DOI: 10.5821/ace.12.36.4791

THE FIVE CATEGORIES OF SOLÁ-MORALES AS A LEGACY FOR READING THE URBAN LANDSCAPE

MONTEIRO, Evandro Z. [1]
TURCZYN, Daniel T. [2]

Initial submission: 30-06-2016
Definitive acceptation: 02-02-2017
Definitive submission: 17-01-2018

Key words: Urban Morphology; urban sprawl; urban planning; gated communities

Structured abstract

Objective
Nearly forty years after Lynch (1960) proposed the use of his “five elements” to apprehend the “image of the city,” Solà-Morales (2002) published the article “Presente y futuros. Arquitectura en la ciudad” in which he also proposed five "concepts” or "platforms" focused on the changing dynamics and morphologies of 21st-century large urban areas. The objective of the study is to propose a method for analyzing the urban morphology of the rapid-growing new suburban areas in the city of Campinas, State of São Paulo, Brazil based on those five categories.

Methodology
The methodology consisted of analyzing *Google Earth* and *Google Street View* images, complemented by street level observations and photographs, under an approach that takes advantage of Solà-Morales' five categories as analysis units.

Conclusions
The paper concludes that local conditions tend to shape these (undergoing change) areas in ways that are in tune with the categories’ descriptions. The phenomena was observed not only in Campinas, but also in other major cities of the State of São Paulo, Brazil. This shaping indicates a shift in the traditional hierarchical structure of the urban territories, with an emphasis toward new “mutation” areas.

Originality
The new method proposed by this paper, based on Solà-Morales’ revolutionary concepts, may trigger further investigations and unexpected results when applied to other metropolises throughout the globe.

[1] Research scholar and professor at School of Civil Engineering, Architecture and Urban Studies, State University at Campinas-Unicamp, Brazil, E-mail: evanzigg@g.unicamp.br
[2] PhD Student at School of Civil Engineering, Architecture and Urban Studies, State University at Campinas-Unicamp, Brazil, E-mail: daniturczyn@gmail.com

1. Introduction

Based on both cognitive mapping and the concept of public image, one can observe that Lynch's five elements' methodology is a milestone in analyzing growth patterns of 20th-century cities. For the past half a century, such growth has systematically created new territories, somewhat diverse from those observed in the traditional model of a city, which had prevailed for centuries. The city that, historically, had been boosted by urban values maintained by its city core, as well as by the sociability of its traditional districts, streets and squares, in some instances has yielded to a suburbanization dynamic based on population scattering, multipolarization, and spatial fragmentation. The spaces created by sprawl, suburbanization, and the popularization of fortified enclaves, are no longer on a pedestrian scale; therefore, it is impractical to analyze them from that vantage point. Examining the situation on a metropolitan scale, these spaces conform differently, based on the logic of their consolidated neighboring areas, and the traditional urban fabric and its built-up typologies. Instead, they conform to new urban organelles that no longer are structurally related to the traditional city. These are the urban mutations as defined by Solà-Morales (2002).

Conversely, as pointed out by Harris & Larkham (2003), many stereotypical beliefs have been associated with the suburbs, such as social and class status of the inhabitants, uniformity of suburban character, ugliness and individualism. But these all are highly dependent on cultural and local issues. Furthermore, suburbs have been present in large cities since the ancient Roman era and can be found worldwide, which denies another stereotype associated with them: that they are a contemporary disease. In fact, with the ascension of urban mutations, what we may be witnessing is not necessarily celebrating or condemning suburban landscape and life, but rather a reckoning in the hierarchical structure of the urban territory with which architects must work. The quantitative importance of suburbia and its qualitative flaws are facts already widely known (Phelps, 2010). The main issue at play may be the need to embrace this historical shift of urban form. It is also uncertain if the shift is a process centered at the metropolis or if it is, as Arellano & Roca (2014) understand, a phenomenon based on already existing megalopolises around the globe. But as Modarres & Kirby (2010) have proposed, we must begin to "adapt our cities, from center to edge, moving away from nostalgia"; as these authors' note: "Polycentric urban forms are written large in our cities' futures."

The type of suburbanization in place in the United States since the mid-20th century is the model virtually adopted in most of the in development and developed world - including the European countries (Arellano & Roca, 2012; Burns & Grullón, 2012), and Brazil. It reflects a design process offering peripheral, low-density occupation reliant mainly on highways and their junctions. It induces the formation of vast areas of generic spaces and landscapes. Locomotion is based on the intensive use of private vehicles. Recreation and social gatherings rarely happen in most public areas, but instead in semiprivate structures that concentrate a variety of functions, such as shopping malls, the type of places labeled by Solà-Morales as "containers". Fortified enclaves are the new urban developments at work, shaping contemporary suburbs, such as gated communities, office parks, and shopping centers and, increasingly, other spaces adapted to conform to this model, such as schools, hospitals, leisure centers, and theme parks (Caldeira, 2000). Many urban functions have been co-opted by fortified enclaves. Historically, these types of operations needed high densities and centers established for their operation that

were recently embraced by large structures and no longer dependent on their concentration or centralization, but rapid access (Fishman, 2005).

Although these developments tend to be spaces for the affluent social strata, in developing countries they have been often deployed in rural areas or next to slums and self-constructed houses (Caldeira, 2000). The periphery in Brazil, which was formerly a territory of the poorest part of a population, today is the dream of the elite, with the price appreciation of these locations having been forged by the real estate market, which simultaneously enhanced the degradation of the central areas (Maricato, 2011). The popularization of this type of urban development is often justified by the increase in urban violence—especially by the elite who prefers to (and can) reserve open green areas within their private property, and in addition, who can afford individual, private means of transportation. Studies on the appeal of gated communities in Brazil reveal the main reason families decide to live in controlled spaces isolated from society is to exercise greater control over security, followed by the desire to be surrounded by a tranquil and quiet environment (Lopes & Ornstein, 2010). The same study concludes that status signaling also may be a reason for acquiring a home in a closed community, but after a couple years, is no longer seen as a reason for remaining in the same neighborhood.

The shift in the hierarchical structure of the urban territory, also currently in progress in Brazil, highlights the decaying of the traditional central area and neighboring districts in exchange for all types of gated communities and retail facilities accessible only and directly by cars. As Kärrholm (2012) has stated, "the shopping mall wants to become a city, and the city wants to become a shopping mall". These areas, always coinciding with those whose values have been highly assessed by private enterprises and real estate managers, are the stock upon which Solà-Morales builds his concepts. In this paper we introduced the five categories of Solà-Morales as a tool to analyze urban morphology to facilitate the recognition, identification and qualification of emergent trends and patterns in a metropolitan territory, as part of an evolving era of polycentric urban forms.

2. Reading contemporary urban space using the categories of Solà-Morales

Unlike Lynch's elements, which are associated with clear spatial/built structures, the concepts proposed by Solà-Morales do not follow the same linear argument. They also (as with Lynch) number five and are sometimes called "categories": (1) mutations (the form of change); (2) flows (the form of movement); (3) dwellings (the form of the home); (4) containers[3] (the form of exchange); and (5) *terrain vague*[4] (the form of absence).

With the concept of flows, while it forms the basis for the other four categories, it retains its own specific nature. It is not directly associated, as are the other four, with spatial structures, but

[3] From the original Spanish term "c*ontenedor*"

[4] In the words of Solà-Morales (2002), "*Terreno baldío* in Castilian, wasteland, in English, are expressions that do not translate in all its richness the French expression. The notion of *terrain vague* contains such vague ambiguities and multiplicities of meaning: (...) one is the vague sense of the vacant, empty, free activity, unproductive, and in many cases obsolete. Another is a vague sense towards inaccurate, indefinite, vague, wander, without certain limits, without a future horizon."

primarily with a dynamic, so powerful, it can conform and alter them all. It can even govern spatial phenomena that may be virtual in nature and remain hidden behind actual spaces. At the same time, Solà-Morales (2002) argues that "movements of all sorts are becoming more and more the very substance of design", in which networks, meshes, ducts, and staccato movements start to be understood as recurring motifs of the built environment. To some extent, these resemble the latest speculations in physics on "dark matter", which is believed to underlie our universe as an observable physical matter. Another tangible manifestation of the concept of flows, observed in metropolitan areas around the world, is a less "elegant" pattern: the resurgence of Venturi's (2000) "strip" along highways. In the city of Campinas in Brazil, this phenomenon has merged with the pattern of "marginal roads" (Monteiro, 2010). Fragments of long-distance roadways, which ring around the city, thus are transformed into new centralities.

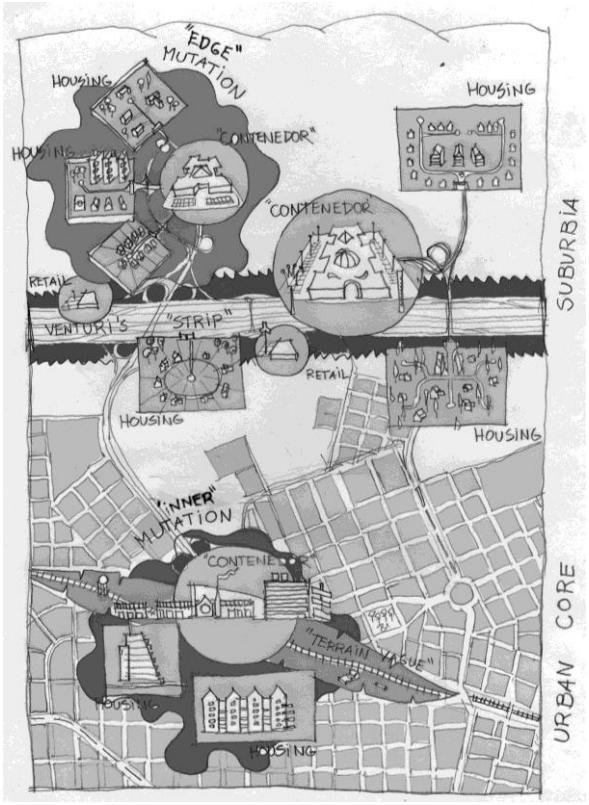
Unlike Lynch (1960), who proposed a method to identify and analyze his elements, Solà-Morales presents his theory of five cultural categories as a means to help us understand "the new relations between architecture and the large modern metropolis", without the use of any specific method or tool. While his theory may not demand it, it is certainly tempting to search for specificity. Solà-Morales begins his explanation with the mutation category, because, according to him, it is most suited to understand the sudden transformational phenomena at play. He concludes with *terrain vague*, the counterpoint to mutation, or the other side of the same metropolitan coin, concluding: "Only the same attention to the innovation as to the memory and absence values will be able to keep alive the trust in a complete and plural urban life" (Solà-Morales, 2002). What is not clearly described in the text, but is implied, is that the mutation category represents a physical expression on a much grander scale than other elements, such as dwellings and containers, although normally, it is equal in size to the *terrain vague*. Actually, a mutation will normally occur by creating new dwellings and containers.

Considered separately, dwellings and containers represent the most desirable and fashionable forms for both living spaces and goods exchange (as well as for transmitting information and culture), and they can emerge from any point within the metropolitan fabric. Sometimes, their influence is further empowered when they are combined into a mutation. Kärrholm (2012) has pointed out "the strategies of design and spatial organization that were once developed for shopping centers are now used for city planning and urban design". Moving in this direction, however, we observe this strategy contaminates the inner logic of the mutation. The key element of an urban mutation is the container that can be in the form of a shopping mall, a theme park, or an iconic museum. The container, when approved by a city authority, is the final catalytic element in a network of strategic deals made among private investors and real estate brokers. These do not only involve the retail enterprises, but also investments in future dwellings, urban infrastructure, and into them, evidently, the flows. In developing countries, this privately executed operation frequently takes place without requirements, regulations, or design criteria. The absence of any strict development process thus may explain why such regions' suburban areas often lack proper connectivity to the existing urban fabric. They are based on a different logic and their utility as being part of a whole is reduced.

The last of the categories described by Solà-Morales, the *terrain vague*, deserves a cautious approach. It results from a shift in areas that have witnessed an abandonment of their original function. They become deserted space after a technological or economical shift occurs. Solà-Morales warns urban designers not to eagerly transform, or "revitalize" them. Sometimes, it is

too soon to understand all the symbolic meanings and memories tied to those areas, spaces, and ruins by the population. City planners will often decide "to do something about" such abandoned, empty, dangerous areas. In the launching of a public-private partnership, the *terrain vague* suddenly becomes fuel for mutation. Design scenarios might include a retro shopping mall, a new glazed commercial building and a hotel, or housing designed for young families and lofts aimed at young urban professionals. In addition, all structures would be equipped with underground parking garages. This is mutation type "B", or inner mutation, a solution fit to bring the new urban-age private investitures back to the old urban core. It may result in a better quality of structure on the landscape, which is why it also is referred to as the "creative" mutation (Turczyn & Monteiro, 2013b). The inner mutation is antagonistic to what would be the typical mutation of urbanism in the global era, the edge mutation. The edge mutation is the one that more frequently accompanies the suburbanization phenomena of the great metropolis. Associated to undeveloped land, suburban highways and huge parking lots on the outskirts of the city, the "A" type mutations were the ones analyzed in the study-case described here.[5] Figure 1 illustrates how the Solà-Morales' categories are morphologically reshaping the metropolis, either in suburbia or in the traditional urban core.

Figure 1. **Diagram to illustrate the categories of Solà-Morales**



Source: Elaborated by the authors.

Note: (1) mutation (inner and edge); (2) flows; which are spatially intangible, were barely represented by their "iceberg tips," to borrow Venturi's concept of strip; (3) dwellings; (4) containers; and (5) *terrain vague*.

[5] In some extent, the Solà-Morales concept of mutation, regardless the fact that he has always linked it to the present time, do have similarities to the urban morphology concept of "fringe belt" (Whitehand & Morton, 2004). Following that line of thinking, *terrain vague* would be the result of past mutations.

3. Edge Mutations in a Brazil's smaller metropolis – the case of Campinas, São Paulo

Despite finding no conclusive evidence that in Brazil's younger cities the polycentric urban era is dismantling the downtown areas, conversely, this appears to be occurring in small metropolitan regions of the United States (Filion *et al.,* 2004). Earlier studies of cities in the State of São Paulo and other parts of Brazil seem to indicate that Solà-Morales-inspired *dwellings* and *containers* are becoming a widespread phenomenon. Particularly in the city of Campinas, in São Paulo, a more detailed investigation has uncovered that not only is this phenomenon happening, but specifically mutations have been observed forming along the D. Pedro I highway, in the northeast area of the city (Turczyn & Monteiro, 2013a).

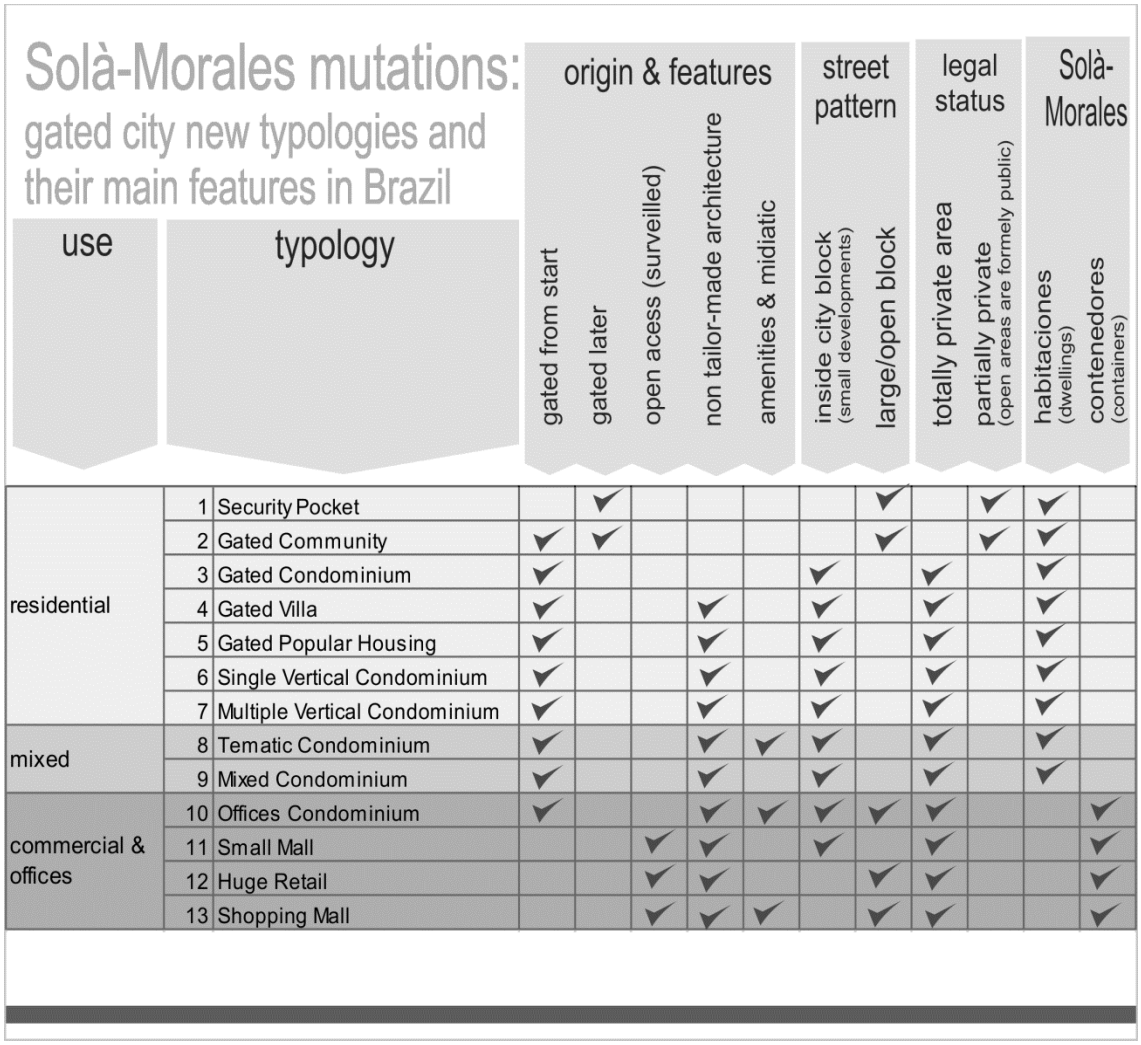
The methodology used to identify this particular mutation is based on analyzing *Google Earth and Google Street View* images, complemented by photos and field surveys. These focused on recognizing the outline of the mosaic that the *dwellings, flows, and containers* create (Turczyn, 2013). This research consisted of creating a system of morphological and functional patterns based on landscape analysis. As a result 13 building typologies are identified and associated with *dwellings* and *containers*, and 58 urban landscape patterns[6], are associated with mutation. In this article we focused on describing the 13 typologies that recognize Solà-Morales's categories at play. The criteria adopted to classify the typologies are based on the following issues: use: residential, commercial-offices, or mixed; gate/wall/surveillance characteristics; type of architecture, if done by the developers or tailor-made on a privately owned lot; product type is a new, if an advertised product, according to the latest fashionable amenities; size and shape, if it is part/whole of a block or if it is an open block of the fringe belt; legal status, if it is a totally privately owned area or if it is laid-out as part of the city's territory, with public roads and public open areas; complementing use, if it functions as Solà-Morales' dwellings or containers. (Figure 2)

3.1 The 13 typologies of Campinas' mutations

Each of the typologies represents a private initiative type of building or urban parceling. Nine of the thirteen typologies are residential enclaves (Figure 3), which share two basic formal characteristics: they are all delimited by walls or fences and have at least one controlled and supervised entrance. But, how do we get to define nine typologies of residential enclaves in Campinas? Beyond the common characteristics, the first feature that can be distinguished is verticality. Single vertical residential buildings were the first multi-family structures in the city to have controlled access. This trend started in the 40s and 50s, at the urban core and in central districts of Campinas. They are present in the edge mutations, but since the 90s have gradually been replaced by more market oriented products, with multiple towers and collective facilities (i.e. gym, clubs, kennels, gourmet areas). Some recent developments also mix vertical buildings with horizontal dwellings. Those differences were taken into account when we decided to categorize numbers (6), (7), (8) & (9), the vertical and mixed typologies.

[6] The 58 landscape patterns studied in the cited research (Turczyn, 2013) are a more detailed morphological analysis of the landscape created inside and among the typologies, in the pedestrian scale and at a street-level approach.

Figure 2. **The 13 building typologies of the edge mutation in the city of Campinas, São Paulo: characterization criteria**



Source: Elaborated by the authors.

A second group of typologies are horizontal residential enclaves, from the beginning considered a very controversial legal issue in Brazil (Freitas, 2008). Brazilian federal law that regulates land parceling was established in 1979 (Presidencia da República, 1979), and under the law horizontal enclaves may only be totally private if inside a block of a property that was previously parceled. Once a large portion of land is parceled, it becomes part of a city, as a district or neighborhood, therefore must include public roads, public parks and plazas, and areas reserved for future public buildings. Only typologies (3), (4) and (5) can be considered horizontal condominiums in the strict sense of totally privately owned land, and so considered legal to be walled and closed to the public. These are normally smaller areas that can easily fit into a city block. Typology (2), the gated community, inaugurated the controversy.

They are large areas and represent a high percentage of the territory of the mutation (Figure 3) and therefore have a strong impact in its landscape. Most of them started to being built in the

70s and 80s, when lack of sense of security began to push the high-income families into looking for this type of housing (Yildiz *et al,* 2010). Sometimes the enclosing perimeter is walled years after the development is built-up, and those cases have been judicially questioned. The practice may have influenced, from the 90s, the arising of bizarre typology (1), the so-called "security pocket"[7]. Security pockets are parts of old districts and streets (or group of streets) of the existing city that, by their dwellers own initiative, have controlled/blocked free public access of people and vehicles inside a defined perimeter. In Campinas, this practice or typology that has been regulated by municipal law.

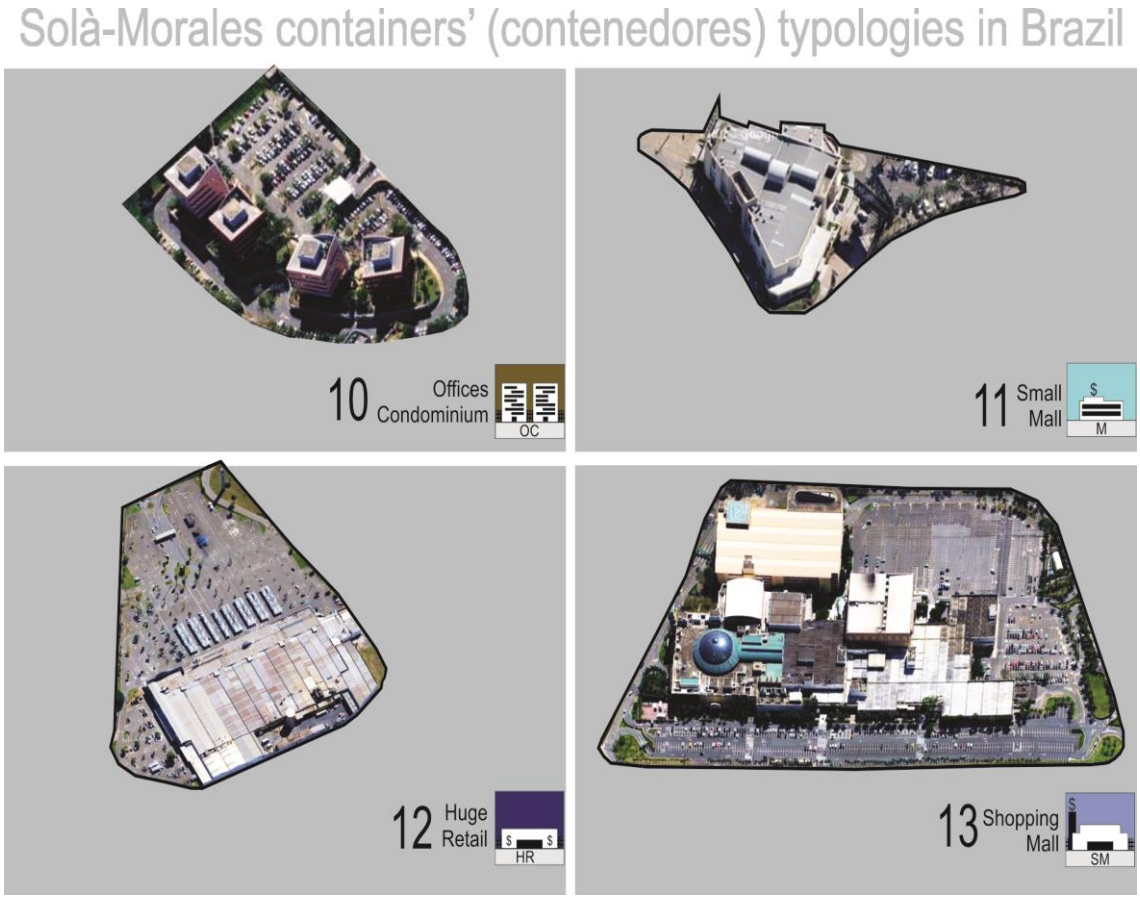
Figure 3. **Residential typologies of Campinas edge mutations**

Source: Elaborated by the authors. Images based on Google Earth

[7] Security pocket" is the legal term used by the Campinas city authority to designate traditional areas of the city that have been turned into walled communities, with some enclosed by improvised barriers or fences.

Typologies (1) and (2), aside from occupying a large territory of the edge mutation, are in the main responsible for the loss of continuity of the urban tissue, aside shopping malls, which have a similar effect. The other two horizontal typologies – gated condominiums and gated villas – originate from the fusion of existing urban parcels, and examples are rarely larger than a regular city block. The difference between the two is that the villas are more compact. Both typologies are characterized by being totally on private land and controlled access is legal. Not all of the nine residential typologies found in Campinas can be related to Solà-Morales examples of "experimentation and innovation" when he talks about the *dwellings'* category (Solà-Morales, 2002). Most of the typologies still represent, in terms of architecture, very traditional and standardized solutions, either as typologies characterized as tailor made units on privately owned lots, or as mass constructed units by the real state entrepreneurs.

Figure 4. **Commercial/office typologies of Campinas edge mutations**



Source: Elaborated by the authors. Images based on Google Earth

The last set of typologies is related to commercial/offices use (Figure 4). Their architecture is characterized either by office towers, Venturi's decorated sheds (2000), or buildings made as large single volumes, or extruded surfaces, surrounded by parking lots. In this study, Solà-

Morales containers are restricted basically to larger shopping malls and their surrounding area satellite small malls, offices' condominiums and huge retails. Despite the fact that the author's *containers* found in cities like Campinas are not as varied (for now) – iconic museums, stadiums, theme parks – they do play an unquestionable preponderant role in the lives of the edge mutation dwellers. In the words of Benfatti *et al.* (2010), also analyzing the Campinas city metropolitan area, the dwellers "spend more and more time in circulation and displacement, and increasingly use specifically megalopolitan areas: integrated shopping centers".

The authors believe that this possible "decline of the public space" maybe signalizing a profound privatization of the city. The fact is that in the city of Campinas, the area studied can be analyzed as a compound of three chronological grown individualized but integrated mutations: the mutation catalyzed by Iguatemi shopping mall, inaugurated in 1980, the mutation catalyzed by Galleria shopping mall, inaugurated in 1992, and the one of Dom Pedro shopping mall, inaugurated in 2002 (Figure 6).

Each of the three containers reinforces this paper's hypothesis that a mutation is morphologically structured by a series of homogeneous typologies, either of residential or commercial/office use, and each of them presenting a catalyzing component, a main *container*, as well as being well served by a dense network of flows.

3.2 The mutations' landscape: how typologies are structured in the territory

The average size of each private initiative type of edge mutation that makes a typology (left panel of figure 6) varies from 0.5ha to 40ha. The largest ones are: type (2) the walled community, at 40ha; type (13) shopping mall, at 23ha; and type (1) the security pockets, at 17ha. Those are the larger objects that have strong impact, both on the mutation's landscape, and on the territory's permeability. The right panel of Figure 5 shows the percentage of the mutation occupied by each typology in relation to the mutations total area. It highlights the large percentage that the biggest enclosed communities represent, despite their footprints being much smaller in actual number.

Much of the new built landscape created by mutation areas in the city of Campinas is characterized, besides the buildings' own typologies, by walls, normal fences, electrified fences, green walls, dead-end roads, enormous parking lots, and poorly designed or unfinished public space and sidewalks and absent or inappropriate urban furniture. Since security is a major concern in the layout of the State of São Paulo's enclosed communities, this fact plays a major role in defining the new landscapes of the mutation. We can see two examples of urban landscape patterns: the "bridge between enclaves" and the "walled road", in this case with some landscaping elements (Figure 5).

Figure 5. **Examples of urban landscape patterns associated with the new mutation areas in the city of Campinas-SP**

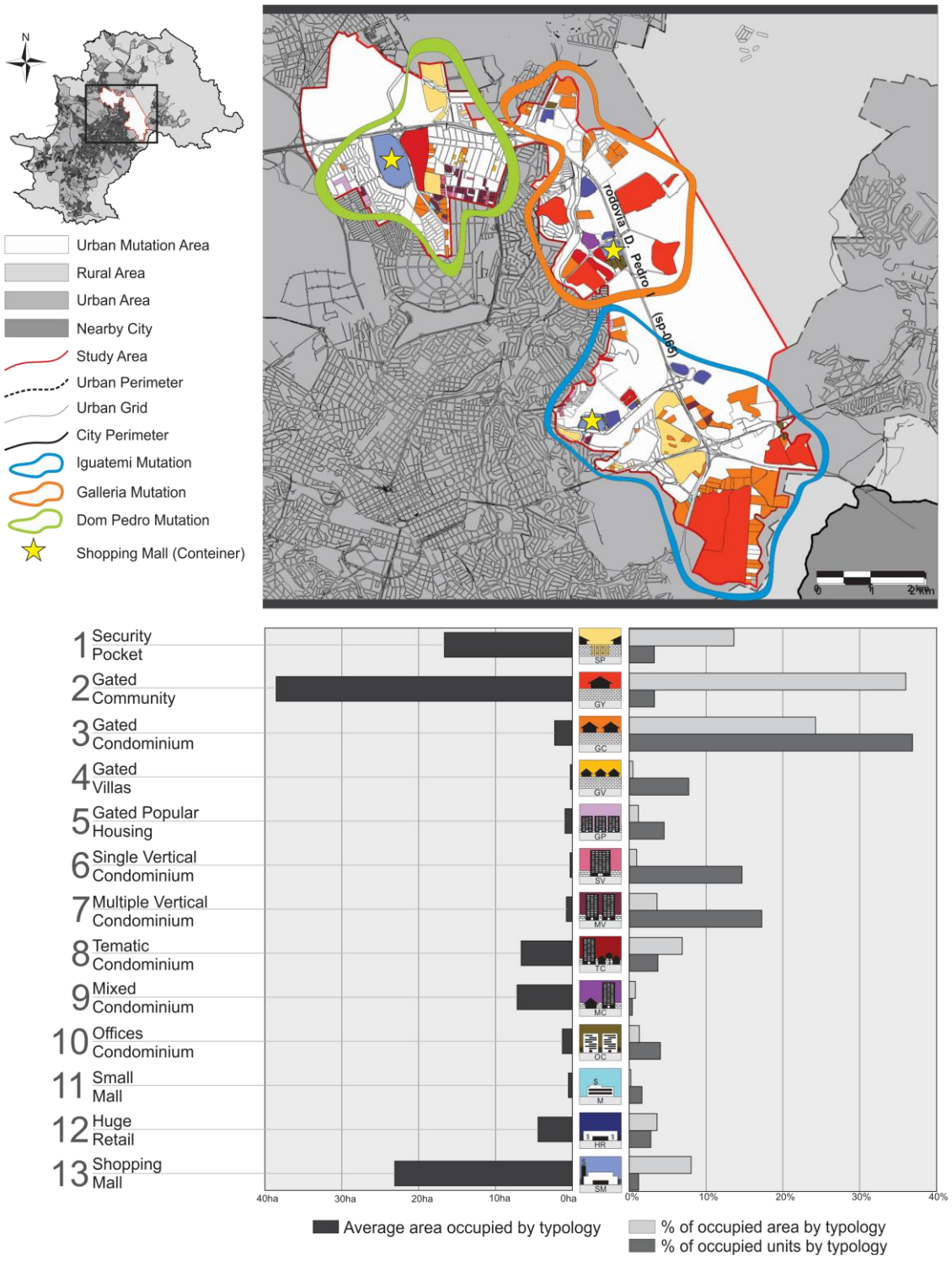
Source: Turczyn, 2013.
Note: (a) “a bridge between enclaves”; (b) “a walled road”.

A mosaic of dwellings and containers, which create typologies and specific landscape patterns structure mutations. Since a powerful infrastructure supports these, its flows, one can understand the logic organizing their proximity and growth dynamics. Despite the evident disregard for the public sphere, at least in Campinas-SP, rules are in place to ensure the profitability of new additions to the system.

Four basic elements can be cited: similarity—making the typology recognizable as such; security features—walls, gates, surveillance equipment; flows—physical (car, highways, parking) and virtual (cable, high-speed internet); and proximity to other typologies of the same kind. The proximity structure was analyzed for Campinas-SP, as shown in Figure 6. Each typology group (e.g., *dwellings*, *container*-offices, *container*-retail) maintains a close proximity among the samples within the group (Turczyn, 2013).

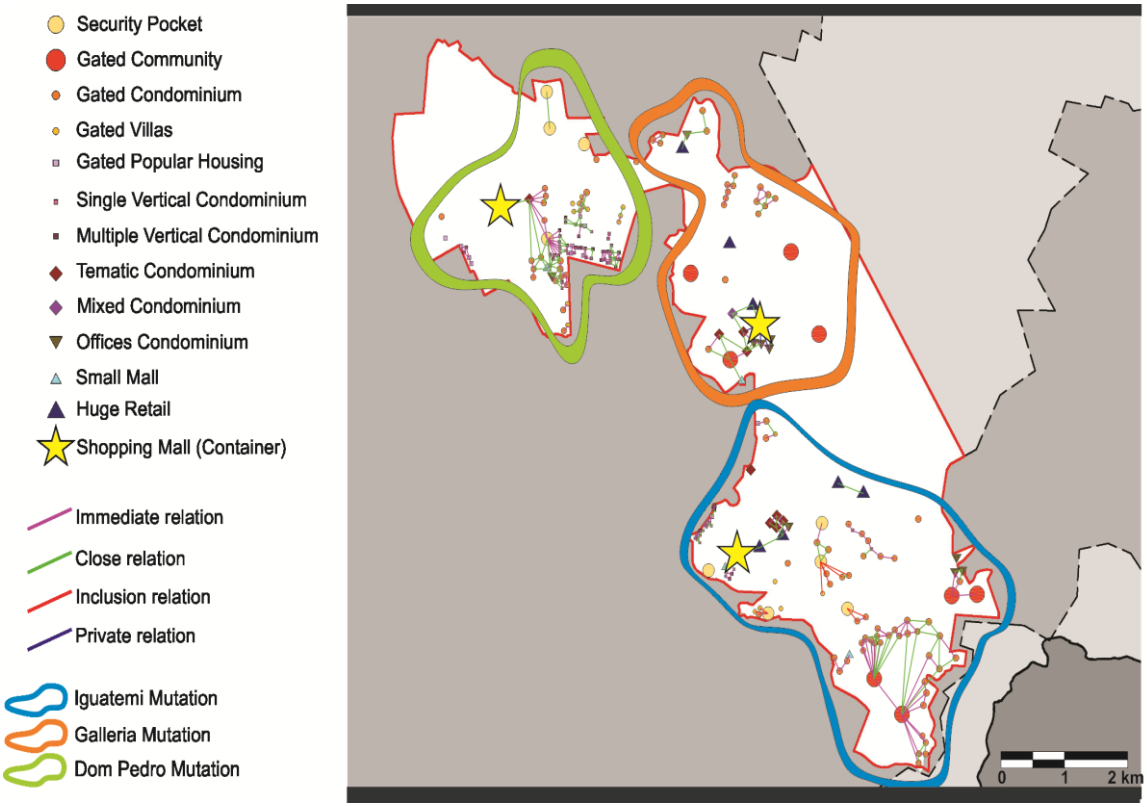
Despite the groups normally being very well connected by, either expressways or the *strip*, close proximity is not imperative. Evidently, this characteristic is also directly affected by the road system’s layout and zoning regulations. The proximity analysis also reinforces the three chronologically grown, individualized but integrated mutations already cited.

Figure 6. **Distribution of building typologies associated with typologies, along the D. Pedro I corridor, in the city of Campinas, São Paulo, Brazil**



Source: Turczyn, 2013.

Figure 7. **Proximity among building typologies of urban mutations along the D. Pedro I corridor, in the city of Campinas, São Paulo, Brazil**



Source: Turczyn, 2013.

3.3 Other cities in the state of São Paulo: a preliminary survey

A preliminary analysis of *Google Earth* images shows that similar findings can be observed in other small metropolitan areas and midsized cities besides Campinas, in the State of São Paulo, Brazil. Three other locations were studied: Ribeirão Preto, São José do Rio Preto, and São José dos Campos. In all of them, we can observe clear signs of new and connected global standard *dwellings* and *container,* as well as clear mutation areas forming near the local *strip*, or an important road. In São José do Rio Preto such growth occurs along the east and south portions of the city, while in São José dos Campos it is highly concentrated through a strong network of highways. Campinas and Ribeirão Preto show signs of mutations in more advanced stages, which have merged to form unified areas (Figure 8).

Figure 8. **Evidence of urban mutations in Campinas, São José dos Campos, Ribeirão Preto and São José do Rio Preto, State of São Paulo, Brazil**

Source: Maps drew in AutoCAD software over GoogleEarth raster images.Source: by the authors.

Conclusions

In this paper we acknowledge that the era of suburban landscapes is now long established—not only in the sense of the suburbs themselves, but also in the creation of a new metropolitan shape through the two types of mutations (edge and inner). A major challenge is how we can best work with their usage patterns. The time has passed for nostalgic reflection or for fighting against this type of development just because architects consider it to be bad urban design. We

can spend our time and resources more effectively in reviewing available approaches and identifying the instruments to use in planning and designing the new metropolis.

We should not discard urban traditions; they are needed now more than ever. In addition, if we apply only formal, established solutions to address public space, pedestrian realms, urban vitality, beauty, and sustainability concerns in new models, which may not have worked optimally even in the past, results may prove disappointing.

Devising different methods to analyze this new morphology is a valid action for architects and urban designers to take, which will allow them to contribute in the ways they know best. Cullen (1993) has given us a method to apprehend the beauty of walking in the city; Lynch (1960) has given us another to read its cohesion and diversity, and how to identify the causes when they do not work as we envisage they will. Nowadays, we can find a seemingly infinite catalogue of broad and deep critiques, thoughts, and writings about contemporary urban phenomena, but not nearly enough practical ideas on how to plan and design cities for our time and prepare them for an unknown future.

We conclude giving voice once more to Solá-Morales: his theory gives us a sound base upon which one can overlay other methods to use in analyzing 21st-century city landscapes through their morphology. His theory, based on highlighting the protagonists of this new scene—the global dwellings*,* containers*,* flows*, terrain vague,* and resulting mutations—without praising or condemning them, is simple, but clever enough to result in a new "five categories" milestone. This theory might not only inspire other annalistic approaches, it also could stimulate a wiser response from the urban planning and design community in addressing the increasing problems arising in our new urban era.

References

ARELLANO, B. & ROCA, J. *Las megaestructuras urbanas del siglo XXI: un ensayo para la identificación y caracterización de las megalópolis*. In: ACE: Architecture, City and Environment [on line]. June 2014, vol. 9, no. 25, p. 127-158. [Access data: December 1st 2016]. Available at: <http://hdl.handle.net/2099/16353> DOI: <http://dx.doi.org/10.5821/ace.9.25.3963>

BENFATTI, D. M.; QUEIROGA, E. F. & SILVA, J. M. P. *Transformações da metrópole contemporânea: novas dinâmicas espaciais, esfera da vida pública e sistema de espaços livres*. In: Revista Brasileira de Estudos Urbanos e Regionais [on line]. May 2010, vol. 12, no. 1, p. 29-43. [Access data: June 15th 2016]. Available at: <http://rbeur.anpur.org.br/rbeur/article/view/230> DOI: <http://dx.doi.org/10.22296/2317-1529.2010v12n1p29>

BURNS, M. C. & GRULLÓN, Y. R., *La medición y previsión del consumo de suelo en las costas ibéricas*. In: ACE: Architecture, City and Environment [on line]. October 2012, vol. 7, no. 20, p. 115-130. [Access data: January 7th 2018]. DOI: <http://dx.doi.org/10.5821/ace.v7i20.2575> Avaiable at: <http://revistes.upc.edu/ojs/index.php/ACE/article/view/2575>

CALDEIRA, T. P. do Rio (Ed.) *Cidade de muros: crime, segregação e cidadania em São Paulo*. São Paulo, Ed. 34/Edusp, 2000. 400 p. ISBN: 978-85-7326-188-2.

CULLEN, G. *Paisagem urbana.* Lisboa, Edições 70, 1993. 202 p. ISBN: 978-972-44-0530-8.

FILION, P.; HOERNIG, H.; BUNTING, T. & SANDS, G. *The Successful Few: Healthy Downtowns of Small Metropolitan Regions*. In: Journal of the American Planning Association [online]. 2004, vol. 70, no. 3, p. 328-343. [Access data: June 15th 2016]. DOI: <https://doi.org/10.1080/01944360408976382>

FISHMAN, R. *Introduction: Beyond sprawl.* In: SAUNDERS, W. S. ed. Sprawl and Suburbia. A Harvard Design Magazine Reader, NED-New edition, University of Minnesota Press, 2005. pp. xi–xviii. ISBN: 978-0-8166-4754-5

FREITAS, E. L. H. *Loteamentos fechados.* PhD thesis, Faculdade de Arquitetura e Urbanismo, Universidade de São Paulo [on line]. March 31, 2008. São Paulo. [Access data: 18 January 2017]. Available at: <http://www.teses.usp.br/teses/disponiveis/16/16137/tde-18012010-230029/pt-br.php> DOI: <http://dx.doi.org/10.11606/T.16.2008.tde-18012010-230029>

HARRIS, R. & LARKHAM, P. J. *Changing suburbs foundation, form, and function*. London, New York, Routledge, 1999. 296 p. ISBN: 978-0-203-22299-7

KÄRRHOLM, M. *Retailising space: architecture, retail and the territorialisation of public space.* Ashgate studies in architecture. Burlington: Ashgate Pub. Co., 2012. 176 p. ISBN: 978-1-4094-3098-8

YILDIZ, H. T.; KOWALTOWSKI, D. C. C. K.; MONTEIRO, E. Z. & YONET, N. A. *The walls of Gated Communities in Brazil and Turkey: security, separation or status?* In: 21th IAPS-Conference "Vulnerability, Risk and Complexity: Impacts of Global Change on Human Habitats" (2010, Leipzig, Germany). Helmholtz Centre for Environmental Research. Available at: <https://iaps.architexturez.net/doc/oai-iaps-id-iaps-21-2010-999>

LOPES, P. A. & ORNSTEIN, S. W. *Modelo de avaliação de desempenho em uso para o caso de áreas de uso coletivo em loteamentos fechados e ou condomínios horizontais*. In: Encontro Nacional de Tecnologia do Ambiente Construído, ENTAC 2010. Avanços científicos e impactos da pesquisa em tecnologia do ambiente construído: como avaliar? Proceedings. (2010, Canela, Brazil) pp. 100-111.

LYNCH, K. *The image of the city*. Cambridge, MA, MIT PRESS, 1960. 208 p. ISBN: 9780262120043

MARICATO, E. *O impasse da política urbana no Brasil*. Rio de Janeiro, Editora Vozes, 2011. 219 p. ISBN: 978-85-326-4147-2.

MODARRES, A. & KIRBY, A. *The suburban question: Notes for a research program.* In: Cities [on line]. April 2010, vol. 27, no. 2, p. 114-121. [Access data: June 15th 2016]. DOI: <https://doi.org/10.1016/j.cities.2009.11.009>

MONTEIRO, E. Z. *Avenidas marginais postas em xeque: análise urbanístico-paisagística das soluções para fundo de vale com o advento das "infra-estruturas verdes."* In: SB10Brazil - Sustainable Building [online]. Proceedings. São Paulo, Brazil, 2010. DOI <https://doi.org/10.13140/2.1.2852.8002>

PHELPS, N. A. *Suburbs for nations? Some interdisciplinary connections on the suburban economy.* In: Cities [on line]. April 2010, vol. 27, no. 2, p. 68-76. [Access data: June 15th 2016]. DOI: <https://doi.org/10.1016/j.cities.2009.11.005>

PRESIDENCIA DA REPÚBLICA (BRASIL). Dispõe sobre o Parcelamento do Solo Urbano e dá outras Providências. *LEI No 6.766*. December 19th 1979.

Arellano, B. & ROCA, J. *Sprawl en las metrópolis europeas. las periferias metropolitanas, ¿principal escenario de la dispersión de la urbanización en europa?*. In: ACE: Architecture, City and Environment [on line]. October 2012, vol. 7, no. 20, p. 95-114. [Access data: December 7th 2018]. Available at: < http://revistes.upc.edu/ojs/index.php/ACE/article/view/2580> DOI: <http://dx.doi.org/10.5821/ace.v7i20.2580>

SOLÀ-MORALES, I. *Territorios*. Barcelona, Gustavo Gili, 2002. 207 p. ISBN13: 9788425218644

TURCZYN, D. T. *Mutação urbana em Campinas: sua forma e paisagem.* Master's degree assignment. Campinas, Brasil, Universidade Estadual de Campinas-UNICAMP, 2013. Avaiable at: <http://www.bibliotecadigital.unicamp.br/document/?code=000919874>

TURCZYN, D.T. & MONTEIRO, E.Z. *As Tipologias das Mutações Urbanas nas Margens da Rodovia Dom Pedro I, em Campinas.* In: XV Encontro Nacional da ANPUR. Proceedings. Recife, Brazil, 2013a

TURCZYN, D.T. & MONTEIRO, E.Z. *Mutações criativas: Campinas pode e precisa delas.* In: III Congresso Internacional de Cidades Criativas. Proceedings. Campinas, Brazil, 2013b

VENTURI, R.; SCOTT BROWN, D. & IZENOUR, S. *Learning from Las Vegas: the forgotten symbolism of architectural form*. 17th edition. Cambridge, Massachusetts, The MIT Press, 1977. 208 p. ISBN: 978-0-262-72006-9.

WHITEHAND, J. W. & MORTON, N. *Urban morphology and planning: the case of fringe belts.* In: Cities [on line]. April 2004, vol. 21, no. 4, p. 275-289. [Access data: June 15th 2016]. DOI: <https://doi.org/10.1016/j.cities.2004.04.001>