Urban Fringe Belts: Roots, Developments and Prospects

Tolga Ünlü

Faculty of Architecture, City and Regional Planning, Çukurova University, Turkey.
Email: tolgaunlu@gmail.com

Journal of Urban Research and Development
2022, Vol. 3 4-15

https://ojs.emu.edu.tr/

Abstract

The outward growth of cities has always been an issue attracting attention within urban studies, including urban sociology, urban economics, and urban planning. This paper examines urban growth from the view of urban morphology. The utilization of urban fringe-belt concept in explanation of urban growth is questioned.Although it is mostly used to elucidate the processes of growth in existing cities through a historical perspective with detailed use of cartographic data and taken into consideration as a part of urban morphological analysis, the fringe-belt concept has the potential to be considered as a constructive concept in urban planning and to define new insights to strengthen the weak relations between research and practice in the field of urban morphology. In this vein, this study investigates the emergence and evolution of the fringe-belt concept, the processes that give rise to change in fringe-belt areas and their impact on restructuring of cities, recent developments in fringe-belt studies and to discusses the prospects for future studies.Recent research on fringe belts has revealed that there is a growing tendency to use the concept in the study of urban growth in various cultural contexts. It is observed that the ecological perspective has been growing in the last few years and is of great importance in the present day in the context of climate change and global warming. Furthermore, fringe-belt theory has the potential to be utilized as a constructive concept in the management of urban growth.

Keywords

Urban Growth, Fringe Belt, Urban Planning

Introduction

The industry-driven growth of cities with their rapid and enormous expansion into surrounding areas during the nineteenth century has been described thus: “Cities appeared to grow not by the year but by the hour. Massive expanses of brick and granite engulfed formerly green fields, and miles of new houses and apartments lined narrow streets” (Hohenberg and Lees, 1996, p.290). During the exceptional growth of industrial cities, Frederick Engels was the first figure who investigated the effect of growing industrial capitalism on the urban life, with a special focus on the living conditions of the working class and slum formation. He was reflecting the turbulence in physical condition of the industrial city: “The streets are generally unpaved, rough, dirty, filled with vegetable and animal refuse, without sewers or gutters, but supplied with foul, stagnant pools instead. Moreover, ventilation is impeded by the bad, confused method of building of the whole quarter, and since many human beings here live crowded into a small space, the atmosphere that prevails in these working-men’s quarters may readily be imagined. Further, the streets serve as drying grounds in fine weather; lines are stretched across from house to house, and hung with wet clothing” (Engels, 2001, p.83).

Approximately seven decades after Engels’s investigations, examination of the growing industrial city was in the agenda of urban sociology in the United States. After analysing large-scale cities, Chicago School presented urban growth models, which had been attractive in the academic world due to their relative simplicity in explaining the outward growth of cities. They explained urban growth as including

"constantly evolving mechanisms, subject to the processes of growth and decay, interdependence, competition and cooperation, health, and disease" (Judd, 2011, p.3). The relative simplicity of the Chicago School, developed by the concentric zone model of Burgess (1925), the sector model of Hoyt (1939), and the multiple nuclei model of Harris and Ullman (1945), allowed its adoption to different cities (Dear, 2002).

At the same time as the development of several urban growth models, the fringe-belt concept was elaborated by M.R.G. Conzen during 1960s to explain urban growth from the perspective of urban morphology. However, it remained underestimated in the field of urban studies and geography as a concept to develop explanations for growth patterns and processes of cities, but also in urban planning as a potential concept to use for developing policies at a city-wide scale.

When fringe-belt theory was developed by M.R.G. Conzen, most of European cities were faced with a further challenge, restructuring programs after 2nd World War. In this period, planners and architects conceived of themselves as the pioneers of a new world, believing that cities should be planned and shaped in a rational way, built upon statistical enquiry and technical efficiency (Rykwert, 2000, p.3). Whitehand (1981b) stresses that the underestimation of the fringe-belt concept was mainly due to the popularity of quantification and functional approaches during the post-war period, the relative difficulty of collecting information for fringe-belt studies when compared to more readily quantified data, as well as having its roots in German scholarship, when English and American studies were prevalent. Moreover, as the development of urban morphology more generally remained marginal in urban studies for a long period, the fringe-belt concept also could not get attention within the broader fields of urban studies (Barke, 2019).

Although the fringe-belt concept is mostly used to elucidate the processes of growth in existing cities through a historical perspective with detailed use of cartographic data and is a central part of urban morphological analysis, it has the potentiality of being considered as a constructive concept in urban planning, helping to define new insights to strengthen the weak relations between research and practice in the field of urban morphology. Thus, even though the fringe-belt concept is elaborated through numerous case studies in different cultural contexts after the seminal study of Conzen (1969 [1960]), most of them are concentrated on the classical model of Conzen, in which urban growth is dependent on a strong city centre. However, the developments in the 21st century encourage us to question whether the initial conceptions of fringe belts could help in the search for explanation of the urban growth at regional scale: Is it possible to develop new insights in fringe-belt theory in response to the emergent urban growth worldwide?

Today, the cities worldwide are undergoing through a new process in the 21st century. According to UN reports (UN, 2020), 55% of world's population in 2018 began to reside in urban areas, and it is expected to rise to 68% by 2050. It is envisaged that 43 cities will have population more than 10 million people, while those of 66 will have population between 5 and 10 million people. The report also reveals that the cities in Asia and Africa, which are relatively medium-sized cities today, will be at the top-rank ones with their urban population. In this light, the cities are being confronted with a new wave of growth. The expected massive population increase in newly developing economies would presumably give rise to new urban expansion processes through opening new areas to settle in the peripheral lands. On the other hand, the built-up areas of existing cities would face with a new wave of redevelopment in the following decades. These processes would give rise to extreme use implications for energy consumption, greenhouse gas emissions, climate change, and thus global warming. Depending on its roots, is it possible to develop new insights in how the use of fringe-belt areas could be extended to give response to the structure of cities in a world of global warming and climate change? In this vein, this study aims to investigate the emergence and evolution of fringe-belt concept, the processes that give rise to change in fringe-belt areas and their impact on restructuring of cities, recent developments in fringe-belt studies and to discuss prospects for future studies.

Definition and composition of fringe belts

Urban morphology is defined as "the study of urban form" (Larkham and Jones, 1991) through the analysis of the change in the main aspects of urban form, plots, buildings, and streets (Oliveira, 2016). Since the entire city presents its structure through the hierarchical nesting of urban forms from the small to large scales (Conzen 1988), the changes in plots and buildings lies at the small scale, while the outward growth of cities is conducive to develop explanation at the large scale.

Outward growth of cities may come into existence in an accretionary or scattered way. While the former refers to a continuous expansion of the built-up area at the edges of a city, the latter reveals itself through dispersed urban development in the distant areas from the built-up area without or little coordination with the existing structure of the city.

Residential districts are the most recognizable parts within the built-up areas of cities since they inhabit larger areas and show relative homogeneity in terms of use? However, some heterogenous areas within the urban form emerge during outward growth of cities that are less easily identified. 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). In this zone, the building block plans and the buildings are much more variable in size, building types are much more heterogeneous, rhythm is generally lacking in the street facades, where indeed there are frequently no buildings facing the street, and the ratio of hard to soft surface is also generally more variable (Whitehand and Morton, 2004). This zone is defined as "urban fringe belt" by M.R.G. Conzen (1969, p.58) as a part of town-plan structure: "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". It contains a distinctive group of land-use units through togetherness of industries, including warehouses, factories, transport facilities and quarries; institutions, containing military barracks, governmental, religious, health, education uses; open spaces, involving public parks, cemeteries, nurseries; recreation, comprising sports fields, golf courses etc., and villa estates or further out isolated larger houses as limited number of residential units (Conzen M.R.G., 1969, Conzen M.P., 2009). Varying size and shape of plots, diversity of building types and styles, and low coverage of plots by buildings bring about them a more coarse-grained spatial structure in fringe belt areas as compared to close-grained residential and commercial areas.

The origin of the fringe-belt concept is dated back to the study of Louis (1936) on Berlin, when he identified three rings, encircling built-up areas and distinguishing development periods of the city (Figure 1). The first one girdles the historic centre of Berlin and houses cultural institutions, such as numerous museums in Museum Island, religious institutions, such as Berlin Cathedral and open spaces. The second ring surrounds the early suburbs, of which the most significant unit is Tiergarten. As two rings manifests continuous circles around the built-up area, the units of the third one were dispersed in the peripheral lands of the city, presumably due to its formation phase. Within these rings, the industrial premises tend to move from the inner city to the peripheral areas during the period between 1890 and 1925 (Dickinson 2002). Louis called these ring-like formations *Stadtrandzone*.

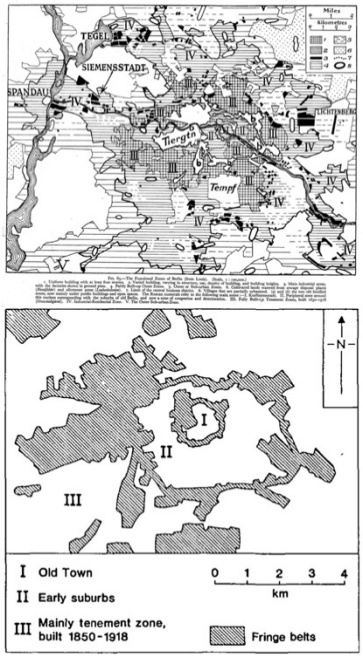

Figure 1: The functional zones of Berlin (at the top, Dickinson, 2002, p.240) and its fringe belts (down below, Whitehand, 1988, p.49)

Almost three decades later, M.R.G. Conzen elaborated the fringe-belt concept within the morphogenetic tradition of urban morphology. His contribution is the development of a morphological theory of urban growth and change through the fringe-belt concept (Whitehand, 1988). He was probably influenced by Louis during his studies at the Geographical Institute at the University of Berlin (Whitehand, 1981a). Beginning with the Alnwick study, Conzen (1969 [1960]) paid attention to three distinct fringe belts, formed and transformed during urban growth: inner, middle and outer fringe belts (Figure 2). They appeared in urban form in varying distances from the city centre (Whitehand, 1981a). Among all, inner fringe belt is portrayed as the corollary of the central business district, where the former is the product of centrifugal forces and the latter is the product of centripetal forces (Whitehand, 1967, p. 223). According to Barke (1982, p.111) urban fringe belts are "composed of land uses that are produced by the town but do not necessarily have to be located within it". M.R.G. Conzen (1969, p.110) described it as a separate major morphological unit within urban form with its fixation line and consequent ring road, forming a continuous, uninterrupted zone around the historic city centre. Therefore, the inner fringe belt is expected to be more continuous than the middle fringe belt and outer fringe belt, where the latter being the most discontinuous (M.P. Conzen, 2009).

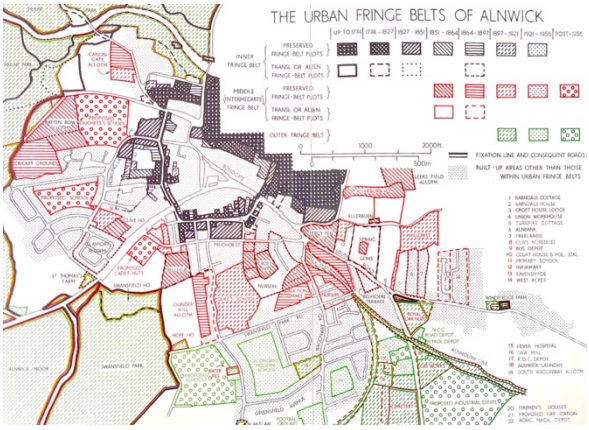

Figure 2: Fringe belts of Alnwick (Conzen, 1969, p.64)

In medieval towns the inner fringe belt frequently develops in relation to the town wall which functions as a fixation line and separates the fringe-belt area into two sub-zones. First is the intramural that is associated with repletion inside the wall through secondary building development on tail-end plots of the already built-up area, while the second is the extramural that is developed through the accretions outside the built-up area and town wall with greater freedom of space (Conzen, 1969, p.58-59). The intramural zone reveals a closed-grained plot pattern formation while the fringe-belt plots in the extramural zone are more open, sometimes dispersed in the surrounding formerly rural areas (Whitehand, 1981a). Fringe-belt developments in the distant extramural that have no topographical contact with the existing inner fringe belt might be considered as a discontinuous outer formation of the existing fringe belt, however in the succeeding phases, these formations may later be parts of a subsequent new fringe belt.

While the fringe-belt units are likely to give effect to the emergence of more continuous inner fringe belts in medieval cities associated with the town walls, and thus called “closed fringe belt” (M.R.G. Conzen 1969, p.58) or “the medieval town fringe-belt model” (Openshaw 1974, p.6), in the absence of a town wall, the towns of post-medieval origin usually did not experience such a strong fixation line fixed limit. If there were no natural features functioning as a fixation line, they would be unlikely to develop continuous fringe belts (Whitehand, 1967, p. 230). For instance, fringe belts are less recognizable in American cities than European cities, depending on the sporadic obstacles to urban growth and the nature of the land market (M. P. Conzen, 2009). Other reasons for a discontinuous fringe belt might be the latency in industrialization that can affect paucity of industrial uses likely to locate at the fringe, property ownership and ownership pattern of the peripheral lands that can influence the acquisition of land for land uses that require larger areas, governmental decisions in different periods that impact on the development or decline of particular fringe-belt uses, especially the institutional ones.

Further clarification

Despite its clear definition, there might be lack of certainty about the urban fringe-belt concept relating especially to the use of two other descriptive conceptualisations used in urban studies. One cause of such uncertainty might derive from the similarity of the fringe-belt concept to that of the CBD frame, and the second to the general description of the rural-urban fringe. The former is mostly related to inner fringe belts. As Barke (2019) highlights, the CBD frame that might house some fringe-belt uses on site, is defined directly through its relation to the CBD core. The distinction between CBD core and frame was developed by Horwood and Boyce (1959), and was mentioned earlier implicitly by (Murphy and Vance, 1954) distinguishing the “commercial core” and CBD edge. Davies (1972, p.73) defines the core-frame distinction: “The core area is a zone of greatest intensity, represented primarily by concentrations of shops and offices, the frame area is a zone of lesser intensity, made up of a series of sub-areas of varying specialization in different activities, primarily wholesaling, warehousing, manufacturing, motor-car servicing, and some housing”. Whitehand (1967) points out that the CBD frame has a different character from that of the inner fringe belt, mostly due to the relatively small housing plots of the former, when compared to the larger ones of the latter. Although some of these land-use units might be a part of the inner fringe belt, the recent developments around the commercial core, represents development of touristic functions, such as hotels and entertainment, car-oriented uses, such as oil stations, and large-scale retail developments, such as shopping centres in the CBD frame, all of which cannot be conceived as land-use units of a fringe belt. On the other hand, land-use units such as wholesaling, warehousing, manufacturing, motor-car servicing can be categorised as a part of industrial uses of the fringe belt on the peripheral lands. In this vein, the units comprising the inner fringe belt and the CBD frame both can be interchangeable. However, it should be kept in mind that the fringe belts concept is not just concerned with the location of land uses but is also concerned with historico-geographical explanation of urban forms, allowing a comprehensive evaluation of the growth phases of cities and physical forms of each period (Whitehand and Morton, 2003).

A second source of potential confusion concerns the term “rural-urban fringe”, defined as “the zone of transition in land use, social and demographic characteristics, lying between the continuously built-up urban and suburban areas of the central city and the rural hinterland,”. This is a much broader concept than

the term "urban fringe belt" which is specifically morphological in character. The urban fringe is the "subzone of rural-urban fringe in contact and contiguous with the central city, exhibiting a density of occupied dwellings higher than the median density of the total rural-urban fringe" (Pryor 1968, p. 206). It is essentially "identified less as an expansion area of the city and more as a transition zone in which the rural land pattern begins" (Andrews 1942, p. 169). That is to say, the fringe areas basically include the lands for urban expansion that might include the fringe belts itself and also the newly developing residential quarters. Fringe-belt uses appear in the immediate edge of the built-up city and later become embedded in urban form as new developments occur in the 'new' fringe of the city. Therefore, once the urban fringe belt is formed in the urban fringe of a city through the congregation of land-use units, such as industry, institutions, open spaces, recreation, it would subsequently be enveloped with the urban expansion beyond the former urban fringe.

The relationship with planning process

A further point of discussion is the relationship of fringe belts to planning decisions. Since the accretions to the built-up areas of the city is more recognizable due to their rapid development and consist of land use units that appear to be 'planned' as a coherent, uniform entity, the fringe-belt areas, in contrast, seem to be 'spontaneous' in their urban form, thanks to their slow development (M.P. Conzen, 2009). The fringe-belt is characterized by spontaneity, rather than planning, and is formed through the singular relocation of individual functions in the peripheral areas. However, the integration of once formed fringe-belt units could be brought together by planned decision-making (Dollen, 1990).

The spontaneous fringe-belt development is mostly discernible in the formation of the inner fringe belt, due to its historical formation in medieval times. Middle and outer fringe-belt formation is a phenomenon, largely observed during the rapid outward growth of the industrial city, after the nineteenth century, when planning began to be institutionalized as a separate profession and urban function. Therefore, although inner fringe belts are expected to experience more complex morphological processes of adaptation and redevelopment during their formation phase, middle and outer fringe belts are more likely to face a complex web of interactions with the planning process. All fringe belts are subject to planning decisions during the modification phase. Whitehand (1967) observed that decision-taking processes at the national level are more influential on fringe-belt development than those of at the local scale. For example, planning decisions and purposeful actions of central government can have significant effect on the formation of middle and outer fringe-belt units, such as large-scale sports grounds, education campuses, and industrial areas (Ünlü and Baş, 2016). Such large-scale fringe-belt uses are located in convenient areas, in which the property ownership becomes important as well as their size, and the current urban fringe meets many of the desired criteria.

However, there are historical examples of the deliberate, planned creation of zones which, in effect, become a fringe-belt. For example, the creation of Ringstrasse in Vienna as a site of institutional and cultural uses in the space between the built-up area and emergent suburbs of the period, or planning public spaces around the historic core of Copenhagen after demolition of the town walls during the nineteenth century. As Whitehand (1988) highlights, this idea of using the glacis as a space for public amenities was adopted in many European cities in the same period. Nonetheless, they were mostly not the comprehensive 'planning of fringe-belt areas', they were rather examples of 'planning in fringe-belt areas. Recent studies of morphological research used fringe-belt units to inform decision-taking process in planning. The fringe belts of Barnt Green, a suburban development in southern Birmingham, were recognized within a hierarchy of character regions, and they are named 'community spaces and utilities' instead of 'fringe belt' to make them more readily understood by the public at large and used as distinctive morphological units in the planning process (Whitehand, 2012). Kropf and Ferguson (2014) also used the fringe-belt concept through recognizing fringe-belt uses as 'fringe tissue' in development of planning decisions in Bath.

Developments in urban fringe belts: Phases and Processes

In the simplest sense, urban fringe belts are the physical manifestations of slow movement or actual standstill in the outward development of a city (Whitehand, 1981a). Depending on the pace of urban growth, they are actively created by the slow advance of the urban edge (Carter and Wheatley, 1978, p. 214).

The clarity with which the process and related physical forms can be identified varies according to such factors as topographical and legal constraints on urban growth, the amplitudes and periodicities of fluctuations in residential construction, and the prevalent house forms and modes of transport (Whitehand and Morton, 2003).

Development of fringe belts come into being through two phases. First is the formation phase when the peripheral rural lands are taken up for urban uses

for the first time, while the second is the modification phase when changes may occur in the functional or physical attributes of fringe-belt plots (Whitehand, 1967). The formation phase includes the fixation, expansion and partly consolidation phases, defined by M.R.G. Conzen (1962). The modification phase is basically related to reactions of fringe-belt areas to development pressures after envelopment by urban expansion. The changes occur through a cycle of adaptation and redevelopment which is related to the changing social and economic requirements of the society. As a result, a specific fringe-belt use in the built-up area may change its location within the growing city (Whitehand, 1967). On the other hand, fringe belts can be consolidated and expand through accumulation and repletion processes as well as site succession (Conzen, 1962).

Put simply, the changes in the modification phase would result in dissolution or retention of the fringe-belt area (Figure 3). The former comes into existence through a change from a fringe-belt use to a non-fringe-belt use, usually to commercial or residential. It is the fringe-belt alienation, through which the character of fringe belts might change dramatically. This usually occurs as a result of migration of older fringe-belt use to a new location in the city or its termination as a result of changing needs of the society. Inner fringe bels are usually faced with alienation processes as a result of the growing pressure of CBD expansion and its need to acquire new lands for redevelopment. Accordingly, the site is absorbed into the urban area and taken over by residential or commercial purposes (Barke, 1982). Especially, the rapidly-growing 21st century cities experience this process in the last decades through emergence of mixed-use development and shopping centres in the place of older fringe-belt areas. Retention of fringe-belt uses may occur in three ways. First is the "survival of original use in original form" (Barke, 1982), in which fringe belts tend to remain in situ (Conzen, 2009). The second is the replacement of a fringe-belt use by another fringe-belt use as a part of land-use change. This might come into existence after migration of the older use and its substitution with a more contemporary one. Third is the fringe-belt expansion that occurs through transformation of the adjoining accretionary non-fringe-belt uses and their colonisation as a part of the fringe belt. When the fringe-belt areas in urban form is retained, the fringe belts continue to reflect themselves as historico-geographical entities of the urban structure. That is to say, the fringe belts would protect their historico-generic unity in urban form (Conzen, 1978).

During fringe-belt development, each process, except in-situ survival, might result in intensification as a result of erection of new buildings and uses on site through additions, adaptations and replacements. When the fringe belts continue their historico-geographical character in urban form, institutions, such as schools and hospitals tend to behave in this way (Whitehand, 1994). On the other hand, in the case of fringe-belt alienation, land-use changes in the fringe belts to non-IFB land uses such as residential or commercial usually result with an increase in intensity of use (Whitehand and Morton, 2003; Barke, 1974).

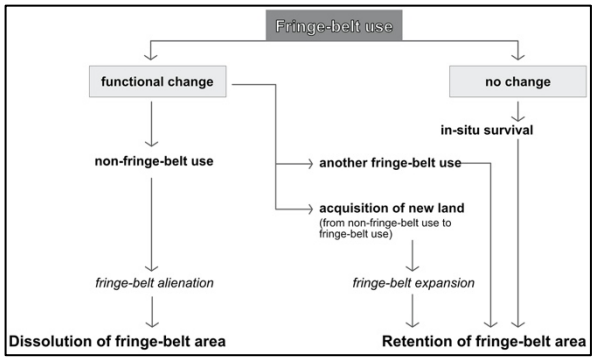

Figure 3: Fringe-belt processes in the modification phase

Development of the concept: J.W.R. Whitehand as the central figure

J.W.R. Whitehand had been the central figure from the mid-twentieth century not only for fringe-belt studies, as also depicted by Oliveira (2019), but also for the development of urban morphology in various fields of interest from the view of the historico-geographical approach. He had 'battled' for elaboration of fringe-belt research (Barke, 2019). According to him, the fringe-belt concept is "arguably the most important single contribution to urban morphology to arise out of the morphogenetic tradition" (Whitehand 1987, p. 76). He recognized the fringe-belt concept as "a means of putting order into the otherwise bewildering complexity of urban morphology" (Whitehand 1967, p. 233). He was the first researcher to investigate fringe belts in their own right. The initial studies of Conzen were basically focused on inner fringe belts within the investigation of the morphological transformation of the entire town, but Whitehand (1967) focused specifically on fringe belts, and extended the scale from a single city to a metropolitan area in the case of Newcastle. He examined the merging of several centres in the Tyneside conurbation during the inter-war and post-war periods, and the effect of this integration to the formation of fringe-belt areas.

Whitehand's contribution to fringe-belt studies during the 1970s opened new paths in fringe-belt studies and deepened the discussions on why and how fringe-belt areas emerge (Whitehand, 1972a, 1972b, 1974, 1975, 1987). After the constructive development of the fringe-belt concept by M.R.G. Conzen during the 1960s, Whitehand sought to question the relationship between economic development of a city and formation

and transformation of fringe belts. He expanded the descriptive nature of initial research into more explanatory approaches through the examination of the formation and modification of fringe-belt uses in relation to the building cycles in the city. Despite some attacks on this new insight into fringe belts, Daunton (1978) discussed by Barke (2019), this approach was the first time anyone recognised the role of competition for sites by various land uses and the impact of economic cycles on the development of fringe within the urban form. He identified that "the housebuilder is prepared to pay high rents for accessible sites but relatively low rents for sites farther away. On the other hand, institutions, for which the decline in accessibility is generally not such a significant disadvantage, have a bid-rent curve with a more gradual slope away from the edge of the built-up area. If this relationship remains fixed the result in the landscape is a zone of residential land surrounded by a zone of institutions" (Whitehand, 1974, p. 33). That is to say, since house-building requires much more initial site development costs, and is sensitive to changes in the price of land, housing slumps provide an opportunity for institutions to acquire sites which are otherwise taken by house builders. Therefore, the sites adjacent to the built-up area are acquired for residential development during the periods of housing boom, while development of institutions is likely to occur during periods of slumps (Whitehand, 1972a, pp. 41-42).

This new perspective was developed following the "traditional conception" (Whitehand, 1981b) and "spatial perspective" (Ünlü 2013) -initiated by M.R.G. Conzen- that was largely based on empirical and detailed investigation of physical changes. The "economic perspective" (Ünlü 2013), developed by Whitehand, was elaborated in relation to bid-rent theory, which afterwards helped Whitehand out to instigate the innovation/building cycle model after Conzen's classical model. Within the relationship of housing booms and transport innovations, he illustrated residential accretions and fringe belts throughout the historico-geographical development of the city (Figure 4).

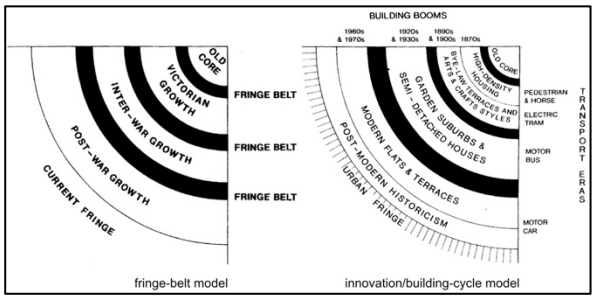

Figure 4: Fringe-belt model of M.R.G. Conzen, and innovation/building cycle model of Whitehand (Whitehand, 1994)

The traditional conception of fringe belts by M.R.G. Conzen and their economic explanation by Whitehand has been followed by discussions on the relationship between fringe-belt development and planning decisions. Whitehand was also in a pivotal role in this new perspective. His investigations were concentrated on the key decision-making processes as a part of comprehensive analysis of agents of change in the Edwardian fringe belt of Birmingham (Barke, 2019). Whitehand and Morton (2003) pointed out that the potential significance of fringe belts in planning is neglected due to viewing the city in functional terms or as stocks of physical features, rather than taking it as a historico-geographical entity. They examined the pressure for change in fringe belts and the attitude of planners towards fringe belts, and concluded that the piecemeal developments in the Edwardian fringe belt of Birmingham resulted in a cumulative effect on the historico-geographical character of the city. Planners were widely not aware of the fringe-belt concept since the tendency to redevelop spacious lands by landowners to realize the enhanced value of their sites is very dominant. In a further study (Whitehand and Morton, 2004) observed that planners could change their attitude towards the proposals to redevelop fringe-belt areas in the face of persistent pressure throughout the ongoing decision-making process within the discretionary nature of British planning system. They revealed that planning policies had very little effect on presenting the Edwardian fringe belt of Birmingham as an entity within the morphological structure of the city -it remained almost as unplanned as it was created a hundred years ago. When they focused on the site-specific developments in Birmingham's Edwardian fringe belt (Figure 5) through a detailed analysis of morphological agents, one of the significant findings was that the pressure on land within the existing urban area had an impact on the increasing pace of redevelopment in fringe-belt areas for residential purposes (Whitehand and Morton, 2006).

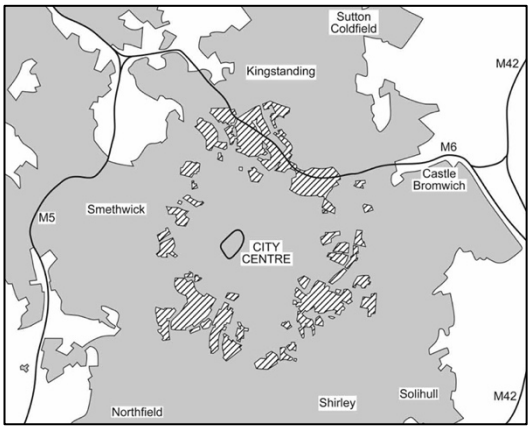

Figure 5: The Edwardian middle fringe belt of Birmingham (Whitehand and Morton, 2006)

As Whitehand's concern on fringe-belt studies went beyond the historic cores of the medieval cities, and included the larger cities, such as Newcastle, Glasgow, Birmingham, he also steered his attention to cross-cultural studies. His special focus was on the Chinese cities, in which town walls had been one of the major features of urban form. In this vein, Whitehand et al (2011) opened a new path to further investigations on the fringe belts of Eastern Asian cities through a study on Pingyao. They revealed that the characteristics of the fringe-belt areas in Chinese cities show resemblances to those studied previously, and paid attention to the convenience of the fringe belt, associated with the city wall, to be included in delimitation and management of the World Heritage Site. In another study on Nanjing (Whitehand and Gu, 2015), the recognition of city walls from a heritage perspective was also mentioned, where also the Ming fringe belt is identified as a special feature of the morphological structure of the city.

Further issues in fringe-belt research

Recent research on fringe belts reveals that there is a growing tendency to use the concept in the study of urban growth in various cultural contexts. As a further issue, relationship between various disciplines, and its connection to the attitude towards fringe-belt areas is discussed. It is observed that a new perspective, -the ecological perspective- has been growing in the last few years. It is of great importance in the present day, when climate change and global warming is being discusses with reference to urban growth.

Being widely focused on European cities -and partially on American cities- during four decades after its introduction in urban morphology (Conzen MP 1968, Dollen 1990, Ducom 2003 and 2005, Slater 1989, Vilagrasa 1990), the fringe-belt concept has attracted the attention of researchers from different cultural contexts, from the beginning of the 21st century (Gu 2010, Krajnik et al. 2008, Kukina 2006, Rodrigo Cervantes 1999, Scritaroci and Maric 2019). The last decade has experienced a growing amount of fringe-belt studies on Turkish and Chinese cities. On the one hand, there has been numerous studies at the city-wide or metropoltian scale (Hazar and Özkan 2020, Kubat 2019, Lihua et al. 2019, Ünlü 2018, Ünlü and Baş 2016 and 2019), on the other hand, there are those focused on inner fringe belts (Conzen et al. 2012, Ünlü 2013, Whitehand et al. 2011, Whitehand and Gu 2017).

Among these studies, Ünlü and Baş (2016) argued a new fringe-belt model to explain the rapidly changing structure of the metropolitan cities. They paid attention to an "umbrella fringe belt" that had been developing beyond the former fringe belts, in the city of Mersin, Turkey. According to this conception, the fringe belts of subcentres and small-scale settlements coalesce with the later fringe belts, ie. middle and outer, of the main city throughout its historico-geographical development. In a further phase, the innovations in transportation and manufacturing had been conducive to the emergence of new transportation connections at regional and national scale while large-scale development of fringe-belt uses, such as organized industrial sites, waste-disposal areas began to be located in the distant peripheral lands within the metropolitan region. Besides, the effect of neoliberal politics on the shaping of urban form that prioritize large-scale investments on land through effectual projects for the sake of capital accumulation is evident in the advent of large-scale fringe-belt uses in the distant peripheral lands, such as new hospitals, sports areas, university campuses. This trend is also strengthened by planning decisions. As a result, a new fringe belt, consisting of these large-scale areas, began to embrace the former fringe belts at the metropolitan scale, which act as an umbrella over the whole city (Figure 6).

In addition to introducing economic and planning perspectives, J.W.R. Whitehand led the way to open the development of an ecological perspective in fringe-belt studies. Green spaces around cities are taken into consideration as a part of fringe belts, and their ecological significance was highlighted (Hopkins 2012). In fact, this approach began with Whitehand and Norton (2004 and 2006), when they noted that the sites of ecological significance were protected through planning policies that in turn affected maintaining the character of fringe belts. Additionally, the latest contributions of J.W.R. Whitehand (2019 and 2020) to fringe-belt studies opened a new path to the development of an ecological perspective. Departing from the discussion on the relationship between fringe belts and green spaces, he provides an insight into the potentiality of these areas to be utilized in planning practice in an integrated way, rather than taking them as distinct and individual entities. The study of Scritaroci and Maric (2019) and Zhang (2019) have strengthened this new path of development for fringe-belt studies. The former highlights the significance of the green spaces along the fortification zones as a part of the historic town and the need to develop conservation strategies that should take these spaces as a part of urban identities. Focusing on the relationship between the historical development of urban form and the nature and distribution of different types of green spaces, the latter comments that fringe-belt areas protect their soft spaces, better than residential areas.

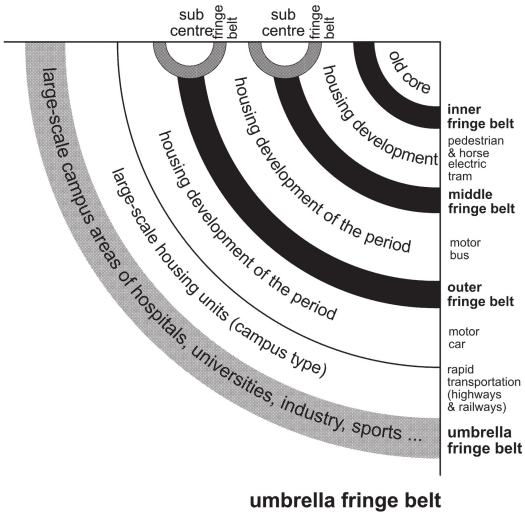

Figure 6: Umbrella fringe-belt model (Ünlü, 2022)

When the relationship between disciplines is concerned, although many researchers in the field of urban geography are suspicious about the field of urban morphology and the concept of the fringe belt, it is of considerable significance that planners, architects and landscape architects have much more eagerness in engaging with the field and the concept (Barke, 2019). However, planners have a sectional perception as well as landowners and developers towards the fringe-belt areas since they adopted a functional stance on the city. Therefore, the decision-making process in planning runs through a site-by-site evaluation in a piecemeal fashion. The significant sites are usually recognized due to the age and architecture of buildings (Whitehand and Norton, 2003).

This raises questions concerning the different attitudes towards fringe-belt areas. What is their importance for the future of our cities? What is their impact on restructuring of cities? These questions also refer to a discussion on the conception of fringe belts in urban studies and planning. Put simply, there are two broad perspectives, first of which is the protection of fringe-belt areas for strengthening the urban structure, while the second is redevelopment of fringe-belt areas through housing, commercial and mix-used developments. The first conceives of fringe belts not only as physical features at the edge of the city, but as a part of the "historico-generic unity" of the city (Conzen, 1978, p.121) and "historico-geographical frame of reference" (Whitehand and Morton, 2003, p.822) to recognize the growth phases of the city: "At a practical level fringe belts provide physical orientation within the urban area, but at a deeper level they offer a frame of reference within which the phases of development and physical manifestations of previous historical periods can be related to the environments of present urban areas. This points to the need for greater awareness of the historico-geographical structure of cities" (Whitehand, 2019, p.16). This protectionist approach recognizes the fringe belts as a part of historico-geographical development of the city within the part-to-whole relationship of morphological units in their hierarchical nesting. From this point of view, if one of the purposes of planning is to conserve areas of particular character and historic interest within the existing urban form then it could be argued that, in many cities, the planned preservation of a fringe belt, especially the inner fringe-belt should be a key priority. The redevelopment approach, on the other hand, identifies fringe-belts as relict areas in urban form, and residual areas that need to be redeveloped through a discourse of brownfield development. However, it is crucial to keep in mind that the fringe-belt areas are produced as a result of urban dynamics, that is to say, through the efforts of the citizens of the city. Therefore, they are the constitutive components, not only of the urban structure, but also of the public interest. Especially, when the inner fringe belts are concerned, they are the constructs, formed in relation to the historic centres, which made them special units to be considered as a part of urban memory in planning studies. Furthermore, their ecological significance needs to be taken into consideration in substantial conservation policies.

Conclusion

The outward growth of cities had always been an attractive issue within urban studies, including urban sociology, urban economics, and urban planning. This paper examined urban growth from the view of urban morphology. The utilization of the urban fringe-belt concept in explaining urban growth and also its potential use in urban planning are questioned. The discussion on the relationship of fringe-belt development with the emergent urbanization trends has the potential to provide new insights into fringe-belt studies and its improvement, especially in the days of expected rapid population increase in newly developing economies, and global warming and climate change, although the study of fringe belts was initially confined to British towns and had a limited expansion to European cities during the twentieth century, the last two decades have witnessed the flourishing of fringe-belt studies worldwide. The fringe-belt concept has the potential to strengthen the relationship between research and practice, especially through conceiving fringe belts as part of the historico-geographical structure of cities. Within this potential, the ecological and historical significance of fringe-belt areas is conducive to take them into consideration as the spaces of urban memory and to design them as the spaces of public amenities. Equally, they have the potential to be planned as public open 'green' spaces in the age of global warming and climate change.

Therefore, the fringe-belt concept has the potential to be utilized as a constructive concept for managing urban growth. When fringe belts are recognized as historico-geographical units of the city, they are constructive elements in creating a consistency in urban form within the part-to-whole relationship with the other morphological elements. On the other hand, as the comparative studies in different cultural contexts show a remarkable elaboration of the fringe-belt concept, detailed idiographic studies and in-depth understanding of single cases are also needed to investigate unique processes at work in fringe-belt development.

Acknowledgments

The author would like to express his gratitude to Michael Barke for his comments on an earlier draft of this paper. However, this paper could not be written without J.W.R. Whitehand's encouragement. He introduced the author to the world of urban morphology, and to research on fringe belts in particular. His sudden loss in the summer days of 2021 drove us to deep sorrow, however he still lights our way to urban morphological research.

References

Andrews RB (1942) Elements in the rural-urban pattern. The Journal of Land and Public Utility Economics 18(2):169-183.

Barke, M. (1974) 'The changing urban fringe of Falkirk: some morphological implications of urban growth,' Scottish Geographical Magazine 90, 85-97.

Barke M. (1982) Beyond the Urban Growth Map: Suggestions for More Analytical Work in Urban Morphology, Teaching Geography, 7 (3), pp. 111-115.

Barke M (2019) Fringe Belts. In Oliveira (ed) JWR Whitehand and the Historico-geographical Approach to Urban Morphology Springer, Cham, pp. 47-66.

Burgess EW (1925) The Growth of the City, An Introduction to a Research Project. In: Park, RE, Burgess EW, McKenzie RD (eds) The City: Suggestions for Investigation of Human Behavior in the Urban Environment. The University of Chicago Press, Chicago, p. 47-62.

Carter H. and Wheatley S. (1979) Fixation Lines and Fringe Belts, Land Uses and Social Areas: Nineteenth-Century Change in the Small Town, Transactions of the Institute of British Geographers, New Series, Vol. 4, No. 2, The Victorian City, pp. 214-238.

Chapin F.S. (1964) Selected Theories of Urban Growth and Structure, Journal of the American Institute of Planners, 30:1, 51-58.

Conzen, M. P. (1968) 'Fringe location land uses: relict patterns in Madison, Wisconsin', unpublished paper presented to the 19th Meeting of the Association of American Geographers West Lakes Division, Madison, Wisconsin.

Conzen M.P (2009) How cities internalize their former urban fringes: a cross-cultural comparison. *Urban Morphology* 13(1):29–54.

Conzen, M. P., Gu K. and Whitehand J. W. R. (2012) Comparing traditional urban form in China and Europe: a fringe-belt approach, Urban Geography 33, 22–45.

Conzen M. R. G. (1962) 'The plan analysis of an English city centre', Norborg, K. (ed.) Proceedings of the IGU symposium in urban geography, Lund 1960, 383-414; reprinted in Whitehand J.W.R. (ed.) The urban landscape: historical development and management: papers by M.R.G. Conzen, Institute of British Geographers, Special Publication no.13, (Academic Press, London), 25-54.

Conzen M. R. G. (1969[1960]) Alnwick: Northumberland: a study in town-plan analysis, publication no: 27, (Institute of British Geographers, London) [revised print of 1960 paper with glossary]

Conzen M. R. G. (1978) "The morphology of towns in Britain during the industrial era", Jäger, H. (ed.) Probleme des Stadtewesens im industriellen Zeitalter (Cologne), 1-48; reprinted in Whitehand J.W.R. (ed.) The urban landscape: historical development and management: papers by M.R.G. Conzen, Institute of British Geographers, Special Publication no.13, (Academic Press, London), 87-126.

Conzen, M.R.G. (1988) `Morphogenesis, morphological regions and secular human agency in the historic townscape, as exemplified by Ludlow', in Denecke, D. and Shaw, G. (eds) Urban historical geography Cambridge University Press, Cambridge (published in Conzen (2004)

Daunton MJ (1978) The building cycle and the urban fringe in Victorian cities: a comment. J Hist Geogr 4:175–181SEPDavies, R. L. (1972) Structural Models of Retail Distribution: Analogies with Settlement and Urban Land-Use Theories, Transactions of the Institute of British Geographers, 57,. 59-82.

Dear M (2002) Los Angeles and the Chicago: invitation to a debate. City & Community, 1:5-32.

Dickinson RE (2002) The West European City: A Geographical Interpretation, Routledge, London. [reprinted copy of 1951 book].

Dollen B, 1990, "An historico-geographical perspective on fringe-belt phenomena", in The Built Form of Western Cities Ed. T R Slater (Leicester University Press, Leicester) pp 319-345.

Ducom, E. (2003) 'Fringe belts and planning: a French example', Urban Morphology 7, 103-4.

Ducom, E. (2005) 'Fringe belts in French cities: a comparative study of Rennes, Nantes and Tours', in Barke, M. (ed.) Approaches in urban morphology (Division of Geography, University of Northumbria, Newcastle upon Tyne) 34-43.

Engels F. (2001) The Condition of the Working Class in England, Penguin Books, London.

Gu, K. (2010) 'Exploring the fringe-belt concept in Auckland: an urban morphological idea and planning practice', New Zealand Geographer 66, 44–60.

Harris CD and Ullman EL (1945) The nature of cities. Annals of the American Academy of Political and Social Science 242:7–17.

Hazar D, Kubat AS (2015) Fringe belts in the process of urban planning and design: comport,ve analysis of İstanbul and Barcelona. AZ ITU Journal of the Faculty of Architecture, 12 (1):53-65.

Hazar D, Özkan SP (2020) Public and Ecological Significance of Fringe Belts: The Case of Military Areas in İzmir. Urban Academy:Journal of Urban Culture and Management 13(1): 10-21.

Hohenberg PM, Lees LH (1996) The making of urban Europe, 1000-1994. Harvard University, Massachusetts.

Hopkins, M.I.W. (2012) "The ecological significance of urban fringe belts", Urban Morphology 16(1), 41-54.

Horwood E. M. and Boyce R. R. (1959) Studies of the central business district and urban freeway development, University of Washington Press, Seattle.

Howard, E. (1898) To-morrow: a peaceful path to real reform (Swann Sonnenschein, London).

Hoyt H. (1939) The Structure and Growth of Residential Neighborhoods in American Cities. Federal Housing Administration, Washington, DC.

Judd DR (2011) Theorizing the city. In Judd DR, Simpson D (eds) The City Revisited, University of Minnesota, Minneapolis, 3-20.

Krajnik, D., Ščitaroci, M. O. and Ščitaroci, B. B. O. (2008) 'City fortifications and the form of European cities, with special reference to Croatia', Urban Morphology 12, 117-29.

Kropf, K. and Ferguson, P. (2014) City of Bath morphological study. Built Form Resource, Oxford.

Kubat AS (2019) Exploring the Fringe-Belt Phenomenon in a Multi-Nuclear City: The Case of Istanbul; Iconarp 7:95-134.

Kubat AS, Gümru F (2014) Investigating the fringe belt concept: The case of Istanbul, Turkey. International Seminer on Urban Form, Porto, Portugal, 3-6 Temmuz 2014, unpublished paper.

Kukina, I. V. (2006) 'Fringe belts and the planning of Russian cities', Urban Morphology 10, 145-6.

Larkham, P.J. and Jones, A. N. (1991) A glossary of urban form. Historical Geography Research Series no:26, Urban Morphology Research Group, University of Birmingham, Birmingham.

Lihua H., Zheng J., Yinsheng T. (2019), "Fringe-Belt Phenomenon in a Historic Chinese City: The Case of Foshan", J. Urban Plann. Dev., 2019, 145(3): 05019008

Louis H. (1936) 'Die geographische Gliederung von Gross-Berlin', Länderkundiche Forschung: Festschrift zur Vollendung des sechzigsten Lebensjahres Norbert Krebs (Engelhorn, Stuttgart) 146-71.

Murphy R.E., Vance J.E. (1954) Delimiting the CBD, Economic Geography , Jul., 1954, 30(3), p. 189-222.

Oliveira, V. (2016) Urban morphology: an introduction to the study of the physical form of cities. Springer, Dordrecht.

Oliveira, V. (2019) J.W.R. Whitehand and the Historico-geographical Approach to Urban Morphology, Springer, Cham.

Openshaw S. (1974) A Theory of the Morphological and Functional Development of the Townscape in an Historical Context, University of Newcastle upon Tyne, Department of Geography, Seminar Papers, Number 24.

Park, R.E., Burgess, E.W., McKenzie, R.D. (1925) The City: Suggestions for Investigation of Human Behavior in the Urban Environment. The University of Chicago Press, Chicago, p 63-79.

Pryor RJ (1968) Defining the rural-urban fringe. Social Forces 47(2):202-215.

Rodrigo Cervantes N E, 1999, "The concept of the fringe belt in a Mexican city: Morelia", in Transformations of Urban Form Eds R Corona, G L Maffei (Alinea, Firenze) pp FK2.16-FK2.20.

Rykwert J (2010) The Seduction of Place. University of Oxford Press, Oxford.

Scritaroci M.O. and Maric M. (2019) Morphological characteristics of green spaces in fortified towns and cities. Urban Morphology 23(1):27-44.

Slater, T. R. (1989) 'Medieval and Renaissance urban morphogenesis in eastern Poland', Journal of Historical Geography 15, 239-59.

UN Habitat (2020) World Cities Report 2020: The Value of Sustainable Urbanization, United Nations Human Settlements Programme.

Ünlü, T. (2013) Transformation of a Mediterranean port city into a 'city of clutter': dualities in the urban landscape – the case of Mersin. Cities 30(1):175–185.

Ünlü, T. and Baş, Y. (2016) 'Multi-nuclear growth patterns in a rapidly changing Turkish city: a fringe-belt perspective', Urban Morphology 20 (2), 107-21.

Ünlü T (2018). Urban growth of Turkish cities. In Strappa (ed) Observations on Urban Growth, Franco Angeli, Milano, pp 173-188.

Ünlü, T. and Baş, Y. (2019) Changes to Urban Form in Eastern Mediterranean Port Cities: Formation and Transformation of the Çamlıbel Neighborhood in Mersin. In Yenişehirlioğlu F., Özveren E., Selvi Ünlü T. (eds) Eastern Mediterranean Port Cities: A Study of Mersin, Turkey—From Antiquity to Modernity, Springer, Switzerland, pp. 221-239.

Ünlü, T. (2022) "Large-scale urban development and the possibility of new models in fringe-belt studies: the question of the umbrella fringe belt", Urban Morphology 26(2), 189-193.

Whitehand J. W. R. (1967) 'Fringe Belts: a Neglected Aspect of Urban Geography', Transactions of the Institute of British Geographers 41, 223-233.

Whitehand, J. W. R. (1972a) 'Building cycles and the spatial pattern of urban growth', Transactions of the Institute of British Geographers 56, 39-55.

Whitehand, J. W. R. (1972b) 'Urban-rent theory, time series and morphogenesis: an example of eclecticism in geographical research', Area 4, 214-22.

Whitehand JWR (1974) The changing nature of the urban fringe: a time perspective. In: Johnson JH (ed) Suburban growth. Wiley, London, pp 31–52.

Whitehand JWR (1975) Building activity and intensity of development at the urban fringe: the case of a London suburb in the nineteenth century. J Hist Geog 1:211–224.

Whitehand, J.W.R. (1987) The changing face of cities: a study of development cycles and urban form Institute of British Geographers Special Publication no. 21, Blackwell, Oxford.

Whitehand J. W. R. (1981a) Background to the urban morphogenetic tradition. In Whitehand JWR (ed) The urban landscape: historical development and management. Papers by M. R. G. Conzen Institute of British Geographers Special Publication 13. Academic Press, London, p 1-24.

Whitehand J. W. R. (1981b) 'Conzenian ideas: extension and development', in Whitehand, J. W. R. (ed.) The urban landscape: historical development and management. Papers by M. R. G. Conzen Institute of British Geographers Special Publication 13 (Academic Press, London) 127-52.

Whitehand, J. W. R. (1988) 'Urban fringe belts: development of an idea', Planning Perspectives 3, 47-58.

Whitehand, J. W. R. (1994) ‘Development cycles and urban landscapes’, Geography 79, 3-17.

Whitehand, J. W. R. (2012) Issues in urban morphology. Urban Morphology 16(1):55–65.

Whitehand, J. W. R. (2019) Green space in urban morphology: a historico-geographical approach. Urban Morphology 23(1):5-17.

Whitehand, J. W. R. (2020) Green space, fringe belts and the historico-geographical strcuture of cities. Urban Morphology 24(1):105-106.

Whitehand J. W. R and Gu K. (2015) Urban fringe belts: evidence from China, Environment and Planning B: Urban Analytics and City Science 44(1): 80–99.

Whitehand J. W. R and Gu K. (2017) Research on Chinese urban form: retrospect and prospect, Prog Hum Geogr 30(3): 337-55.

Whitehand J. W. R and Morton NJ (2003) Fringe belts and recycling of urban land: an academic concept and planning practice, Environment and Planning B: Planning and Design, vol. 30, pp. 819-839.

Whitehand J. W. R. and Morton N. J. (2004) ‘Urban morphology and planning: the case of fringe belts’, Cities 21, 275-89.

Whitehand, J. W. R. and Morton, N. J. (2006) ‘The fringe-belt phenomenon and socioeconomic change’, Urban Studies 43, 2047-66.

Whitehand JWR, Gu K, Whitehand SM (2011) Fringe belts and socioeconomic change in China, Environ Plan B Plan Des 38:41–60.

Vilagrasa J, 1990, “The fringe-belt concept in a Spanish context: the case of Lleida", in The Built Form of Western Cities Ed. T R Slater (Leicester University Press, Leicester) pp 300-318.

Zhang Y. (2019) A spatio-temporal study of fringe belts and urban green spaces in Birmingham, UK. Urban Morphology 23(1):18-26.