

# Thinking about urban fringe belts: a Mediterranean perspective

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**Abstract.** *Four perspectives on fringe belts are discussed: spatial, economic, social and planning. The characteristics of previous studies are examined in relation to these perspectives. In this light the investigation of the fringe belts, especially the inner fringe belt, of the Mediterranean port city of Mersin reveals the emergence of three distinct functional sections within the inner fringe belt and the merging of the inner and middle fringe belts. Phases and processes of development are examined. The absence of a significant fixation line until the construction of the ring road well into the post-war period has been a major factor influencing the historico-geographical pattern of fringe-belt development. The findings are related to those of previous fringe-belt studies.*

*Keywords: fringe belt, research types, historical development, fixation line, Mediterranean port, Turkey*

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The fringe-belt concept has been used in many studies to investigate the historical development of urban form. Having been elaborated mainly in the English-speaking world during the second half of twentieth century, it has been diversified in studies in various cultural areas during the last 2 decades. This paper has two purposes: first, to summarize the main perspectives evident in fringe-belt research; and secondly, to move the frontier of that research by investigating the processes of formation and modification of fringe belts, especially inner fringe belts, by examining the case of Mersin, a Mediterranean port city on the southern coast of Turkey.

## Types of fringe-belt research

The origins of fringe-belt research are to be found in the study of Berlin by Louis (1936). He used the term *Stadtrandzone* (urban fringe belt) to explain morphological structure of that

city. Building to some extent on Louis's ideas, M. R. G. Conzen investigated the town plans of Alnwick and Newcastle upon Tyne. He used the fringe-belt concept to establish a theoretical framework to explain urban growth and change (Conzen, 1960, 1962, 1969). Conzen defined an urban fringe belt in his seminal study of the town of Alnwick as 'a belt-like zone originating from the temporarily stationary or slowly advancing fringe of a town and composed of a characteristic mixture of land use units initially seeking peripheral location' (Conzen, 1969, p. 58). He identified three fringe belts in Alnwick, an inner and a middle fringe belt, embedded within the built-up area, and an outer fringe belt at the present edge of the town. These fringe belts were considered to be fundamental in the development of the morphological structure of the town. Whitehand (1987, p. 76) has described the fringe-belt concept as 'arguably the most important single contribution to urban morphology to arise out of the morphogenetic

tradition’.

Partly because of their heterogeneity, fringe belts are less easily recognized within the internal structure of urban areas than more homogeneous areas, such as residential districts or central business districts. Their unity is derived from the morphological elements that had their original location near the fringe of the built-up area (Whitehand, 1967, p. 223). Barke (1982, p. 111) defines fringe belts as zones, ‘composed of land uses that are produced by the town but do not necessarily have to be located within it’. In land-use terms, they ‘present a distinctive group, including certain industries, institutions, community services, small houses, and further out isolated larger houses as well as open spaces’ (Conzen, 1969, p. 58). However, fringe belts are far more than just ways of describing land-use associations: they provide ways of explaining the historico-geographical development of urban areas in terms of distinctive phases of growth and hiatus (Whitehand, 1994).

There have been various attempts to classify fringe-belt studies. Whitehand (1981) grouped such studies into three categories according to the ideas they developed and the approach they adopted. In a further study, he updated this categorization in terms of a schematic genealogy, taking account of the different cultural contexts (Whitehand, 1988). Responding to the multiplication of fringe-belt studies in the last two decades, especially their consideration in cities in a variety of different cultural areas, M. P. Conzen (2009) made a comparative assessment in which he searched for commonalities and differences. The present study does not purport to provide a comprehensive categorization of all fringe-belt research, but it does highlight the distinctive characteristics of four types of emphasis: spatial, economic, social and planning (Figure 1).

#### *The spatial perspective*

The early studies, described by Whitehand (1981, p. 133) as ‘the traditional conception’, concentrated primarily on the physical change

within fringe belts, with a spatial perspective. They were largely empirical and entailed detailed investigation of changes in fringe belts. In this way, M. R. G. Conzen (1960, 1962, 1966, 1969) elaborated a theory of the formative and transformative processes underlying change in the built environment. Detailed cartographic records allowed him to develop this theory in British towns and cities, such as Alnwick, Newcastle upon Tyne, Ludlow, Conway and Manchester. In this vein, Whitehand (1967) developed the ideas of M. R. G. Conzen by analysing the fringe belt in the urban land use pattern. He extended the scope of fringe-belt studies from a concern with individual cities to the investigation of a multi-nuclear conurbation, through an examination of Tyneside. Distinguishing formative and transformative processes, he related the formation process to countrywide morphological periods.

The study of fringe belts, from the spatial perspective, was extended to the American context in the analysis of Madison, Wisconsin, by M. P. Conzen (1968). An aspect to which attention was devoted here was the need to investigate the growth characteristics of fringe belts in relation to economic fluctuations at various geographical scales, from local to international.

#### *The economic perspective*

In his further studies, Whitehand (1972a, 1972b, 1974, 1987) opened a new research frontier for fringe-belt research by developing an economic perspective. He explored the interrelation between the formation and modification of fringe belts and bid-rent theory, building cycles and innovation. This shifted attention to a more explicitly economic reasoning than hitherto but maintained a major emphasis on changing relationships over time. He recognized major differences between housebuilders and fringe-belt uses in their bidding power for sites – differences that related to both the accessibility of sites and whether there was a housebuilding boom or slump. During housebuilding booms, cities

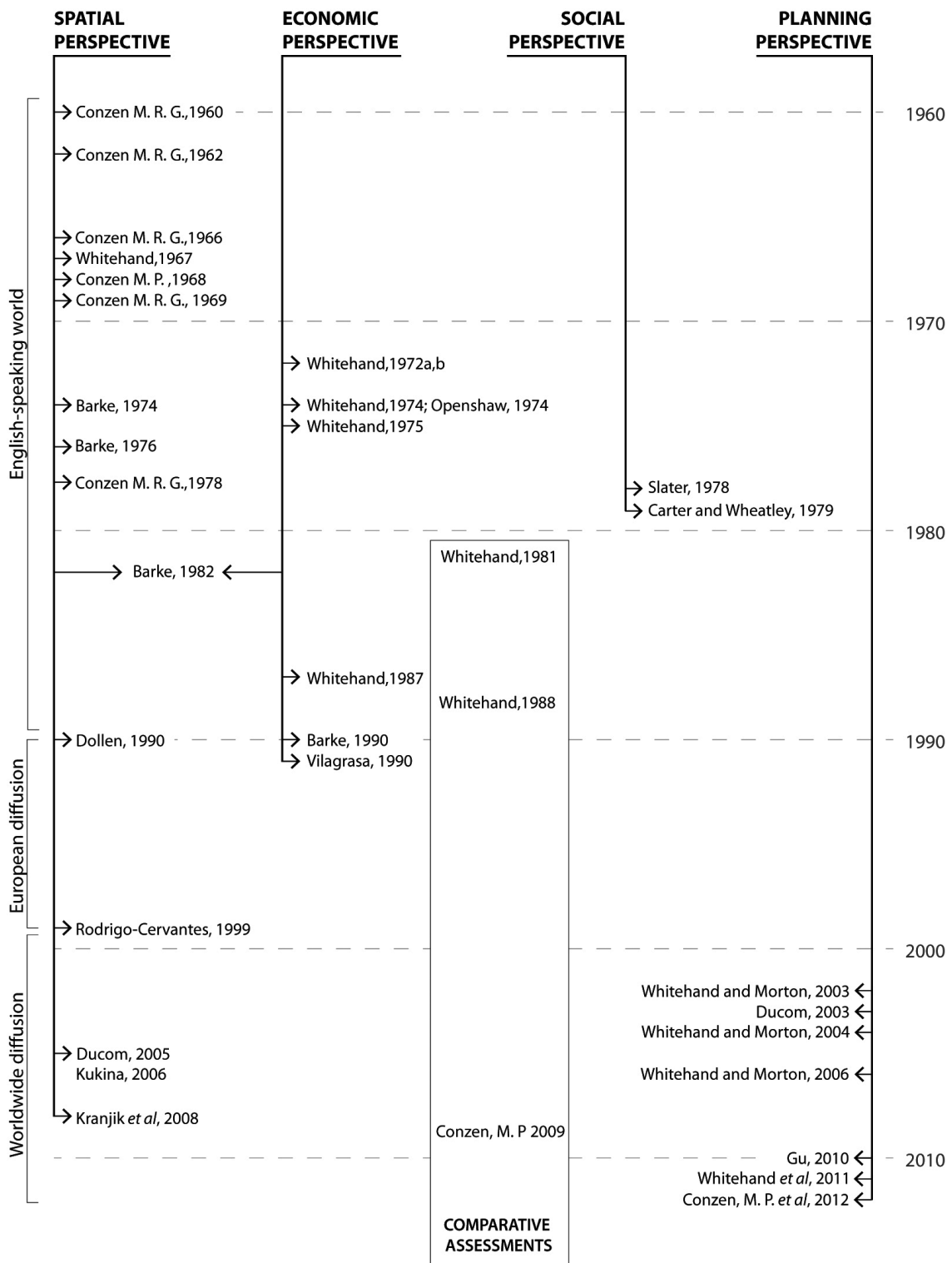


Figure 1. The development of fringe-belt research.

were characterized by rapid residential accretion at their edges, whereas during housebuilding slumps, fringe-belt uses tended to acquire such sites. However, once these uses started to become embedded in their sites and were increasingly investing in them, they become more resistant to the bids for their land by housebuilders. Hence, far from being ephemeral and displaced in the next housebuilding boom, they became long-lasting features embedded within the built-up areas as it spread farther out.

In a similar vein, Openshaw (1974) sought to construct a more general model of fringe-belt processes, but less constrained by a particular historical context. He examined these processes in relation to the functional links to the core area within a much more complex multi-core development. He suggested that the changing prosperity of these cores would influence whether particular fringe belts would expand or decline in competition with each other.

Barke's study of the Scottish town of Falkirk (Barke, 1974) demonstrated the formation and modification processes of fringe belts. He focused on the inner fringe belt from a spatial perspective but also took into account housebuilding booms and slumps. In his later study, he adopted a more economic perspective, addressing how urban size influences the formation and modification processes of fringe belts (Barke, 1990).

#### *The social perspective*

Carter and Wheatley (1979) linked fringe-belt development in the Welsh town of Aberystwyth to the changing locations of different social groups. They sought to uncover the 'relationship between the evolution of the physical structure of a town, the consequent disposition of its land uses and the organization of its social space' (Carter and Wheatley, 1979, p. 237). Slater (1978) also adopted a social perspective, examining factors affecting locational decisions in the case of nineteenth-century ornamental villas, essentially the detached residences of the

business and professional classes. In his study of the town of Cirencester, he related the family life cycles of the owners of villas to changes in location, plot size and tenure.

#### *The planning perspective*

Research in the last decade has emphasized the relationship of planning practice to the spatial processes of fringe belts. In their research on Birmingham's Edwardian fringe belt, Whitehand and Morton (2003, 2004, 2006) noted that the relationship between urban morphology and planning is poorly developed in the English-speaking world. They drew attention to the importance of open spaces in the *genius loci*, not least because of the number of people using them for recreation and other purposes. In a different cultural context, in Auckland, New Zealand, Gu (2010) explored fringe-belt transformation and its socio-economic and environmental implications, considering the use of the fringe belt as a tool in the formulation of more integrated planning and design policies. In a comparative study of Pingyao, China and Como, Italy, M. P. Conzen *et al.* (2012) explored the physical structuring of these cities with reference to the significance of fringe belts. They suggest that the fringe-belt concept has potential for both clarifying historico-geographical development, and providing a basis for the sensitive management of historical landscapes (p. 36).

#### *Reflections*

Although Whitehand envisaged a new theoretical framework from an economic perspective, research on fringe belts has mostly adopted spatial and/or planning perspectives. One reason for the limited number of studies from an economic perspective may be the inadequate recording of building activities in countries outside the English-speaking world. However, from other perspectives, studies have considered cities in Catalonia (Vilagrà, 1990), Italy (Conzen *et al.*, 2012), France (Ducom, 2003 and 2005),

Germany (Dollen, 1990), and Mexico (Rodrigo-Cervantes, 1999). In the last decade, research has been conducted on Chinese cities (Whitehand *et al.*, 2011; Conzen *et al.*, 2012) and on Auckland, New Zealand (Gu, 2010).

Despite these studies of widely-spread cities, no research on fringe belts has been undertaken in Turkish cities, and the Mediterranean region more generally has rarely been studied from this standpoint. An examination of the inner fringe belt of Mersin, a Mediterranean port city on the southern coast of Turkey, is therefore timely. In the context of the studies that have been summarized here, in what ways can examination of Mersin's inner fringe belt add to existing knowledge of this aspect of urban development?

### Inner fringe belts

Initially working entirely within Europe, largely within England, M. R. G. Conzen (1960, 1962, 1969, 1978) identified the characteristic features of inner fringe belts within towns and cities of medieval origin. A recurrent feature was the medieval wall and fortification zone, which acted as what Conzen termed a fixation line. In due course, it was often followed by a ring road. The associated inner fringe belt was divided by Conzen into an intramural and extramural. He termed this type of fringe belt a 'closed fringe belt' (Conzen, 1969, p. 59) since it was completely closed off from the present urban fringe by subsequent zones of residential and other developments. Fringe belts associated with city walls tend to be unbroken, whereas in the absence of such walls fringe belts are likely to be less continuous (Whitehand, 1967, p. 230). According to Openshaw (1974), in towns that have no fixation line, the land-use units of an inner fringe belt are likely to be located in close proximity to the core and reflect the commercial importance of that core.

In research on medium-sized central-European cities between the medieval period and early industrialization, Dollen (1990) confirmed the abundance of religious institutions in the vicinity of city walls, comprising major features of inner fringe belts.

This was confirmed by Slater (1989) in his examination of religious institutions in Lublin, Poland.

The inner fringe belt of Como revealed a classic European medieval fringe-belt formation (Conzen *et al.*, 2012, p. 35). The inner fringe belt of Rennes, France was composed of military uses, health institutions, a jail, a railway station, schools, industries, and green spaces, showing a continuous structure along the town wall and the boulevards encircling it. This subsequently became discontinuous due to the partial absorption of the fringe belt by the developing commercial core (Ducom, 2003, 2005). In Russia, Krajnik *et al.* (2008) showed how inner fringe belts became places for designed open spaces and eventually took on a new identity after demolition of city walls.

Chinese cities have a long history of fringe belts, though tracing this is difficult because of the paucity of historical documents and archeological evidence (Whitehand *et al.*, 2011). In Pingyao, the survival of the city wall and its surrounding moat is a dominant feature of the present inner fringe belt (Conzen *et al.*, 2012, p. 31).

Successive research projects on inner fringe belts in the Old World have on the whole tended to confirm the main characteristics identified by M. R. G. Conzen in England half a century ago (Figure 2). However, in the majority of the cases examined a belt associated with pre-industrial city fortifications has been hemmed in by residential development of the industrial era. Where such closing in of the inner fringe belt has been a much more recent phenomenon it has been shown that later fringe belt features augment those typically associated with the zone, or zones, of city fortifications. Undergoing a late industrial revolution, the city of Clermont-Ferrand, in south-central France, remained open to augmentation until the inter-war period (Whitehand, 1974, p. 45). And in America, Madison, which lacked a fixation line of the traditional type identified by M. R. G. Conzen (1960) expanded its inner fringe belt into the surrounding countryside as recently as the 1930s (Conzen, 1968).

CITY/TOWN	Pre-19th century	Early-19th century	Mid-19th century	Late-19th century	Early-20th century	Mid-20th century	Late-20th century	Early-21st century
<b>Aberystwyth</b>	-common lands and marshland (extramural) -cattle market, pound, and town gallows (intramural)		-railway; smithfield; drill hall; school; recreation grounds	-migration of shopping centre to inner fringe belt -tanneries, iron foundries, slate works, gas works				
<b>Alnwick</b>	-religious institutions -industrial premises -peripheral open space (park in the grounds of castle)	<i>fringe-belt expansion</i> new religious institutions; new industrial premises; warehouses; schools; tannery; brewery	<i>fringe-belt expansion</i> workhouse; nursery grounds; allotment gardens; large houses; railway station	<i>fringe-belt expansion</i> auction mart; infirmary; enlargement of peripheral open space <i>fringe-belt alienation:</i> gaswork to housing <i>land-use intensification:</i> schools	<i>fringe-belt expansion</i> -new industrial premises -enlargement of open spaces	<i>fringe-belt expansion</i> -fire station -new industrial uses		
<b>Auckland</b>				-institutions (High Court and University of Auckland) -public park (Albert Park) -waterfront development (reclamation of land) -railway		<i>land use change</i> -open space to transportation uses (regional expressway)	<i>land use change &amp; fringe belt alienation</i> -fringe belt uses to office blocks and apartment buildings	
<b>Como</b>	Religious institutions (monasteries)		schools; market; theatre; law courts; municipal offices				-breakthrough streets to improve circulation -expansion of city's business district outside the Old Town -redevelopment of lakeshorefront to establish parks and other recreational facilities	
<b>Falkirk</b>	small industrial works; tanneries; brewery; minister's glebe		<i>land use change &amp; fringe-belt alienation</i> -house (Brockville) to school -green to housing, allotments to housing -washing green (at Bleachfield) to a new mansion -nursery to bowling green	<i>land use change &amp; fringe-belt alienation</i> -glebe to tenements and shops -nursery to housing -small estates to housing -gardens and nurseries to industry -washing green to electricity generation station -church to workshop -poorhouse and lunatic asylum to an old people's house -erection of new municipal buildings, library, auction market	<i>land use change</i> -old people's house to annexe of nearby technical school -industrial premises to warehouses -large houses and small estates to institutional use.			
<b>Madison</b>				various institutions				
<b>Newcastle upon Tyne</b>	Churches, friaries and other religious houses (intramural); open spaces (extramural) <i>land use change &amp; fringe belt alienation</i> Friary to large houses (late 18th century)	-chapels; -community services -industry	<i>fringe-belt alienation</i> (CBD expansion) <i>fringe-belt expansion</i> railway	<i>fringe-belt expansion</i> Residential to railway, warehouses, and industrial (southwest); institutions (northwest); industry, railway and institutions (northeast and east)	<i>fringe-belt expansion</i> university; railroad; manufacturing plants	<i>fringe-belt expansion</i> Large institutions (The Royal Victoria Infirmary and King's College)		
<b>Pingyao</b>	-religious and quasi-religious institutions				<i>fringe-belt expansion</i> -railway -danweis	<i>fringe-belt expansion</i> -religious sites -military parade ground (extramural)	<i>fringe-belt expansion</i> -addition of danweis -city-wall park (extramural)	
<b>Rennes</b>	Religious, health and military institutions			<i>fringe-belt expansion</i> Military, health institutions, jail, railway station, schools, industries, and green spaces.	<i>fringe-belt expansion</i> Religious institutions (Sacré Coeur)	<i>fringe-belt alienation</i> residential growth		

Fringe-belt formation      Fringe-belt modification

Figure 2. Inner fringe belt formation and modification processes in different cities.

## Mersin

At the present juncture in fringe-belt research, Mersin is an appropriate case study for a number of reasons. First, as a port city in the Eastern Mediterranean region, it has a historico-geographical development distinctive from that of cities previously subjected to research of this type. Secondly, founded in the early-nineteenth century as part of Ottoman modernization it is a very young city compared with those in Europe whose fringe belts have been at the forefront of research. Thirdly, it differs from many other port cities in the region in lacking a city-wall fixation line, such as existed during Roman and Ottoman times in many Turkish cities. Fourthly, having been merely a coastal village in the early-nineteenth century, it grew rapidly to be a city with a population of approximately 1 million today, making it distinctive from the slower growing cities that have on the whole attracted fringe-belt researchers.

### Sources

Mersin, however, does present a number of problems for researchers, some of which are familiar to urban morphologists who have ventured outside Europe and the English-speaking world. Most notably, systematic building records do not begin until as recently as 1929, are available only for 10-year periods, and do not discriminate between the uses for which buildings were constructed. The sort of detailed analysis of building cycles and building types undertaken by the researchers who dominated fringe-belt research in its early years is therefore not possible.

For the period before 1929, the trade directory, *Annuaire Oriental du Commerce*, prepared annually for Mersin from 1883, provides limited information about the number of buildings of certain types that existed: for example, there were four churches, two mosques and four factories in 1889, rising to eight, seven and nine respectively in 1921.

Cartographic records are broadly of two types. First, there are small- and medium-

scale maps. These comprise a map of 1910 at the scale of 1:10 000, prepared near the end of the Ottoman period; a map of 1920 at the scale of 1:25 000, prepared under French rule; and a map, prepared at the scale of 1:5000, by the British navy in 1942, which provides limited information about building block-plans and street patterns, but almost no information about plot patterns and only selective information about land and building utilization. Secondly, there are plans showing land use at four dates in the post-war period. These allow building block-plans, plot patterns and land use to be distinguished. Photographs of buildings and streets and panoramic views for a variety of dates and points in the city provide a useful supplement.

### Fringe belts

The development of Mersin in the late-nineteenth and early-twentieth centuries has been the subject of many studies (Selvi Ünlü, 2007, 2010; Selvi Ünlü and Ünlü, 2009; Toksöz, 2002 and 2010; Ünlü, 2012, 2013; Ünlü and Selvi Ünlü, 2012). Like a number of coastal settlements in the Eastern Mediterranean, Mersin began to grow rapidly in the late-nineteenth century as international trade burgeoned (Fuhrmann and Kechriotis, 2009; Keyder *et al.*, 1993). According to the records of *Annuaire Oriental du Commerce*, the city's population grew from 6000 in 1883 to 11 500 in 1894, and to 22 000 in 1913. Accompanying this growth, there was the creation of new public spaces and the development of sites for institutions, especially for religious purposes. Churches were located on peripheral sites, whereas the mosques were in the city centre. The Catholic church was on the eastern fringe, the Arab Orthodox church on the western fringe, and the Greek Orthodox church on the northern fringe.

Uray Street was the spine of commercial activities. It connected Customs Square, in the centre of the city, and the railway station on the eastern fringe, close to the Catholic church. Churches, the railway station and warehouses, tanneries and some industrial premises formed

a rapidly growing inner fringe belt to the east. Military barracks, a lighthouse and Müftü Mosque were located well beyond the western fringe and industrial uses and a cemetery were on the northern fringe, with a hospital located beyond them. After a hiatus in residential growth during the greater part of the 1910s, the inner fringe belt began to be surrounded by further residential accretions in the 1920s, particularly on the northern and western edges of the city. To the north, residential accretion reached as far as the previously outlying cemetery. To the west, a new residential quarter (the Kiremithane District) leap-frogged over the fringe belt.

The general structure and boundaries of the city did not change greatly between the declaration of the Republic of Turkey in 1923 and the 1950s. The most significant change was the development of villas to form the Çamlıbel District, the home of notable tradesmen of the period. Cultural institutions and schools began to appear in the western part of the inner fringe belt during the 1940s. However, the military barracks and lighthouse to the west and the hospital to the north were still distant from the built-up area.

The middle of the twentieth century was a turning point in the growth of Mersin. There was a series of major developments. First, central government policies of agricultural modernization created rural unemployment which resulted in migration to the cities. The population of Mersin tripled between 1950 and 1980, rising from 48 000 to 152 000. Secondly, to make way for the development of transportation facilities, piers along the seashore were demolished and land was reclaimed from the sea, skirting the coastline some 100 metres seaward. The reclaimed land was to become part of a new port, constructed to the east of Mersin. Many warehouses were constructed in its vicinity, eventually merging with other warehouses associated with the railway station. The eastern part of the inner fringe belt thus merged with the port area. Thirdly, a ring road was constructed around the built-up area, acting as a fixation line in the formation of a middle fringe belt. Numerous institutions, industries, and petrol stations,

together with a hospital, that had been built in 1910, formed part of this middle fringe belt. Fourthly, when the built-up area extended westward, the Müftü River to the west of the city began to act as a further fixation line for the middle fringe belt. Thus, the existing military barracks and lighthouse were also integrated into the middle fringe belt.

Simultaneously with these developments, illegal housing areas were developing in the vicinity of the middle fringe belt as immigrants from the surrounding countryside improvised their own housing environments. Land was subdivided by landowners and sold to the immigrants without any consideration for planning legislation. The resultant type of urban environment is very common in Mediterranean Europe (Vilagrassa, 1990, p. 316). Illegal housing was mostly located on agricultural land near to the built-up area. It was deficient in infrastructure, services and accessibility to the city centre. Small houses were converted to family houses as the population increased and economic conditions improved, and eventually these areas were legalized by official urban plans, termed *İslah İmar Planı* (Urban Improvement Plans).

While these changes were occurring, there were other significant developments. Along the seafront, the reclaimed land from the sea became an integral part of the middle fringe belt associated with the establishment of a public park. Hence the ring road to the north, the Müftü River to the west, the reclaimed land to the south, and the port area and the railway to the east became parts of a fixation line for development of the middle fringe belt.

In the course of the last 2 decades, Mersin has undergone a new wave of development. The cemetery was moved from the inner fringe belt to the new outskirts in the 1930s and became part of an outer fringe belt. This included an enlarged port area, warehouses, free trade zone, and regional wholesale market to the east, and a university, playgrounds and other recreational facilities to the north and west. A new type of residential development emerged on agricultural land and in vacant areas far away from the main built-up area, in the form of dispersed development (Figure 3).



**Figure 3. The fringe belts of Mersin in relation to the growth of the built-up area.**

However, unlike low density sprawl that occurred in many other Mediterranean cities (Munoz, 2003), this dispersed development was predominantly of high-rise buildings, although the dwelling densities were low, compared with those in older built-up areas.

The formation and modification processes that are currently evident within the outer fringe belt of Mersin are a topic for the future investigation. However, arguably what has hitherto made the fringe-belt development of Mersin distinctive is the merging of its middle and inner fringe belts, and their unification into one belt. And it is this development leading to a much enlarged inner fringe belt (the amalgamation of the previously distinct inner and middle fringe belts) that will now be examined.

#### *The inner fringe belt of Mersin*

By the early-twentieth century it was apparent that Mersin's inner fringe belt was not conforming to the continuous fringe-belt model associated with traditional, especially medieval cities (Figure 4). Instead three distinct functional sections were beginning to form: a west functional section (WFS), an east functional section (EFS) and a north functional section (NFS).

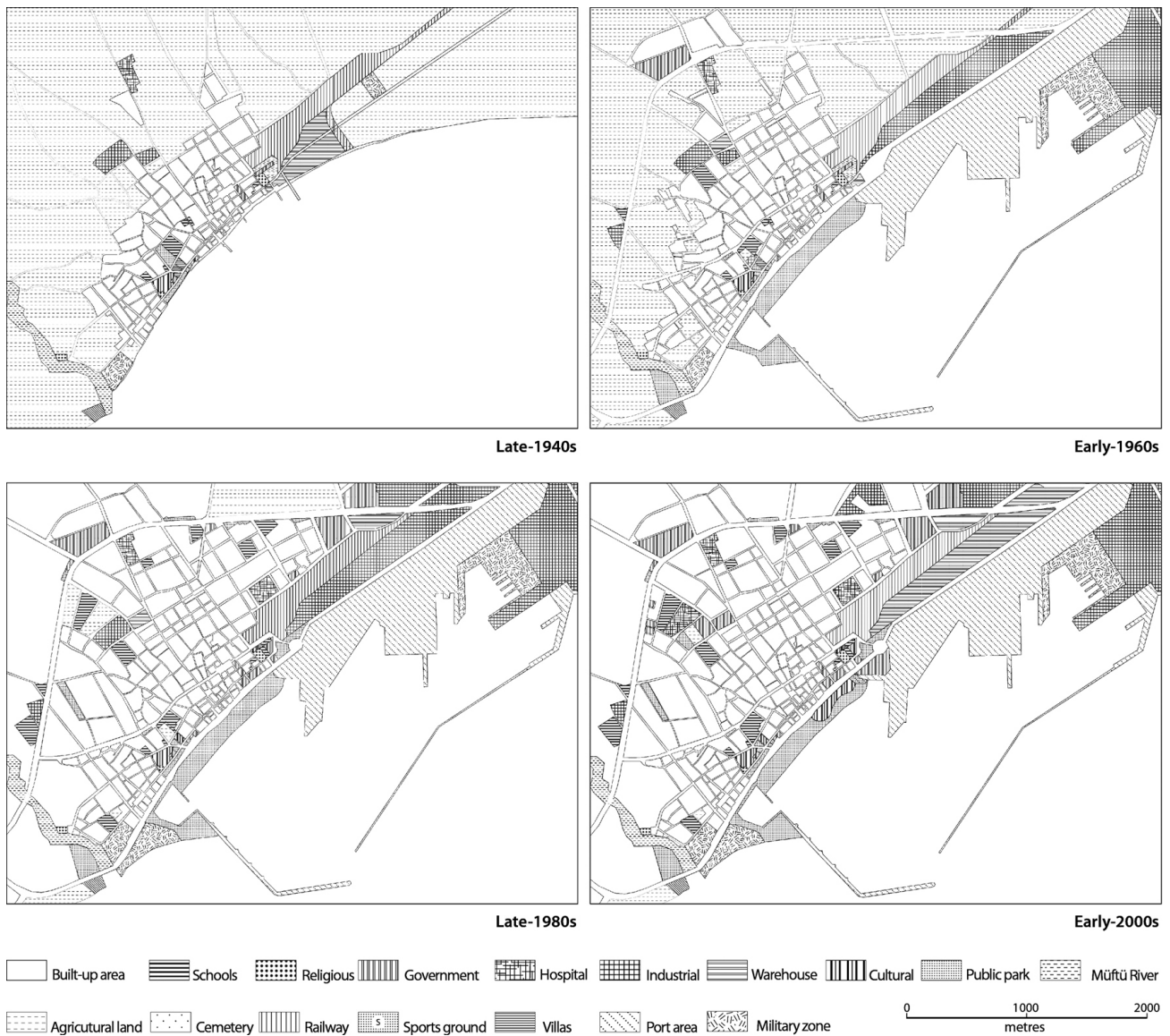
Between the foundation of the Turkish Republic in 1923 and the mid-twentieth century, the WFS underwent both adaptive and augmentative redevelopment (to use M. R. G. Conzen's (1969, p. 123) terms) and associated land-use changes. Institutional uses were introduced that symbolized the flourishing



**Figure 4. Fringe-belt land use in Mersin in 1920.**

young Republic of Turkey, such as the People's House, which is a cultural centre to familiarize the population with the ideas of the Republic (Karpas, 1963), and the Merchants Club, which performs the function of a social centre for merchants. Transformation of a nail factory into the Town Hall, erection of the Governor's Mansion and the first high school in the city, next to the sports ground, gave the WFS the character of a civic centre. While these changes were the result of adaptive redevelopment, the redevelopment of the Greek Orthodox church for commercial uses entailed augmentative redevelopment. During this period the EFS was faced with interventions by the city authorities that resulted in the erection of new buildings, such as the Social Service and Child Protection Institution, and a replacement for the railway station.

The fact that the WFS was subject to major modifications and land-use changes earlier than the other functional sections can be attributed to a number of factors. First, the WFS became embedded within residential accretions earlier than the other functional sections. By the early 1920s urban growth had hardly reached the NFS, while the EFS retained its character associated with the railway and nearby industrial and warehouse uses. Secondly, it was developed as a civic centre in response to direct interventions by the city government of the time. There were few local authority interventions directly affecting the other functional sections, except for the movement of the cemetery in the NFS to previously agricultural land on the northern outskirts of the city, later to become incorporated in the outer fringe belt (Figures 5 and 6).



**Figure 5. Fringe-belt land use in Mersin since the late 1940s.**

In the mid-twentieth century, the WFS was undergoing its consolidation phase. Two primary schools to the north of the Greek Orthodox church were demolished and their sites occupied by commercial uses. The opening of Sakarya Street, in the middle of WFS, entailed demolition of two villas and the redesigning of an area as a public park. The NFS began to expand north and north-west during the mid-twentieth century. A number of high schools were built, and a wholesale

fruit and vegetable market was laid out. The vacant cemetery site was redeveloped for another high school. The EFS retained its existing configuration, except for the erection of a hospital and another primary school.

The main change to take place at this time and which was to have major significance for developments in the second half of twentieth century was the construction of the ring road. This was an outcome of planning ideas, developed in 1938 by Hermann Jansen, the

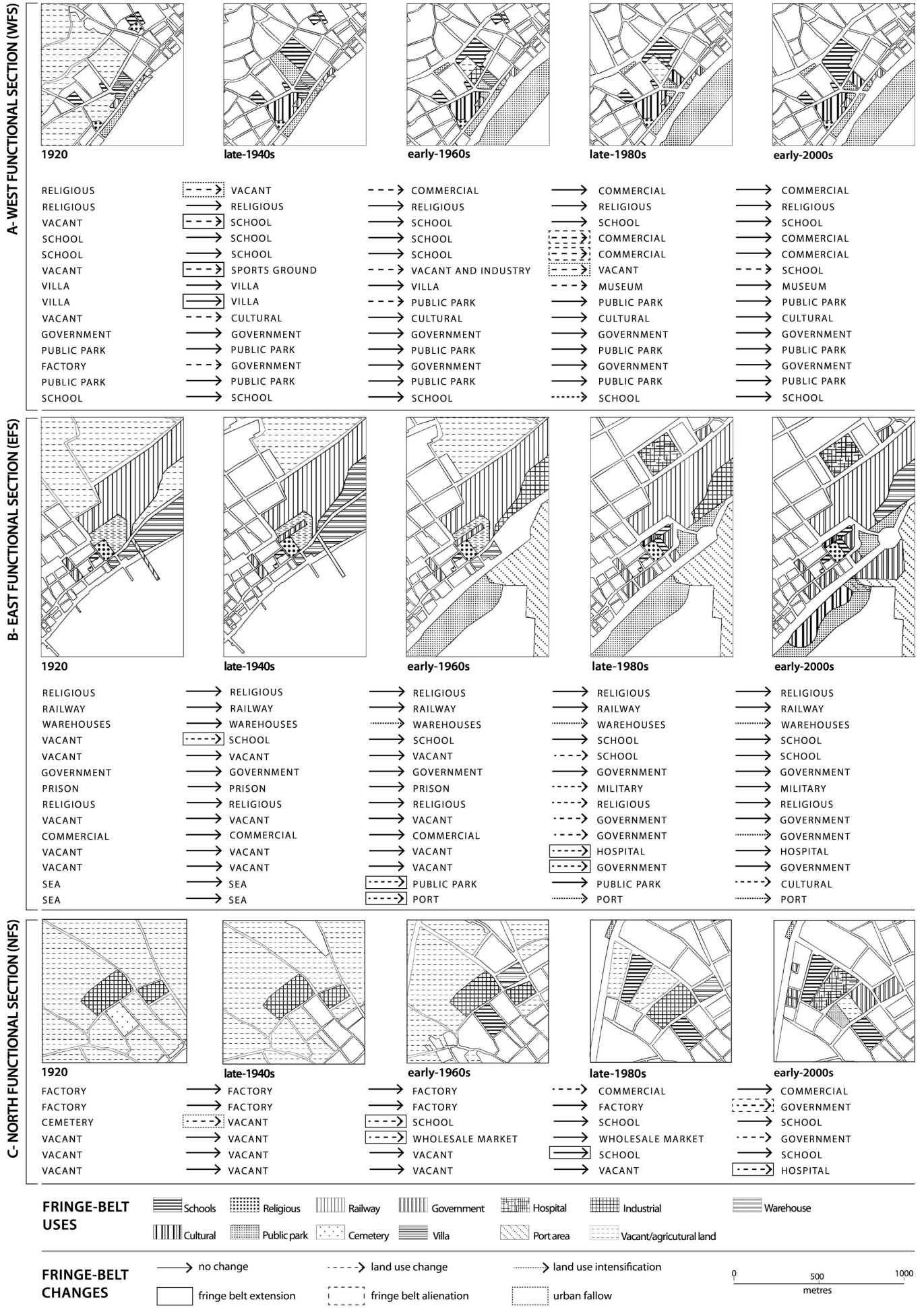


Figure 6. Land use in different sections of Mersin's inner fringe belt, 1920 - c. 2005.

German architect-planner. Although it was anticipated to be constructed at the edge of inner fringe belt where two factories lay, it was ultimately located farther north. It acted as a fixation line, jointly with the Müftü River to the west (Figures 5 and 6).

Construction of a new port area to the east caused the EFS to extend in that direction. A huge amount of land was created by reclamation from the sea. The reclaimed land became not only a part of the middle fringe belt by connecting the ring road and the Müftü River on the south side, but also a part of the inner fringe belt, joining the WFS and the EFS along the seafront. Part of the reclaimed land became a storage area for the port to the east, and another part, to the south of the city along the seashore, became a public park, Atatürk Park. By this time, both the EFS and the WFS were merging with the middle fringe belt.

During the late-twentieth and early-twenty-first centuries, changes to the WFS consolidated its existing character. The EFS, however, underwent extension in the form of warehouses associated with port functions in the east and governmental institutions in the west, where some of the commercial premises on Uray Street were replaced by the new Government House, the Mersin Cultural Directorate, and the Court House.

The most notable changes occurred in the NFS. New schools and a hospital (Mersin University Hospital) extended the NFS towards the north-west where it joined with the land-use units of the middle fringe belt that were located along the ring road. Thus, the NFS began to merge with the middle fringe belt as the WFS and the EFS had done earlier. The most significant change followed from the decision of the city authorities to open up new areas for city centre development. Thus, although the WFS and the EFS did not experience a noteworthy change in their character, that of the NFS was changed from a manufacturing centre to a civic and commercial centre. Modifications to the original plan led to the erection of Mersin Trade Centre, the Town Hall of Akdeniz Municipality and a new Court House. In this area, it is anticipated that there will be further

redevelopment to accommodate civic and commercial land-use units in a former factory area that is currently urban fallow.

## **Conclusion**

Viewed in relation to the background to fringe-belt research with which this paper began, two findings from the study of Mersin's inner fringe belt are particularly noteworthy. First, there is the emergence of three distinct functional sections rather than a continuous belt. Secondly, there is the merging of the inner and middle fringe belts: the inner fringe belt has lost its existence as a separate entity. Since neither of these types of development has been a significant finding in previous fringe-belt studies, it is important to reflect on them.

Particularly important has been the absence of a fixation line in the early stages of fringe-belt development. Being a young city, city walls never surrounded Mersin, and the absence of such a fixation line has almost certainly contributed to the discontinuities in the inner fringe belt. Instead the first fixation line in the city, associated with the ring road and the Müftü River, was farther out and associated with vigorous middle fringe belt development. Also important was the dominance of private property and the inadequate mechanisms for the city authorities to acquire substantial amounts of land. Instead small patchy interventions by the city on the whole reinforced the tendency for the inner fringe belt to develop as separate, functionally distinct sections. However, the forces at work were much wider and call for consideration of broader issues, notably the phases and processes of development, the different types of redevelopment, the characteristics of property ownership and planning practice.

Since Mersin was founded as a port city only as recently as the modernization period of the Ottoman Empire, the formation and modification processes of the inner fringe belt occurred later than in nearly all other cities that have been the subject of fringe-belt research, many of which have a history dating

back to the Middle Ages and even earlier. Its inner fringe belt remained in contact with the surrounding countryside until the early-twentieth century, when middle fringe belts were developing in British cities – the middle fringe belt of Birmingham, for example, was formed at the end of the nineteenth century and during the first two decades of the twentieth century (Whitehand and Morton, 2004).

Perhaps more critical has been the lateness of industrialization in Mersin, relative to much of the Western world, though not as late as in most of China (Conzen *et al.*, 2012). In relation to the merging of fringe belts, the far greater generation of fringe-belt features by the mid-twentieth century, when the middle fringe belt was developing rapidly, than during the period of inner fringe-belt formation, was a factor.

The findings for Mersin reveal that once the inner fringe belt was embedded in the built-up area, it was increasingly susceptible to adaptive redevelopment. This process mostly entailed land-use intensification, and was particularly evident in the adding of buildings to sites occupied by schools and governmental institutions. Augmentative redevelopment was especially associated with the absorption of fringe-belt uses by commercial uses on the periphery of the city centre. This also was generally associated with an increasing ratio of floor area to plot area. However, as Whitehand (1967, p. 231) discovered in a very different environment, although the fringe belt underwent change after incorporation within the built-up area, its character remained distinctive from that of the areas around it.

Previous studies have recognized to varying degree the significance of property ownership in fringe-belt development (Carter and Wheatley, 1978; Vilagrasa, 1990). In Mersin, failure of local and central authorities to acquire sites such as belonged to cities where city fortification zones existed was a further factor militating against the development of a continuous inner fringe belt. However, in the case of the middle fringe belt, either more public land was available or it was possible to acquire it, facilitating the construction of a ring

road that acted as a fixation line.

In many studies in different cultural contexts, it has been concluded that fringe belts have been poorly recognized in urban planning and design (Conzen *et al.*, 2012; Gu, 2010; Whitehand and Morton, 2003). Neglect of fringe belts in planning in the English-speaking world has been related to the conception of cities in primarily functional and land-use terms or as stocks of physical structures rather than as historico-geographical entities (Whitehand and Morton, 2003).

The planning history of Mersin reveals a distinctive perspective on fringe belts. Jansen recognized the historical development of Mersin from the early-nineteenth century to the early-twentieth century in the first development plan of the city, referring to the built-up area as the ‘Old Town’, and depicting it surrounded by fringe-belt uses. He protected the railway station and its associated warehouses in the EFS and proposed a new port which would later be realized in the mid-twentieth century. He anticipated the development of another railway line and airport, in the open land surrounding the city to the north and north-east, with a ring road surrounding the city and passing through the NFS. He also proposed strip-like public parks and sports grounds on the western edge of the ‘Old Town’, which would eventually meet in the civic centre. Not least, he proposed a promenade on the seafront that would have linked the EFS and the WFS.

Although this plan was not realized in the way envisaged, it may not be entirely coincidental that it followed only 2 years after Jansen’s German compatriot Louis’s recognition of fringe belts in Berlin. Subsequently, development plans for Mersin did not recognize fringe belts as structural components of urban growth, though in very general land-use terms they are visible on maps accompanying those development plans. The present study strongly supports the case more generally for recognizing fringe belts not only as articulations of the historico-geographical structure of urban areas but as components in planning practice.

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