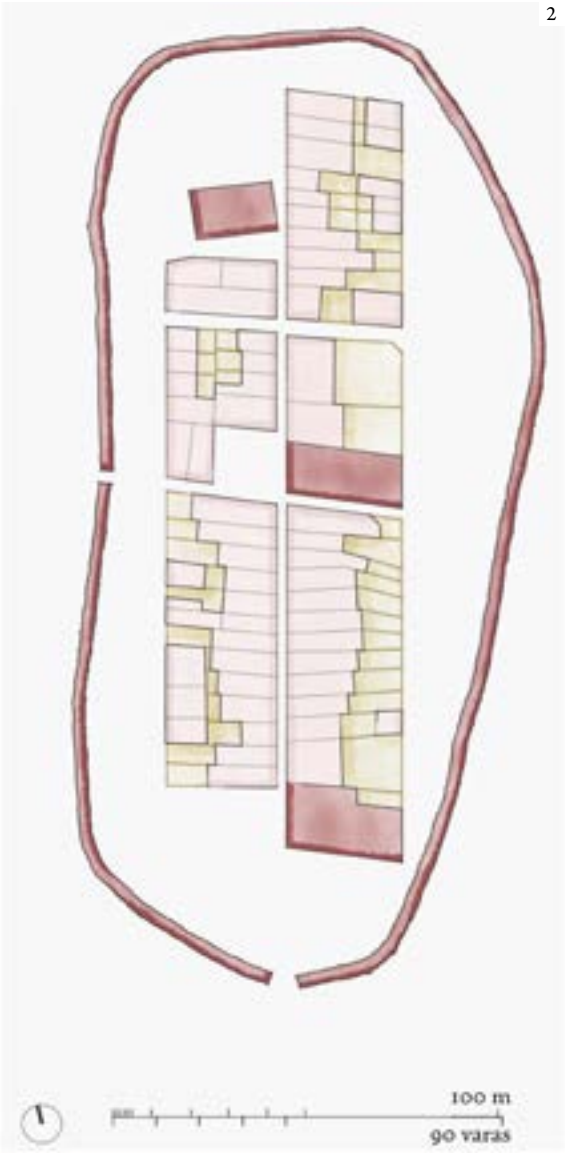
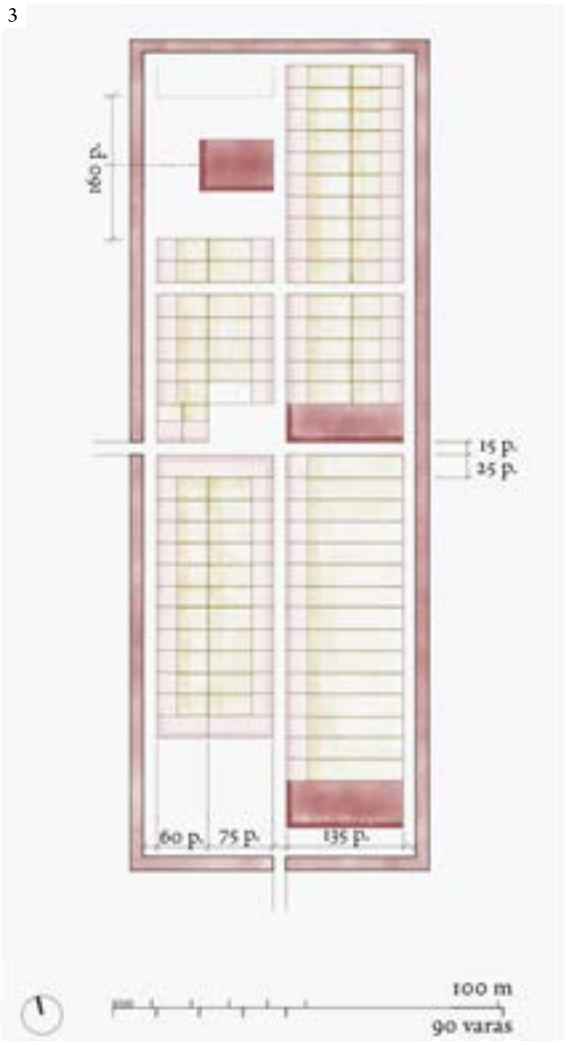
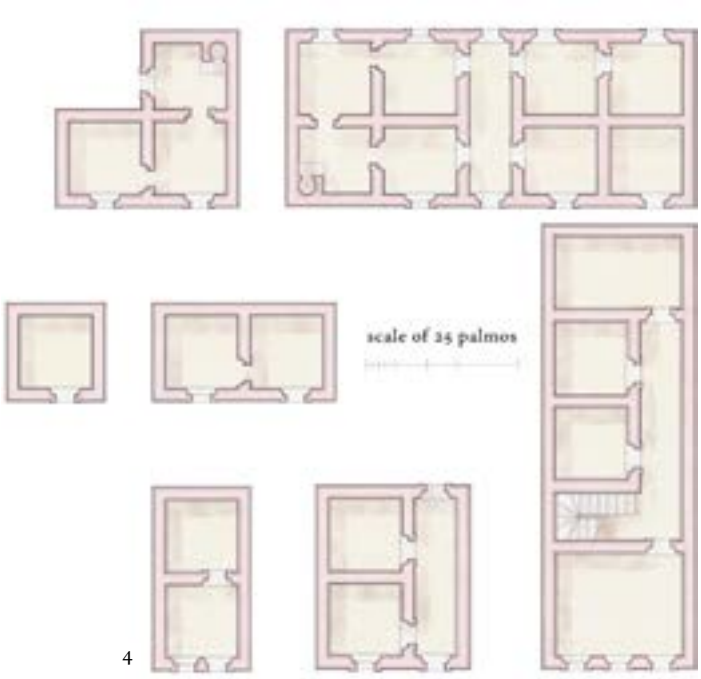


Figure 2. Reconstructed foundation town plan of Caminha, 13th century (author's drawing after Trindade 2009: 157)

Figure 3. Reconstructed modular parceling of Caminha, 13th century (author's drawing after Trindade 2009: 328). Units: 1 *palmo* = 22.5 cm and 1 *vara* = 5 *palmos* = 1.125 m





4

Figure 4. Mediterranean cell house generating traditional house types common in southern Portugal and Brazil. Middle left: basic cell layouts; top: suburban foursquare and rural farmhouse; bottom: narrow urban house and side-hallway townhouses.

Figure 5. Bairro Alto, Lisbon, developed from the 16th century. Yellow: traces of the original 30 × 60 p. lots from the 16th-century development; dark red: former stately mansions and civic buildings; pink: urban fabric that cannot be reconstructed to the original 16th-century modules

5

Relatively broad and shallow lots, 30 p. wide by 60 p. deep, are a particular standard of rural subdivision in Portugal, known as *chão* (Carita 1994). Hence they figure prominently in suburban expansions, such as in Lisbon's 16th-century *extramuros* development known as Bairro Alto (Carita 1994: 47-48). Two 30 × 60 p. lots can be conveniently subdivided into three 20 p. lots for low-income housing or grouped to hold a courtyard block of flats or a stately house (Fig. 5); the latter case is attested in Bairro Alto in the 18th and 19th centuries, whereas the former occurs in 19th-century suburban subdivisions in Rio de Janeiro, Brazil.

Transitional urban patterns

The foundation of *vilas reais* saw a resurgence in the third quarter of the 18th century. A protracted animosity with Spain, for reasons of colonial dominance and dynastic legitimacy, made King José I (reigned 1750–1777) and his chief minister, the Marquis of Pombal, keen on asserting Portugal's political and territorial integrity. A string of new towns founded during this reign near every Spanish-Portuguese border – in both Europe and South America – signaled Portugal's ability to effectively control the territories that it claimed (Delson 1998) and responded to new ideas about the "rational" organization of territory, already being put in place in Spain (Oliveras 1998).

Portuguese new towns such as Vila Real de Santo António (Fig. 6), at the mouth of the Guadiana river in the Iberian peninsula, show both the persistence of traditional land subdivision patterns and the changes occurring in the concept of "rational" planning. Vila Real de Santo António, founded in 1773, was laid out around a single central square by which both the town hall and the church are located; the market has its own dedicated building away from the square, now given over to civic and symbolic purposes. Here, unlike at Caminha, the engineers made a point of adhering strictly to the gridiron plan; it helps that the town was intended as a residential garrison and fishing port, while its fortifications are sited on higher ground.

To facilitate the movement of troops and goods, but also to highlight the clarity and monumentality of the town's plan, the streets are much broader than in the 13th-century new towns: at 40 p. wide, they are more than double the width of the Caminha streets and rather oversized for the single-story houses in the original plan. Also, due to a layout focused on the central square, with a generous width of 350 p., the street hierarchy of older planned towns is lost in Vila Real de Santo António. But despite all these transformations in 18th-century attitudes to urban design, lot sizes changed remarkably little. The same 25 p. frontages were used in 13th-century Caminha and in 18th-century Vila Real de Santo António, with only a slight reduction in depth, from 60 to 50 p. Exactly the

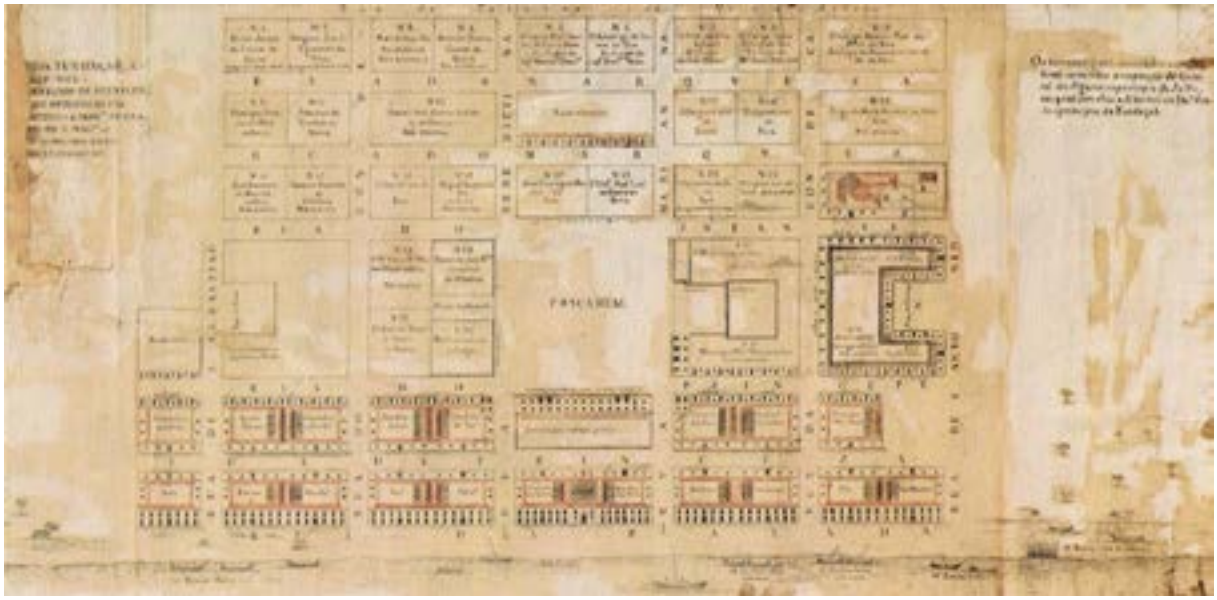


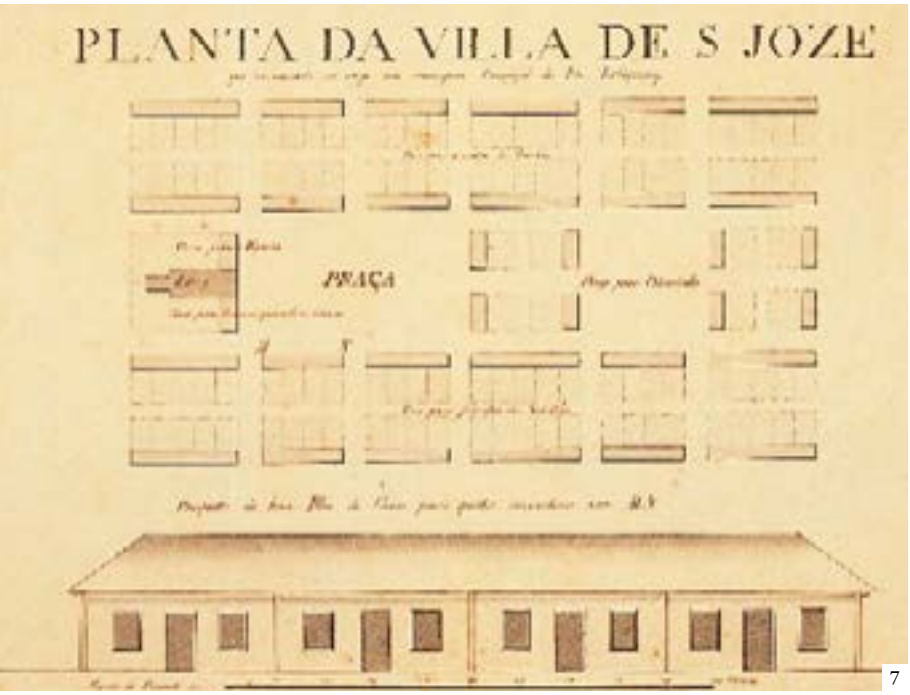
Figure 6. Plan of Vila Real de Santo António (José Sande de Vasconcelos, 1774)

same dimensions for the central square and lot frontages are used in the 1773 town plan for São Luiz do Paraitinga, a staging post on the road to the Brazilian gold mines (Derntl 2013). Street widths, however, are less consistent, ranging from 40 p. in Vila Real de Santo António to 60 p. in São Luiz do Paraitinga – an ample width first attempted in the post-earthquake rebuilding of Lisbon – and up to 100 p. elsewhere in colonial Brazil (Derntl 2013).

These 18th-century efforts at spatial rationalization with carefully sited and planned new towns are also remarkable in that they seem to be the first designs in Portugal to mandate specific building types or particular placements for houses. Such matters appear to have been viewed as self-evident or less significant in earlier periods. The project for the rebuilding of Lisbon set the trend here, associating the regularity of the new city blocks and lots with the uniformity of regulation façades (França 1989). Similarly, a number of surviving drawings for new outposts at the Brazilian frontiers, such as that of Taquari in the south (Fig. 7), established simple façade designs letting one guess at the single-room layout behind.

Figure 7. Plan of the garrison town of S. José on the Tibiquary river, now the town of Taquari, Brazil (Manoel Vieira Leão, c. 1777. Arquivo Histórico do Exército, Rio de Janeiro)

Figure 8. Aracaju, Brazil. Design by Sebastião Basílio Pirro, 1854. Plan (detail) by Francisco Pereira da Silva, 1857 (National Library of Brazil, Rio de Janeiro)



7

8

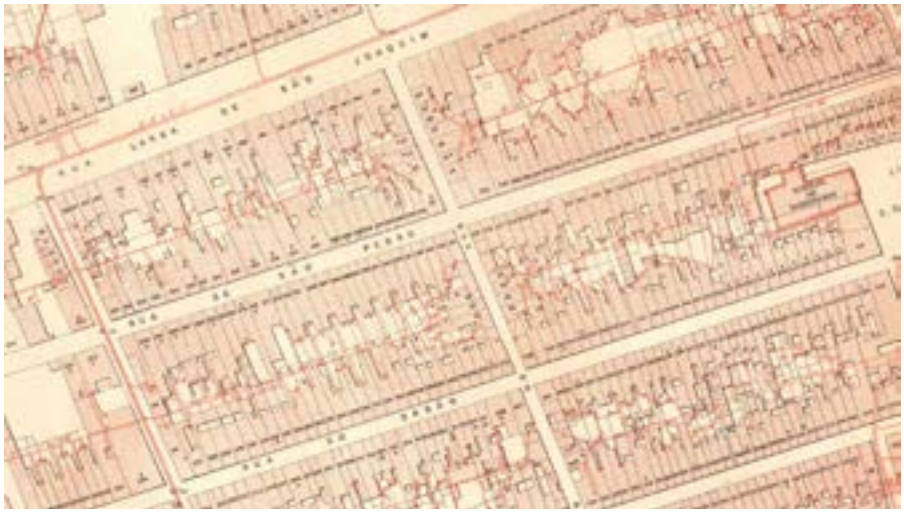


Figure 9: Urban development on the former *rossio* of Rio de Janeiro: 100 p. thoroughfare (rua Larga de São Joaquim), 30 p. streets (rua de São Pedro and rua do Sabão) and 25 p. street (cross street), blocks mostly subdivided into 20 p. lots. Detail from a plan by Edward Gotto, 1871

Centralized spatial planning in Portugal and Brazil came to a sudden halt on the death of José I in 1777, not to resume for almost a century thereafter. But certain designs for new towns or extensions during this lull did carry on the principles and modules of Portuguese tradition. Royal and imperial new towns in Brazil, such as Niterói (1819) and Petrópolis (1843), evidence the continued use of 18th-century military engineering principles with strictly geometric layouts. As late as the 1850s, two new provincial capitals in Brazil, Teresina and Aracaju (Fig. 8), were planned using the 18th-century module of streets 60 p. wide forming a gridiron around a main square facing the river.

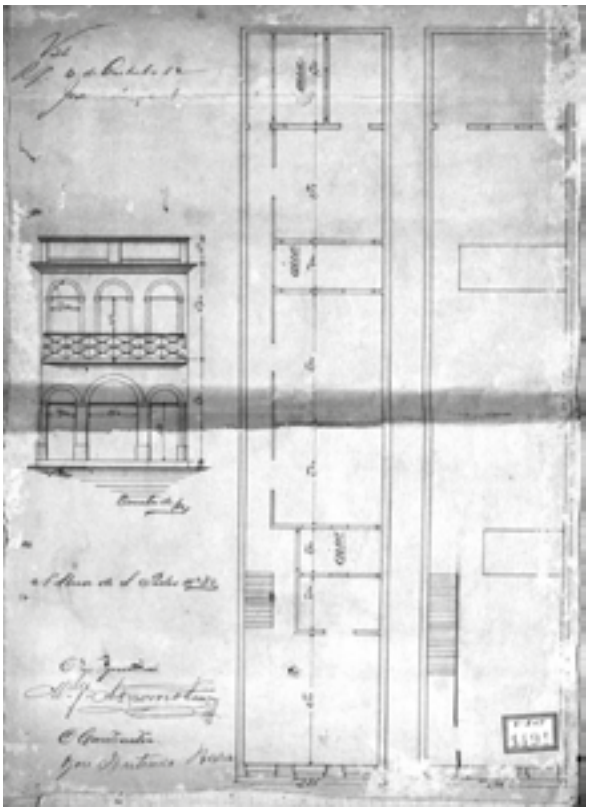
House types and fringe-belt development

The mid-19th-century urban growth of Rio de Janeiro also shows evidence of the persistence of traditional modules. These were used in the early 19th century in developing the *rossio*, a large fringe belt of public land west of the city center: its streets are 25, 30, and 100 p. in width and its blocks are subdivided, where pre-existing conditions so allow, into 20 p. lots (Fig. 9). This area grew into one of the densest and most socioeconomically diverse neighborhoods outside the city center and is also one of the best-preserved 19th-century districts. This is in part due precisely to the extremely fragmented ownership pattern of its narrow lots, which has prevented the consolidation required for large-scale redevelopment.

Farther west, mid-19th-century development on green fields introduced notable though short-lived variations in the form of lots measuring 15 and 18 p. (3.4 and 4 meters) for working-class rental. These extremely narrow lots sometimes stretch to great depths, creating *cortiços* (slums or tenements) akin to the contemporary *ilhas* in Oporto. But in Rio, these narrow lots were rapidly consumed by demand for bulkier apartment or commercial buildings. This short lifespan of ultra-narrow lots contrasts with the resilience of the 20 and 25 p. lots in the former *rossio*.

Haussmannian *percées* by the federal government in the first half of the 20th century ended up clearing several stretches of this area for the construction of large office buildings which compare poorly to the historic fabric in terms of diversity and pedestrian life. Yet these *percées* in the first decade of the 20th century demonstrate how resilient the Luso-Brazilian building traditions are. De Paoli noted that one of the goals of these early urban

Figure 10: Approved building application on rua de São Pedro, Rio de Janeiro, c. 1903 (Arquivo Geral da Cidade do Rio de Janeiro, Paoli 2013)



renewal projects was to force the consolidation of narrow lots into broader ones, at least 6 to 7 meters wide (a measurement reminiscent of the suburban Portuguese 30 p. lot?). Yet several such consolidated lots were redeveloped with two or more independent structures side by side rather than one large building (de Paoli 2013: 36). New mixed-use buildings granted planning consent between 1903 and 1908 often preserve the side-hallway plan type (Fig. 10; compare with Fig. 4).

Effects of metrification on lot frontages

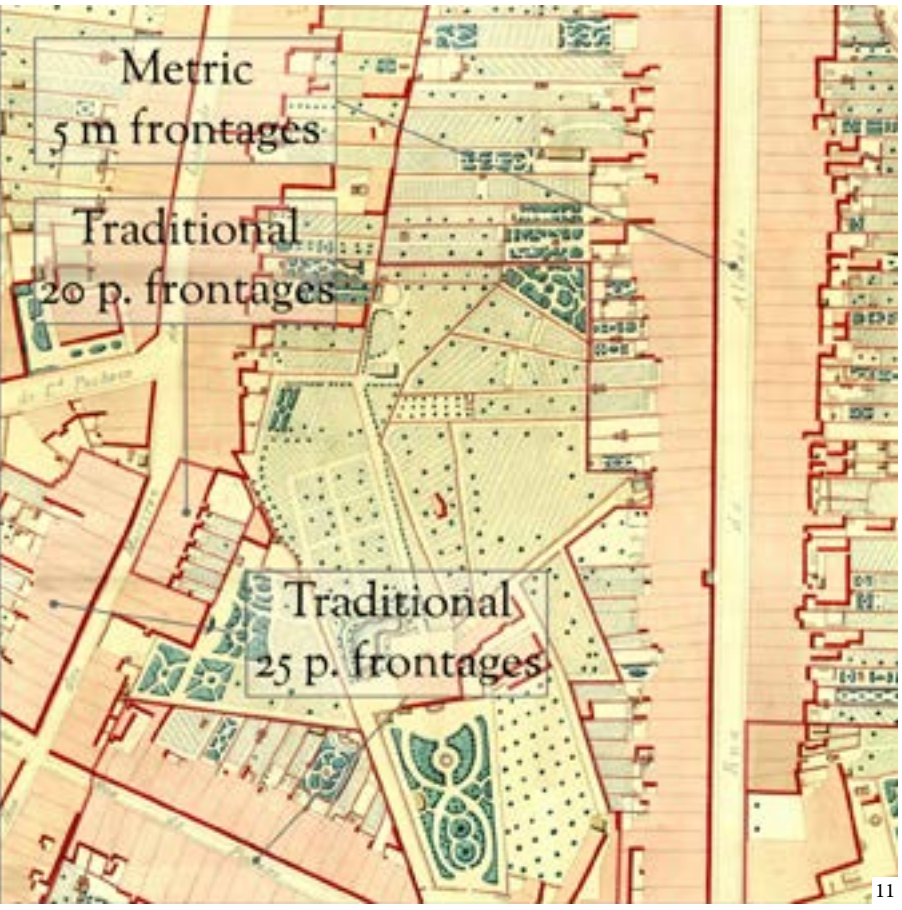
Meanwhile, in 1834, Portugal officially adopted the metric system, followed much later by Brazil in 1872. Metrification directly impacted construction trades and urban subdivision, not least because it was accompanied by a surge in new municipal and national regulation on building and urban development. Evidence of these changes is recorded in the urban fabric of the Portuguese city of Oporto, which grew significantly over the 19th century due to industrial development. The earlier growth lines, along pre-existing roads, exhibit traditional urban lot frontages 20 or 25 p. wide. On the rua do Almada, a new thoroughfare opened up in 1761 but only developed much later, on the other hand, lots are standardized at 5 meters wide (Fig. 11).

Metrification and the ensuing drive for ever-more comprehensive building regulations were also at play in early 20th-century São Paulo, Brazil's own industrial powerhouse. Carlos Alberto Cerqueira Lemos sees a positivistic will to "improve" low-income housing in that city (Lemos 1999). Turn-of-the-century regulations dealt chiefly with natural lighting and ventilation requirements in some (but at first not all) rooms of houses. This resulted first in conservative (and inconvenient) designs, where the side hallway became an open court; only later did actual side setbacks become common, requiring wider lots (Fig. 12).

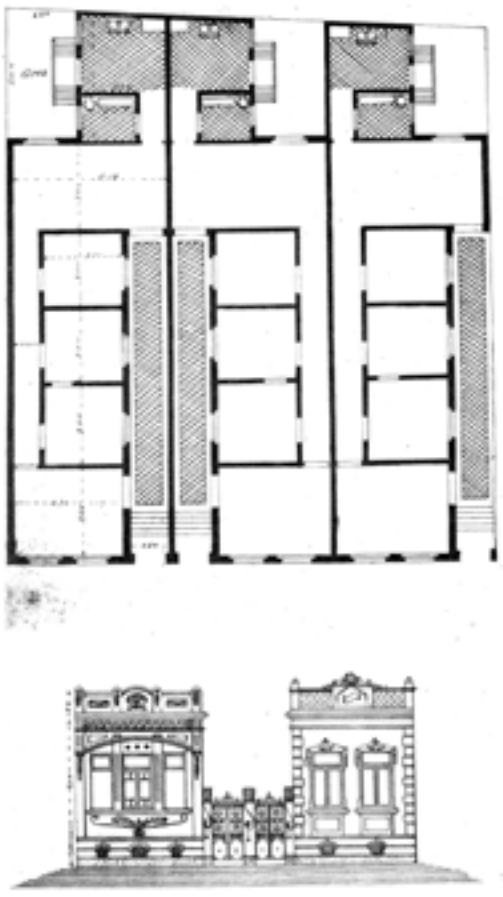
While the example of São Paulo contributed to the spread of side-yard houses through Brazil in the early 20th century, Portuguese builders took a different approach to the requirement for natural lighting and ventilation. Several early 20th-century public and private developments, especially in the center and south of Portugal, experimented with a suburban housing type 8.5 to 9 meters wide made up of four cells arranged in a square, with or without a hallway. A number of variations on this type are to be found at Entroncamento, a railway junction town of the late 19th and early 20th centuries (Paixão 2016). These dwellings, designed by architects and

Figure 11: Different lot standards before and after metrification in Oporto. Base map by Augusto Carlos Teles Ferreira, 1892

Figure 12: Rental dwellings in São Paulo, c. 1900 (Lemos 1987)



11



12

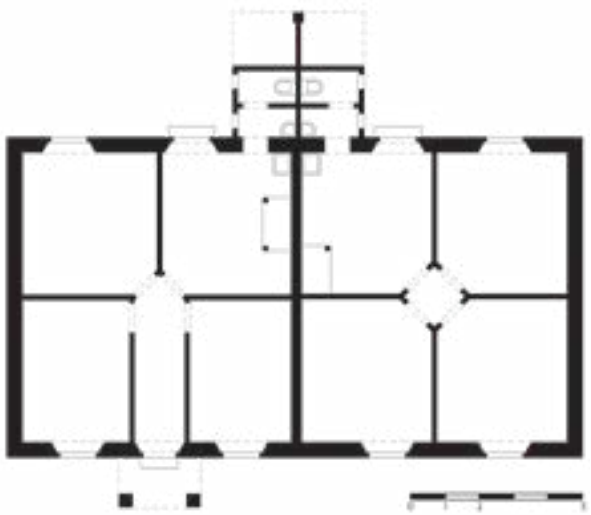


Figure 13: Two four-cell housing types in Entroncamento, 1925–1928 (Paixão 2016)

engineers, are arranged in pairs, evidencing a familiarity with contemporary garden-suburb concepts (Fig. 13). Their architectural style has often been dismissed as merely nostalgic, representing a superficial attachment to familiar visual cues and, worse, playing to conservative politics (Rosmaninho 2002-2003). Contrary to this interpretation, betraying a superficial study of the houses, these planned dwellings demonstrate an understanding of the long typological history of Portuguese houses and a conscious effort to adapt it to modern urban principles.

The increasing popularity of garden-city notions as well as a tendency to round up metric dimensions to 10-meter frontages ultimately put an end to this process. In the 1960s, the widespread use of 10-meter frontages encroached even on historic towns such as Ouro Preto (Fig. 14). But the damaging effect of this transformation on the character of traditional urban areas was not noticed by historic preservationists until much later, in the 1980s (Motta 1987: 114). By then, the exponential urban growth of the post-war era had already caused a major loss of character in such sites.

Figure 14: Unexecuted infill subdivision project in the Alto das Cabeças neighborhood, Ouro Preto, Brazil, 1965. Left: pre-existing conditions; middle: planning application; right: as approved by the National Heritage Institute, Iphan (redrawn in Salgado 2010, after Motta 1987)

Conclusion

I have surveyed the emergence and transformation of traditional urban and building patterns in Portugal and Brazil, focusing on recurring measurements and modules. These town-building traditions were quite stable for nearly five centuries, from the early 13th to the mid-18th century. Even as the spatial policies of "enlightened despotism" in Portugal imposed new, centralized and monumental urban forms on the landscape, these forms accommodated most of the existing practices regarding lot dimensions and house types. A crisis in traditional patterns arose with the adoption of the metric system in Portugal and Brazil in the 19th century, followed by the turn-of-the-century positivist approach of comprehensive urban and building regulation. Still, elements of traditional building types persisted well into the 20th century, only to fade away in the second half of that century.

Studies such as this one rely mostly on planned new towns and large urban expansions showing the interaction between top-down designs and bottom-up vernacular practice. So their most significant drawback is their reliance on a central "act of will" as evidence of the modularity of decentralized patterns. Urban infill and redevelopment can provide insights into the persistence of generic building types but the constraints of the existing fabric and land ownership patterns are likely to override any explicit choice of dimensional modules. On the other hand, these same constraints favor the continued use of plan layouts suited to existing lot sizes. A larger and more detailed body of architectural documentation might shed light on the relationship between these constraints and the dimensional limits that traditional building types can attain.

Customary measurement units play a significant part in the stabilization of urban and building types. The *palmo* (hand span) and especially its fivefold multiple the *vara* (yard) provide sensible, minimal modules for sizing construction elements and laying out urban units – most importantly, lot and street widths. Lots with widths of 20, 25, and 30 p. occur consistently up to the mid-19th century, both in developments planned and controlled

by the state and in the private dynamics of suburban city extensions. These dimensions support specific building types consisting of linear arrangements of spatial cells with or without hallways that changed very little up to the late 19th century.

The successive shocks of metrification and positivist building regulations in the mid-to-late 19th century resulted in conspicuous changes in urban and building morphology as well as in the eventual split of the Luso-Brazilian tradition into separate national trends. Even historic preservation has done little to stem the decline of traditions, not least due to the prevailing emphasis in preservation theory and practice throughout the 20th century on upholding the fatalist distinction between "original" and "addition" rather than on protecting the continuous *process* giving rise to traditional urban areas. Despite this loss, traditional layouts continued to provide cultural references and models for new projects well into the first half of the 20th century. The spatial efficiency and functional flexibility of such types as the townhouse, endowed as of the late 1800s with a side yard, and the foursquare cell house, compare favorably to recent types of housing and urban development.

The long-term stability of Portuguese building modules is a case that, in our age so fond of "microhistory", reasserts the importance ascribed to "intrahistory" by Chueca Goitia and Braudel. Yet its value reaches beyond the domain of the historian's craft: it is a statement about the importance of continuity to design practice. The study of modules in urban and building development shows the resilience of morphological patterns and professional practices over time. Standardized street widths, lot sizes, and building types are valuable evidence of cumulative problem-solving; aimless experimentation and constant starting over from scratch, by contrast, have resulted in so many failed architectural and urban projects.

[1] I am grateful to Douglas Duany for introducing me to Orr's concept of a "block of blocks".

References | Referencias | Referências

Caniggia, Gianfranco. 1997. Analisi tipologica: la corte matrice dell'insediamento. In *Ragionamenti di tipologia: operatività della tipologia processuale in architettura*, 59–107. Firenze: Alinea.

Carita, Hélder. 1994. *Bairro Alto: Tipologias e modos arquitectónicos.* Lisboa: Câmara Municipal de Lisboa.

Cataldi, Giancarlo. 2015. Tipologie dell'abitare: Ipotesi evolutive e quadro metodologico. In *Arquitectura Tradicional no Mediterrâneo Ocidental: 1º Congresso Internacional, Mértola*, 38–47. Lisboa: Argumentum.

Chueca Goitia, Fernando. 1981. Invariantes castizos de la arquitectura española. In *Invariantes castizos de la arquitectura española. Invariantes en la arquitectura hispanoamericana. Manifiesto de la Alhambra*, 2nd ed., 15–153. Dossat Bolsillo 2. Madrid: Dossat.

Conzen, Michael P. 2018. Core Concepts in Town-Plan Analysis. In Vítor Oliveira (ed.), *Teaching Urban Morphology*, 123–43. The Urban Book Series. Cham: Springer. https://doi.org/10.1007/978-3-319-76126-8.

Delson, Roberta Marx. 1998. *Novas vilas para o Brasil-Colônia: planejamento espacial e social no século XVIII*. Translated by Fernando de Vasconcelos Pinto. Brasília: Alva, Ciord.

Derntl, Maria Fernanda. 2013. *Método e arte: urbanização e formação territorial na capitania de São Paulo, 1765-1811*. São Paulo: Alameda.

Fernandes, Sérgio Padrão. 2014. Fundação e evolução dos traçados urbanos: Matrizes elementares de assentamento e derivações complexas. In Dias Coelho, Carlos (ed.), *O Tempo e a Forma*, 70–93. Lisboa: Argumentum.

França, José Augusto. 1989. *A reconstrução de Lisboa e a arquitectura pombalina*. Lisboa: Instituto de cultura e lingua portuguesa, Ministerio da Educação.

Lemos, Carlos A.C. 1987. Ecletismo em São Paulo. In Fabris, Annateresa (ed.), *Ecletismo na arquitetura brasileira*, 69–103. São Paulo: Nobel/ Edusp.

Lemos, Carlos A.C. 1999. *A república ensina a morar (melhor)*. São Paulo: Editora Hucitec.

Lobo, Manuel Leal da Costa; and Simões Júnior, José Geraldo (eds.). 2012. *Urbanismo de colina. Uma tradição luso-brasileira*. São Paulo: SciELO - Editora Mackenzie.

Motta, Lia. 1987. A SPHAN Em Ouro Preto: Uma História de Conceitos e Critérios. *Revista Do Patrimônio Histórico e Artístico Nacional*, 22: 108–22.

Oliveira, Vítor. 2016. *Urban Morphology: An Introduction to the Study of the Physical Form of Cities*. The Urban Book Series. Cham: Springer. http://www.springer.com/la/book/9783319320816.

Oliveras, Jordi. 1998. *Nuevas poblaciones en la España de la Ilustración*. Barcelona: Fundación Caja de Arquitectos.

Orr, Robert. 2018. Five Steps to Super Blocks. *Public Square*. https://www.cnu.org/publicsquare/2018/08/27/five-steps-super-blocks.

Paixão Nunes, Diogo Alexandre. 2016. *Os bairros operários da Companhia de Caminhos de Ferro Portugueses. O Caso do Entroncamento até à primeira metade do século XX*. Dissertação (Mestrado em Arquitectura). Porto: Universidade do Porto, Faculdade de Arquitectura. https://repositorio-aberto.up.pt/handle/10216/86446.

Panerai, Philippe. 2012. *Analyse urbaine*. Marseille: Parenthèses.

Paoli, Paula de. 2013. Uma outra cultura de edificar: a produção da nova arquitetura no Rio de Janeiro das reformas urbanas de Pereira Passos (1902-1906). *Revista do Arquivo Geral da Cidade do Rio de Janeiro*, 7: 15–44.

Raspi Serra, Joselita; and Domenico Acconcia (eds.). 1990. *Il concetto di centro storico: ricerca archeologica, recupero, conservazione, riuso, protezione dei Beni Culturali*. Milan: Guerini Studio.

Rosmaninho, Nuno. 2002–2003. A "Casa Portuguesa" e outras "Casas Nacionais". *Revista da Universidade de Aveiro – Letras*, 19/20: 225–50.

Salgado, Marina. 2010. *Ouro Preto: paisagem em transformação*. Dissertação (Mestrado em Arquitectura). Belo Horizonte: Universidade Federal de Minas Gerais, Escola de Arquitetura. https://repositorio.ufmg.br/handle/1843/MMMD-8QCLUV.

Teixeira, Manuel C. 2012. *A forma da cidade de origem portuguesa*. São Paulo: Editora Unesp.

Trindade, Luísa. 2009. *Urbanismo na composição de Portugal*. Tese em História da Arte. Coimbra: Faculdade de Letras da Universidade de Coimbra. https://estudogeral.uc.pt/handle/10316/13529.

Vieira, Liliane de Castro. 2016. Ouro Preto e o século XIX: o mito da decadência. *Revista CPC*, 22: 145. https://doi.org/10.11606/issn.1980-4466.v0i22p145-189.

Biography | Biografía | Biografia

Pedro P. Palazzo

Pedro is an architect, architectural historian, and historic preservationist. He graduated in Architecture from the University of Maryland (2003) and completed his Ph.D. in Esthetics and Semiology of Architecture at the University of Brasilia (2010), where he has taught architectural history and theory since 2015. He is a former Coordinator of Museums and Historic Preservation in the Federal District (Brazil) Culture Department (2016) and visiting scholar at the University of Coimbra, Portugal (2019–2020). His research areas include traditional architecture and urban form in Portugal and Brazil, and the interfaces between classical and modern architectural theory.