

The concept of urban intensity and China's townization policy: Cases from Zhejiang Province

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ABSTRACT

Urban intensity, in this paper, is measured by four related concepts: compactness, diversity, density, and connectivity. Together they lead to a single idea when considering spatial distributions potentially in a virtuous manner with regard to resource consumption, economic opportunity, social integration and environmental performance. The methodologies applied here included Moran's I, Shannon's index entropy, and accessibility isotimelines, which were then applied to real case scenarios in 20 towns in Zhejiang Province, selected based on their economic performances, population sizes, and geographical locations. Further inspection discovered that density, an outcome of urban form, is highly correlated to compactness, leading to its elimination. The results showed that among the varying spatial arrangements of urban activities, building footprints and infrastructural elements characterized by monocentric centers of use inscribed with well-defined and relatively uniform grids of streets and related networks, alongside of relatively integrated zones of use, seemed to perform best with regard to urban intensity. At the other end of the morphological spectrum, towns with sharp separations of uses and zones of development, often resulting in overall bifurcation of a town's spatial layout, performed less well. Also, linear forms for small towns were less favorable.

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1. Introduction

Amid the forces that shape urban formation in cities and towns, some measure of urban intensity appears to be useful when considering resulting spatial distributions in a potentially virtuous manner with regard to resource consumption, economic opportunity, social integration and environmental performance. Further, such a measure can be comprised of four related spatial concepts. They are compactness, density, diversity and connectivity. Although it might have other dimensions in relative terms, these spatial concepts are the most representative components of urban intensity (Rowe, 2014). Here, the idea of compactness implies an overall built footprint that is conservative in perimeter and, therefore, less invasive of arable land, conservation areas, and surrounding settlements. Density, often measured simply as the number of inhabitants or dwelling units per area of urbanization, is probably favored in higher rather than lower degrees in order to lessen wasteful spread and to heighten potential spatial connections among activities. Diversity, akin to its biological application, concerns the type, range, mix and spatial arrangement of urban functions and would also seem to produce fortuitous results at higher rather than lower levels. Similarly, connectivity concerned with the interaction among two or more spatial entities within an urban area seems to produce better results also when high rather than low, whether measured by spatial proximity,

physical access and administrative or cultural distance. Finally, all four concepts may be combined into a single idea and measures of urban intensity. The goal of this paper is to use the concept of urban intensity to ascertain which kind of morphological spatial distributions performs better for mid- to small-sized cities in China's Changjiang Delta.

2. Inherent paradoxes

There is ample empirical evidence alongside of hypothetical comparisons, however, indicating that such uniformly upward alignments of performance across all four measures of urban intensity may not yield the best results (Rowe, 2014). Compactness and monocentric high density, for instance, can result in overcrowding, dilapidation and congestion. Diversity may run into several paradoxes. There is a version of Marshall's dilemma, for example, where economic participation by many enterprises may preserve and even enhance the competitive vitality of an urban area or aggregation of urban functions, but a subsequent well-scaled economy may actually require a single dominant enterprise in order to become more fully realized (Marshall, 1920). In addition, Porter and others have stressed that useful diversity is more than simply the aggregation of different enterprises but also requires synergy among them so that they amount in performance to something greater than the sum of the parts (Porter, 2008). Then too, empirical evidence from urban areas shows that mixing functions in locations that are either very high or very low usually both result in inter-district travel that is relatively high, together with associated air pollution and

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congestion (Hong & Li, 2009). Also, geographic accessibility can become misleading through overcrowding of roadways and subway lines, for instance, in the absence of other alternative modes of transportation and routes of travel. In short, urban intensity generally involves ‘sweet spots’ and non-linear relations among the four underlying concepts and their combination (Rowe, 2014). Indeed, in Zhejiang Province, the performance of towns provides further empirical evidence that a well-balanced combination of density, compactness, diversity, and connectivity exhibits superior outcomes in urban formation.

3. Cases of urban intensity in Zhejiang Province

The concept of urban intensity was applied to 20 small cities and towns in Zhejiang Province as part of a study aimed more broadly at benchmarking communities below the level of larger urban circumstances with regard to contributions that might or might not be made to sustained development, quality of life and domestic consumption (Town Development Data Research Institute, 2015). This also coincides with at least one of the thrusts of China’s new townization policy explicitly concerned with upgrading the quality of inhabitant’s urban experience in a manner that presents a real alternative to life in a big city (Central Government of the People’s Republic of China’s, 2014). China’s new townization policy, elevated to a national strategy in 2013 by Premier Li Keqiang, was developed in order to secure a better future for smaller city and town dwellers, particularly with regard to community, consumer, and lifestyle services, as well as environmental sustainability. In so doing, the policy will also potentially alleviate migration into large cities in China.

3.1. Study area

Zhejiang Province located on the east coast of People’s Republic of China is bordered by Jiangsu Province and Shanghai municipality to the north, Anhui and Jiangxi Province to the west, and Fujian Province

to the south. It covers an area of 101,800 km² with a density of 540 people per km², and includes eleven prefecture level cities, 90 counties, and 1570 townships (People’s Government of Zhejiang Province’s, 2015). Its gross domestic product has been ranked among the top five since 1995 and, as one of the most economically developed areas in China, the province has also played an important role in the townization process proposed by the central government during the 18th plenary session of standing committee. In fact, the selection of towns was based on a previous study of economically promising locations, most of them distributed in the northeast region of Zhejiang province (Central Government of the People’s Republic of China’s, 2013). In short, Zhejiang Province is a good place to examine smaller city and town development because its relatively advanced socio-economic circumstances represent the likely present–future of China. Also, the larger city structure in the province embraces a number of significant smaller settlements. Moreover, with a range from sizable cities like Hangzhou and Ningbo, useful scale comparisons are presented.

More specifically, among the 20 towns, five are in Hangzhou, four in Ningbo, three in Huzhou and Jiaxing, two in Taizhou, and one each in Jinhua, Shaoxing, and Wenzhou (Fig. 1). The residential population ranges from 396,000 in Longgang to 55,049 in Fenshui. Towns are also distributed in different geographical circumstances: Eight are in riverine areas, four in mountain valleys, three in peri-urban conditions, two in coastal and deltaic zones, two in plains, and one – Guali – adjacent to a regional airport. Xindeng, one of the mountain valley towns, for example, is the sub-center of Fuyang district in Hangzhou, and occupies 180 km² of land. It was selected by the National Development and Reform Commission to be in the first round of experimental towns for re-development (Fuyang Government of Hangzhou, 2015). Fenshui, a sub-center for Tonglu County, is also a mountain valley town located in the western part of Hangzhou. The 133.1 km² administrative area carries a strong linear form. Guali ranked as one of the top one hundred towns in China, has a history traceable back to 978 CE. Now, under the slogan ‘small town big dream’, a catchphrase to promote small- to mid-sized

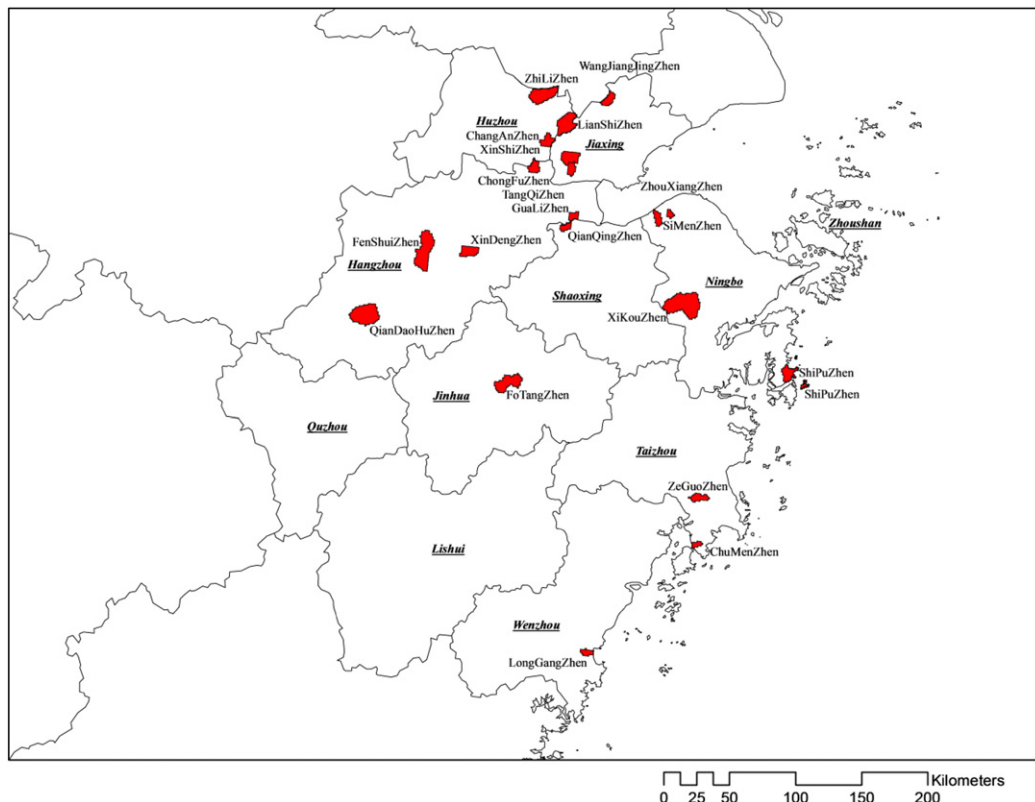


Fig. 1. 20 selected towns in Zhejiang Province.

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