

The fringe-belt concept and planned new towns: a Brazilian case study

Karin Schwabe Meneguetti

Departamento de Arquitetura e Urbanismo, Universidade Estadual de Maringá,
Avenida Colombo 5790, Bloco 32, Maringá – PR, 87020-900, Brazil.

E-mail: ksmeneguetti@uem.br

and

Staël de Alvarenga Pereira Costa

Escola de Arquitetura Universidade Federal de Minas Gerais, Rua Paraiba 697,
sala 494c, Bairro do Funcionários, Belo Horizonte – MG, 30130-140, Brazil

E-mail: staelalvarenga@gmail.br

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Abstract. *There is a degree of consensus about the theoretical foundations underpinning the fringe-belt concept, but relevant empirical research carried out in different cultural contexts still raises important questions. In this paper the methodology of the British urban morphology school is applied in a planned new town in Brazil in order to draw comparisons. The identification of fringe belts in Maringá city confirms the validity of the methodology. The planned city configuration may be compared to the formation of ancient walled cities, attesting the strength of fixation lines in the creation of inner fringe belts. Middle and outer fringe belts are more fragmented. This difference is partly related to the fact that the time-span over which these fringe belts have been formed is very short.*

Keywords: urban planning, fixation lines, historical development, land use, Maringá.

The fringe-belt concept has been investigated in cities all over the world and at all geographical scales, as Conzen (2009) has shown. Its relevance in urban planning has also been demonstrated (Whitehand and Morton, 2003). Moreover, when taking into consideration the concept's articulation of the historical and geographical structure of the city (Conzen, 1960), fringe belts have a considerable ecological potential. In short, they can contribute to both the understanding and planning of the development of cities.

Although the essential theoretical foundations of fringe belts have been the subject of a good deal of consensus, empirical investigation in different settings presents 'many practical obstacles, but also opportunities'

(Conzen, 2009, p. 37). This paper considers the application of the fringe-belt concept in a Brazilian new town whose original layout was based on the formal principles of the English garden city. It utilizes an aspect of the methodology of the British school of urban morphology, considering its applicability in an environment distinct from that in which it has previously been employed.

A planned new town and the fringe-belt concept

Maringá, in the North region of Paraná State, differs from most Brazilian cities in that it was planned from its inception in 1945-1947 as

part of a colonization scheme started by a British private company (Rego and Meneguetti, 2008). The city was designed when the enterprise was under the control of a Brazilian group, but its English garden-city layout and environmental qualities were unusual by Brazilian standards (Meneguetti, 2009; Meneguetti and Rego, 2013; Rego and Meneguetti, 2010). A great amount of open space and large amounts of tree planting along winding roads made for an impressive townscape, which has not deteriorated despite its rapid development.

An initial attempt to map fringe belts in Maringá city (Pereira and Meneguetti, 2011) revealed fringe-belt features that existed at the time of successive Master Plans (namely in 1967, 1979, 1991 and 2000). Analysis verified the longevity of the fringe belts. Subsequently the criteria for recognizing them were revised to take into account types of land uses particular to Brazilian conditions, taking note of questions raised by Conzen concerning 'what exactly belongs to a fringe belt; what principle includes or excludes particular land-use categories or sites from any given fringe belt or fringe belts in general; how do scattered fringe-belt sites become assigned to one fringe belt or another?' (Conzen, 2009, p. 37).

These questions have been addressed in the following way. First, Maringá's initial urban form was considered as a whole since the city had been planned and built from the beginning as a single entity, with a green belt separating urban from rural. The initial urban perimeter acted as a strong fixation line (Conzen, 1969, p. 125), with non-urban activities continuing to exist beyond it. To some extent the circumstances of Maringá can be compared to those characteristic of an ancient walled city, in which fringe belts are located along clearly defined urban boundaries. Horticultural sites, whether run on commercial lines or for leisure, were treated as broadly equivalent to European allotment gardens (Conzen, 2009, p. 33). Maringá was originally surrounded by such gardens, ranging in size from 1.21 ha to 2.42 ha; the closer to the urban area the smaller the plots. They constituted a zone similar to a

green belt – the local version of such a belt proposed by Howard for his garden city (Meneguetti, 2009).

Other fringe-belt features included public parks (though not largely-protected forest reserves); industries; sports fields (including social clubs); large institutional facilities (such as cemeteries, religious retreats, military barracks and university campuses), places for waste disposal and transport sites and installations. Institutions that were embedded within the urban area according to the initial planned layout of the city were excluded.

The dates when fringe-belt features came into existence were mapped based on information available for each successive phase of city planning. The dates of these phases were:

- 1947-1950: initial phase of city development (Figure 1);
- 1951-1965: early years of development, under the control of the local council (Figure 2);
- 1966-1980: the first Master Plan and high population growth (Figure 3);
- 1981-1995: Road Plan implementation and rapid building construction (Figure 4);
- 1996-2010: New Master Plan and extensive outward expansion (Figure 5).

The period between 1947 and 1967 consisted largely of the trading of urban and rural plots and their occupation. Between 1967 and 1979 the growing of coffee reached its peak and boosted economic development. Between 1979 and 2006 there was an economic transition from raw material production to the production of industrial products, and the development of marketing and services (Maringá Prefeitura do Município, 2000).

Mapping urban fringe belts in Maringá

Key features of the fringe-belt pattern in Maringá were established when the city was founded. An almost continuous fringe belt existed by 1950 (Figure 1). This was consoli-

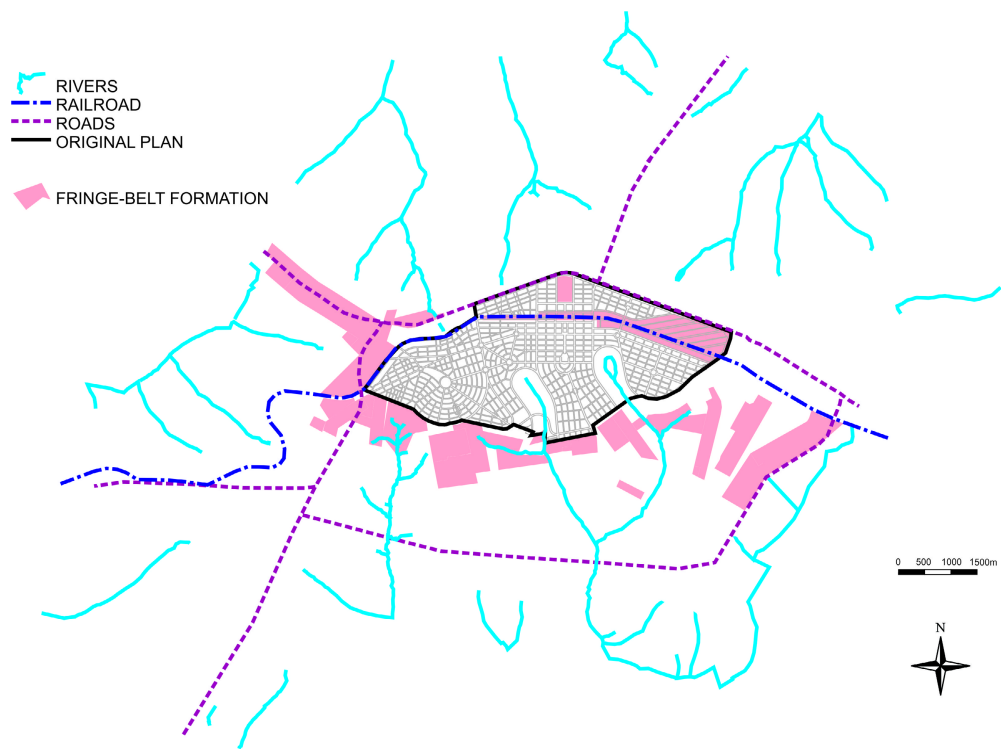


Figure 1. The first phase of fringe-belt formation in Maringá, 1947-50.

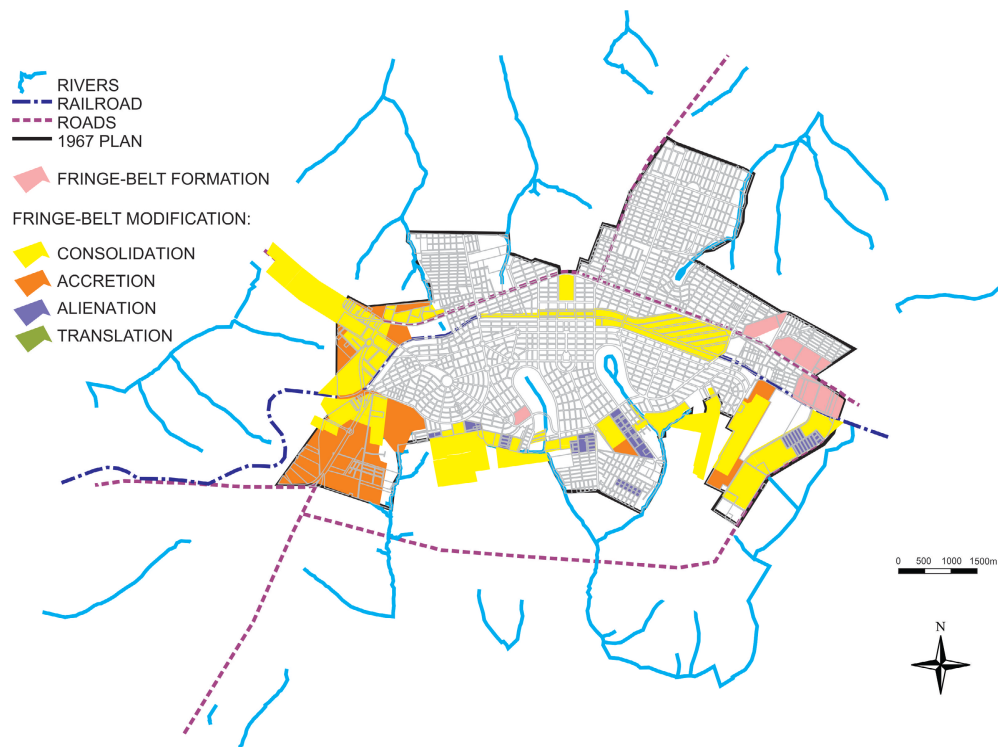


Figure 2. The fringe belts of Maringá in 1965.

dated between 1951 and 1965 (Figure 2). By 1980 a fringe belt was developing farther out (Figure 3), providing the lineaments of what was to become an intermediate or middle fringe belt (Figure 4).

The first fringe-belt plots were located beyond the city boundary. These included the airport, a cemetery, a forest garden, a red-light district and horticultural smallholdings. There were also fringe-belt plots linked to the location of the railway line and yards.

Reflecting the configuration of the original planned area of the city, the inner fringe belt delineates an oval shape rather than a circular one. In certain respects it resembles fringe belts in Europe discussed by Whitehand (2001, p. 108):

Fringe belts can arise from markedly different decision-making processes. Some arise from the planning of a feature broadly circumferential to an urban area: fortification zones were common around pre-industrial cities; and there were numerous cases of amenity zones, parkland belts and green belts around nineteenth- and twentieth-century cities.

The initial fringe belt underwent a modification process as shown in Figure 2, mostly in the form of growth, confirming the types of development identified by Whitehand (1981, p. 136). On the west side of the original planned city a further industrial area was developed. Some plots within the initial green belt underwent a process of alienation, as areas of horticultural production were redeveloped for housing. Additional fringe-belt features included a social club and an exhibition park. The first came into existence as a result of the purchase of lots from the colonizing company by a third party, and the last through the donation of land for a specific use.

Figure 3 shows a large expansion in the city boundary between 1966 and 1980. Intense migration to the city boosted the real estate business. However, this expansion was not associated with commensurate fringe-belt development. Existing fringe belts underwent a process of consolidation and alienation

(Conzen, 1969, p. 125). The main growth occurred in the south-west of the city and was related to the expansion of an area recently zoned for industrial purposes.

The formation of new fringe belts corresponded to the campus of the State University of Maringá, a social club, a new park and institutional areas to the north, and a sewage treatment plant to the south. These areas were separate from the initial fringe belt and have a different configuration. They were beginning to form a much less continuous belt. This was less well defined and similar to what Conzen termed a middle fringe belt (Conzen, 1969, p. 80). These new sites were just outside the initial city boundary. They took advantage of the lower cost of rural land. However, they were soon embedded in the growing residential area.

The period from 1981 to 1995 (Figure 4) was characterized by minimal formation of new fringe-belt features. Nevertheless, in this period there was large-scale filling in of empty plots within the built-up area of the city. This was accompanied by an increase in building density through the construction of multi-storey flats. Just a few new fringe-belt plots came into existence, attached to the existing fringe belt. But others were alienated. Railway land was transformed by the release for residential purposes of areas previously occupied by railway-related uses.

The period between 1996 and 2010 (Figure 5) was characterized by a few, but more varied, changes in existing fringe belts. The construction of a new airport released for residential development the old airport site on the eastern border of the original city plan. The industrial area that was part of the initial development of the city along the railway line was transformed into a mixed-use zone. A new university campus and a further cemetery were added. These new fringe-belt features do not as yet form a continuous belt and are not linked to any kind of fixation line.

Based on information provided by the successive city planning maps, fringe-belt plots can be categorized according to the dates by which they came into existence. This provides an approximate chronology of the

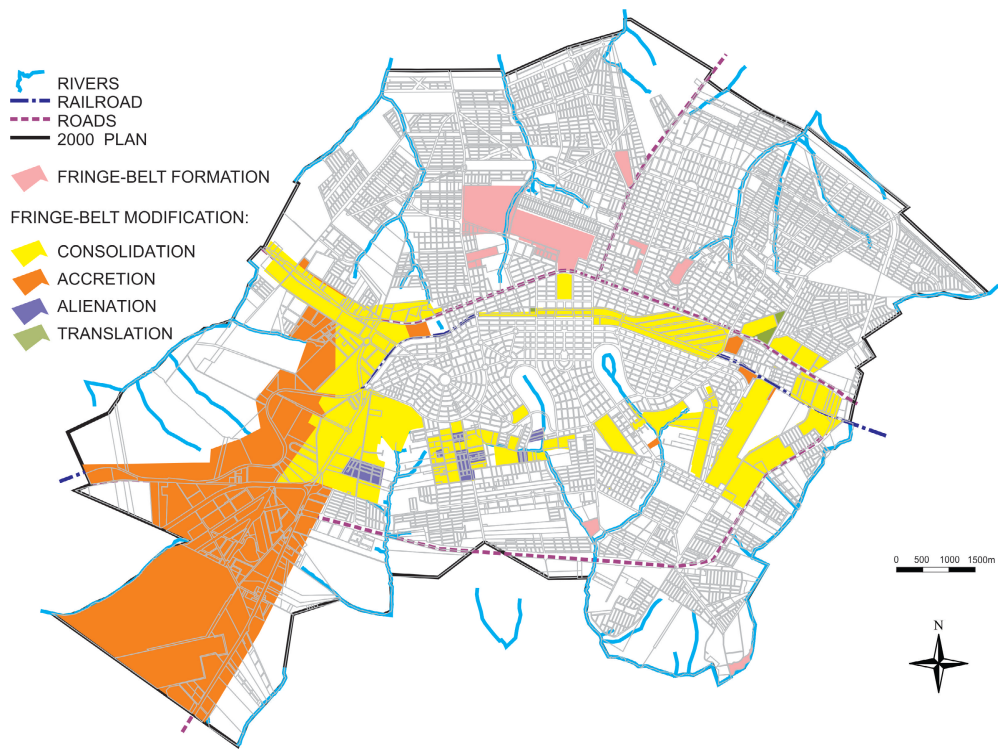


Figure 3. The fringe belts of Maringá in 1980.

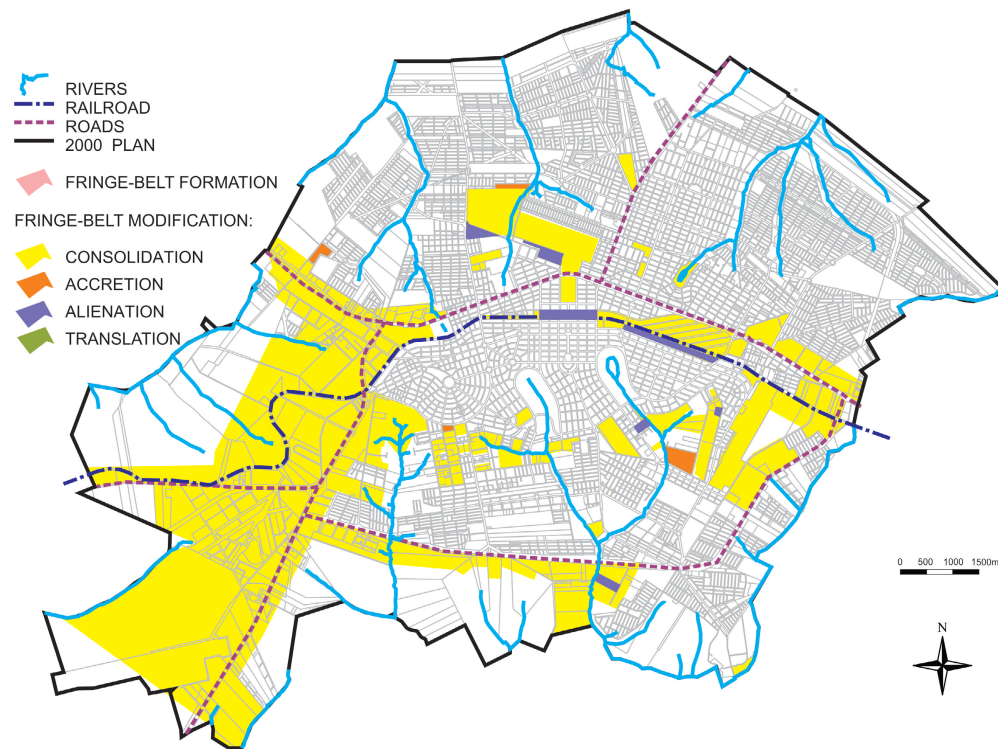


Figure 4. The fringe belts of Maringá in 1995.

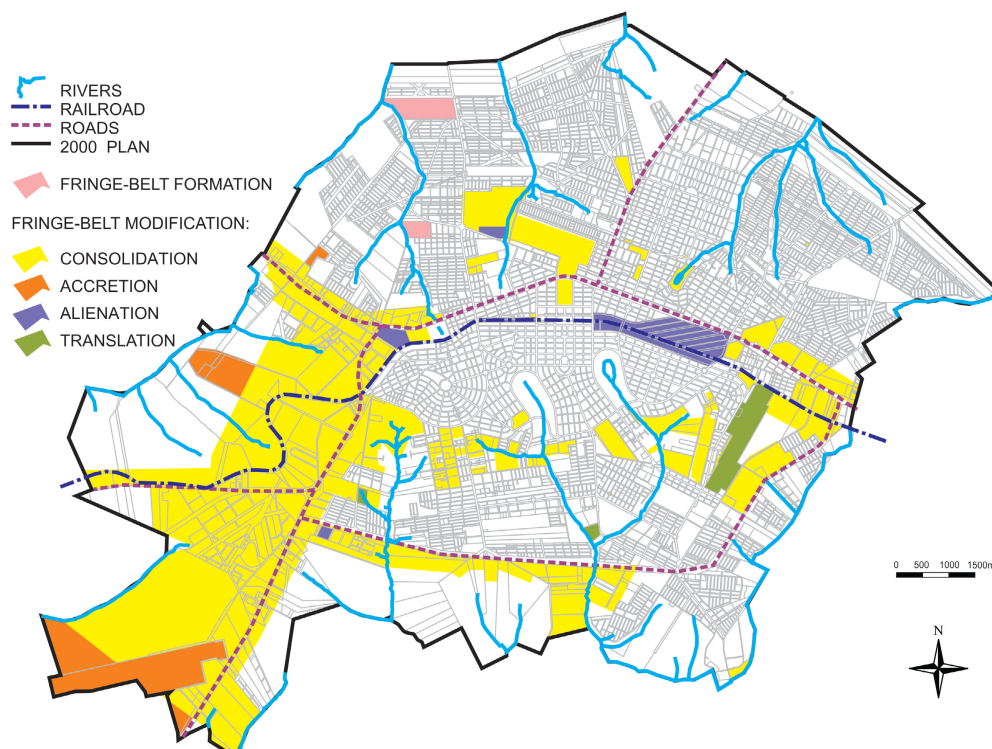


Figure 5. The fringe belts of Maringá in 2010.

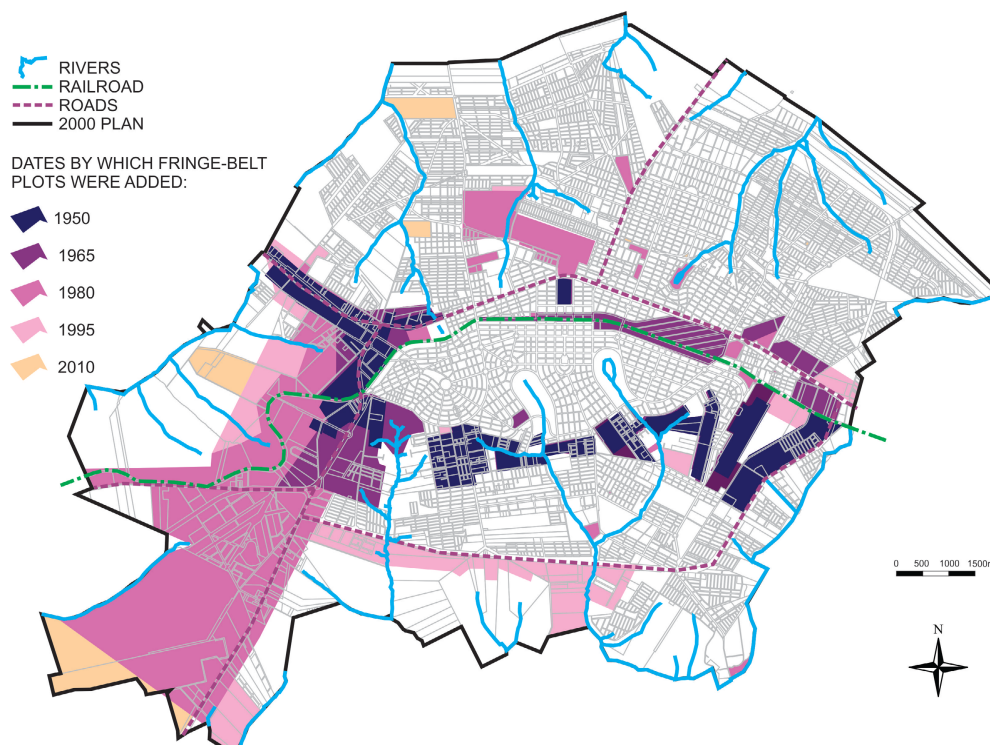


Figure 6. The development of the fringe belts of Maringá.



Figure 7. The delimitation of inner, middle and outer fringe belts in Maringá.

development of Maringá's fringe belts to date (Figure 6).

In relation to their position in the urban structure, the fringe belts can be classified as inner, middle and outer (Figure 7). Although Maringá is only 67 years old, two fringe belts are clearly recognizable. The first is related to the fixation line formed by the boundary of the initial city design plans. It may be likened to fringe belts associated with urban fortifications. The second belt is only partially connected to fixation lines. To the south, the fixation line is the *Contorno Sul* ring road; to the east, the boundary of the airport; and to the west, the initial part of the industrial zone. The rest of the fringe belt, to the north, was associated with other locational influences, such as the pattern of land availability and the absence of geographical barriers to urban expansion. Emerging between 1980 and 1995, this middle fringe belt developed immediately after the second important phase of urban expansion, during the economic transformation of the city.

The presence of disconnected, more peripheral areas occupied by the types of land use that characterize the middle fringe belt suggest that there may be the beginnings of the formation of an outer fringe belt. This would accord with the observation by Conzen (2009, p. 46), that such features 'usually consist of large, scattered parcels that only rarely adjoin others'. They are not related to fixation lines.

The inner fringe belt

The middle and outer fringe belts of Maringá are both youthful and it would be premature to allocate them a firm place in relation to existing schemas of fringe-belt development. The inner fringe belt can be connected more clearly to the framework of previous fringe-belt research. Featuring a quasi-ring form, it is readily identifiable as a landscape feature today, albeit that many changes of plot use have occurred over the past half century. Some plots have been alienated, others have

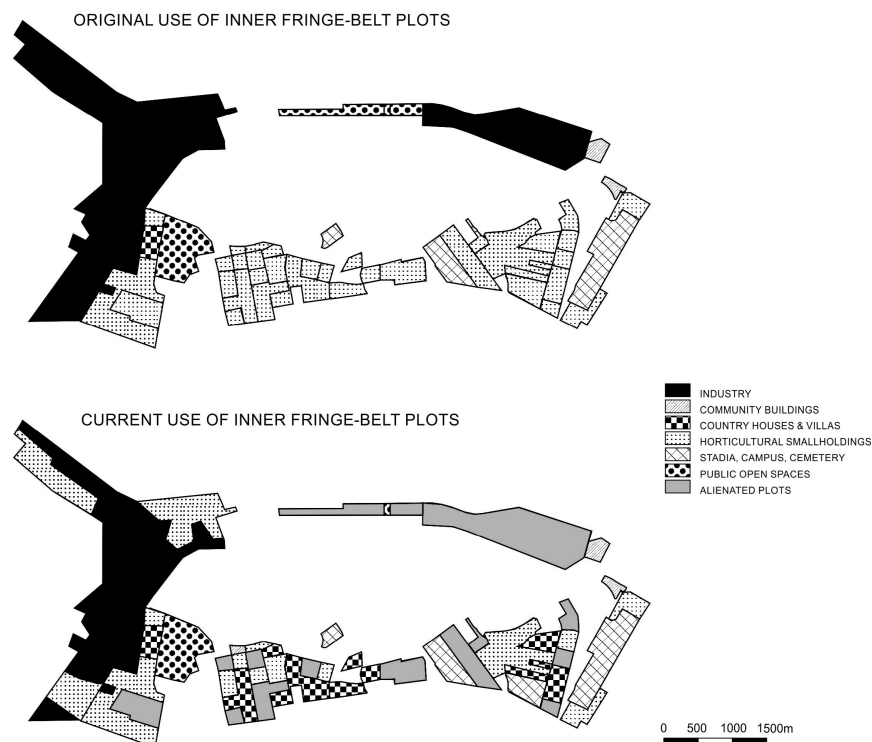


Figure 8. Original use and current use of inner fringe-belt plots in Maringá.

changed their use (Figure 8).

These changes reflect the increasing centrality of the inner fringe belt within the city as urban growth has taken place. Thus, a number of plots on the south side of the ring, almost all in use as horticultural smallholdings in the initial phase, have been redeveloped for housing. On the western side of the city, the area intended for industry was not completely utilized as such, and some parts of it are allotment gardens. On the eastern side, a sizeable plot originally used for horticulture is now a university campus. On the northern side, major changes of land use have occurred.

Conclusion

The application of the fringe-belt concept to a Brazilian new town has revealed the appropriateness of this concept in explaining the historico-geographical development of urban form in conditions significantly different from

those examined when the concept was first developed. Viewed in this way, the form of Maringá has been shown to have resemblances to cities that came into existence in very different historical and geographical conditions. The limits of the initial city layout have had a role as a fixation line that resembles that of the line of a city wall in older cities that have been subjected to similar types of investigation.

Beyond this inner fringe belt, development has for the most part occurred only in very recent decades. But nevertheless there is evidence of the formation of a middle fringe belt and the suggestion even of an outer fringe belt beginning to form. This is a much more rapidly occurring sequence of such developments than has been revealed in the older cities that have hitherto been investigated. This adds weight to the conclusion that the fringe-belt concept may well have validity over a diverse range of conditions of urban development, including in recently planned towns and cities.

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Obituary: Mariusz Kulesza, 1950-2014

Mariusz Kulesza, a contributor to ISUF events and publications over many years, died on 6 August 2014 in Łódź, Poland. He was a Professor in the University of Łódź, with special expertise in urban history. He started work in the Department of Political Geography and Regional Studies in 1991, and devoted himself to research on the historical geography of urban settlements. During this period he became increasingly interested in urban morphological issues. He presented papers at the ISUF conferences in Birmingham, Glasgow, Florence, Trani, Stockholm and Ouro Preto. His habilitation dissertation was entitled *Morphogenesis of urban settlements in Central Poland in the pre-partition period: the former łęczyckie and sieradzkie voivodeship* (*Morfogeneza miast na obszarze Polski*

Środkowej wokresie przedrozbiorowym: dawne województwa łęczyckie i sieradzkie). His principal scientific achievement was the monograph entitled *Morphogenesis and layout issues of medieval cities in Poland* (*Zagadnienia morfogenezy i rozplanowania miast średniowiecznych w Polsce*), published in 2011. In 2002 he became Head of the Department of Historical Geography and Cultural Heritage in the University of Łódź. With his untimely passing, we have lost a good friend and valuable researcher.

Marek Koter, Katedra Geografii Politycznej i Studiów Regionalnych, Uniwersytet Łódzki, Kopcińskiego 31, 90-418 Łódź, Poland.