morphologists of the existence of different schools of thought. Especially significant has been the creation of ISUF itself and developments associated with it, notably its international conferences, journal, and regional networks. In relation to the diffusion of the fringe-belt concept, just in the past decade annual ISUF conferences have on five occasions included sessions specifically on fringe belts.

If Herbert Louis had lived long enough to see Figure 2, he would probably have been astonished that his conceptualization some 85 years ago of an aspect of Berlin's morphological development had provided the starting point for multiple applications almost worldwide. The diffusion of the fringe-belt concept has much in common historically and geographically with the development of what has become widely known, at least amongst those researching urban morphology in the English-speaking world, as the Conzenian approach, after the key developer of the fringe-belt concept, M. R. G. Conzen. But that is a much larger topic than there is space for in the present brief discussion.

The example of findings on the spatial diffusion of just one concept touched on in this Viewpoint provides a *soupçon* of a range of aspects of the diffusion of urban morphological ideas. It suggests too the importance of fitting an aspect of the development of our research into a wider perspective, most obviously in relation to methods of investigation but also with regard to our organizational structures and to some extent awareness of the historical development of our field.

References

Brown, L. A. and Moore, E. G. (1969) 'Diffusion research in geography', *Progress in Geography* 1, 120–57.

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

Conzen, M. R. G. (1960) *Alnwick, Northumberland: a study in town-plan analysis* Institute of British Geographers Publication 27 (George Philip, London).

Hägerstrand, T. (1965) 'A Monte Carlo approach to diffusion', *Archives Européennes de Sociologie* 6, 43–67.

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

Marzot, N. (2017) 'Recent developments in the Caniggian School', *Urban Morphology* 21, 182–4.

Morgan, A. C., Economou, D. J., Way, S. F. and Clauset, A. (2018) 'Prestige drives epistemic inequality in the diffusion of scientific ideas', *EPJ Data Science* 7(40), 12–16.

Morrill, R. L. (1968) 'Waves of spatial diffusion', *Journal of Regional Science* 8, 1–18.

Moudon, A. V. (1997) 'Urban morphology as an emerging interdisciplinary field', *Urban Morphology* 1, 3–10.

Whitehand, J. W. R. (1970) 'Innovation diffusion in an academic discipline: the case of the 'new' geography', *Area* 3, 19–30.

An integrated spatial strategy for the inner fringe belt as an operational entity

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The Conzenian historico-geographical approach provides many valuable concepts for mapping and understanding the evolving urban landscape from a holistic perspective. Yet it is weakly represented in landscape planning and management, although several scholars have advocated for its feasibility and significance in those fields during the past two decades (Whitehand and Gu, 2010; Whitehand and Morton, 2003, 2004, 2006). The fringe belt (FB), both as a concept with which to view urban development, and a dynamic spatial structure of towns and cities, is a valuable topic for morphological study, landscape design and planning. From the perspective of FBs as physical entities,

the large-scale nature, discreteness, and heterogeneity of the middle and outer FBs may question the strategic or integrated interventions of planners seeking a certain spatial order of these areas, which risk stifling unsanctioned but potentially innovative landscape management (Scott *et al*., 2013). Yet the inner fringe belt (IFB), with a more accessible scale, can be a starting-point for considering what implications can be drawn from the study of FBs for landscape planning and design, not only because of its explicit historical and commemorative interest but also its spatial conformity and commonality – originally as continuous areas of water or vegetated open space intimately connected with the city's fortification zone – during its formation.

Despite the many contributions to FB studies, some aspects, especially relating to the IFB, remain under-investigated. First, the significance of the spatial integration of IFBs requires more exploration. Although there has been a range of case studies concerning the changes of land utilization and architectural form of the constitutive fringe-belt plots, more attention is required to explore the systemic functions and the operational potentials of the IFB as an entity, rather than as a simple assemblage of certain historical grains, for purposes of landscape design and planning. This can be demonstrated by the infrastructure quality of IFBs as public work during their formation. Many IFBs originally contained sizeable and continuous water/green areas, which collectively formed the backbone of the water-green infrastructural system in the early stages of urban development and, where surviving, play an important ecological and social role for the urban whole. For example, in the traditional Chinese context, these surrounding natural water/green regions are generally taken as a preset ecological and organizational layer for urban configuration, to which the artificial water/green infrastructures adapt. Inextricably woven together, these natural and artificial components work systemically to sustain daily life by ensuring engineering resilience and providing recreational and religious areas for public life. Thus, for Chinese cities with preindustrial origins, these water/green regions are primary parts of a well-planned water/green infrastructural system rather than some aggregated residual spaces underutilized due to physical or legislative limitations. However, it is these IFB water/green regions that are confronted with the enduring pressure of land requisition and privatization during urban development, especially when redevelopment policies relating to them are dominated by the market-oriented economy. This makes the traditional water-green infrastructural system prone to damage when the IFB spatial conformity can easily disintegrate due to uncoordinated site-by-site modifications. Whether or not it is valuable to retain the spatial integration of the IFB to recover its infrastructural significance is a point for discussion. Overall, the systemic features and functions of IFBs cannot be appreciated if they are only perceived from parts to the whole based on the piecemeal identification and classification of landscape-unit types. It would be essential to initially treat IFBs as central parts of the water/green infrastructural system to fully comprehend their systemic functions and operational potentials for landscape planning and design.

Secondly, the relationship still needs to be consolidated between the chronological description of FB development and landscape planning and design, although it has already been mentioned (Whitehand and Morton, 2003, 2004). Many IFB studies concentrate on formation and modification processes but rather underestimate the environmental and socio-spatial impact of these processes on their adjacent areas and even the entire city, and thus implications derived from that for landscape planning and design. There are still questions to investigate, including: 1) how would the modifications of IFBs affect the socio-spatial composition of their adjoining areas and even the whole city, considering their structural distinctiveness; 2) how should we redevelop the IFB areas with an ecological (with its natural and cultural meaning) plan after their intensification modifications; and 3) is a coordinated plan for redeveloping the IFB as a socio-spatial entity necessary?

The UNESCO city of Quanzhou (a coastal city in Fujian province, China) could be an example of those aspects: the infrastructural significance of the IFB as a functional and operational entity for a city; the relationship between uncoordinated IFB modifications and the socio-spatial fragmentation of a city today; and how an integrated spatial strategy for IFB redevelopment may contribute to ecological landscape planning and design. The Quanzhou IFB formed during the 1920s–1940s: it was during this period that the built-up area finally occupied the urban core and began to extend intramurally and extramurally in all directions, centred on city gates. Along the city wall the continuous water/green regions, which had been developing since the Tang Dynasty (904 CE), comprised the IFB. This IFB was intentionally modified and maintained as the structure of a resilient infrastructural system

before the 1950s. Historically, this water/green system supported the city's engineering resilience: the networking moats, canals, lakes, and permeable green areas not only sustained daily life but also accommodated the floods periodically threatening Quanzhou since ancient times. Meanwhile, it promoted social integration: the circular water/green areas equally provided accessible open public space (for religious and recreational uses) for the inner city and the outer regions, and were shared among all citizens.

However, during the 1950s–1970s, the Quanzhou IFB began to disintegrate because of the site-by-site land requisition and privatization caused by the construction of large gated industrial and residential units (*Danwei*) following Soviet planning principles. Almost all of the spacious water/green areas within the city wall were reclaimed for production and accommodation uses. Thus a large proportion of the open public space was replaced with large compounds, and the resilient water/green infrastructural system unravelled. This deteriorated from the 1980s to the early 1990s due to assigning the leftover water/green areas of the IFB on a piecemeal basis to migrants and residents who had lost their dwellings during urban expansion and renovation. These plots were then fully occupied by self-built houses with residents striving for the utmost private space. Any consideration for the public was overwhelmed. Thus, inserted among those compounds, these self-built enclaves became impenetrable areas with poor living conditions and community security, where low-income migrant workers tend to congregate. Even worse, since the late 1990s, real estate developments of street frontages devastated much of the linear water/green space of the inner city, and also blocked convenient access to those large compounds and self-built communities. Having replaced the water/green areas, these self-built communities and forlorn walled industrial and residential units form today's typical IFB plots, and have become discreditable fragments overlooked by city administrators during urban renovation processes. The traditional water/green infrastructural system has now disintegrated, which causes many problems in the inner city, such as the incapability of drainage, periodical flooding, lack of open public spaces, and low socio-spatial integration.

The notion of the Quanzhou IFB as the primary part of an evolving infrastructural system for the inner city and the outer regions was discarded during IFB modifications since the 1950s. The uncoordinated site-by-site land requisition and privatization of IFB areas paralyses this infrastructural system and induces socio-spatial fragmentation in the city today. Such neglect continues in the city's current landscape conservation and revitalization: more attention is still devoted to individual buildings, monuments, and sectional areas of unique historical and cultural values rather than to retaining the infrastructural significance of the IFB as an entity. An integrated spatial strategy would contribute to recovering the infrastructural effectiveness of the IFB. Two issues merit further study. First, a plan to reconnect and reuse those water/green relics as a system will help to retain the IFB's engineering functions, provide more public spaces, and restore the indigenous landscape features. It is practicable, as the structure of the water-green system remains. Secondly, a coordinated redevelopment plan would be necessary to re-open those derelict industrial and residential units as intermediate accessible space between the urban core and the outer districts. This would attract more attention and investment to these desolated areas during urban renovation and can also promote socio-spatial integration by providing infrastructural and recreational spaces for the entire city. In summary, this Chinese case presents another perspective to conceive of the IFB as an operational entity with the feasibility to bridge the gap between FB study and landscape design and planning.

References

Scott, A. J. *et al*. (2013) 'Disintegrated development at the rural-urban fringe: re-connecting spatial planning theory and practice', *Progress in Planning* 83, 1–52. https://doi.org/10.1016/j.progress.2012.09.001

Whitehand, J. W. R. and Gu, K. (2010) 'Conserving urban landscape heritage: a geographical approach', *Procedia Social and Behavioral Sciences* 2, 6948–53. https://doi.org/10.1016/j.sbspro.2010.05.047

Whitehand, J. W. R. and Morton, N. J. (2003) 'Fringe belts and the recycling of urban land: an academic concept and planning practice', *Environment and Planning B: Planning and Design* 30, 819–39. https://doi.org/10.1068/b12997

Whitehand, J. W. R. and Morton, N. J. (2004) 'Urban morphology and planning: The case of fringe belts', *Cities* 21, 275–89. https://doi.org/10.1016/j.cities.2004.04.001

Whitehand, J. W. R. and Morton, N. J. (2006) 'The fringe-belt phenomenon and socioeconomic change', *Urban Studies* 43, 2047–66. https://doi.org/10.1080/00420980600945138