

# Study on the micro-interventional transformation strategy of bus stops in Linyi City

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**Abstract:** From a city perspective, bus stops are undoubtedly tiny public facilities, but their number is huge. As an important component of a city's streetscape, bus stops can even be considered as microscopic business cards of a city's comprehensive image. This paper proposes a strategy for the renovation and renewal of bus stops in Linyi from the principle of practical micro-interventions, aiming to complete the renewal process gradually without affecting the use and low-cost investment as much as possible, and at the same time, try to refine and transform the historical and cultural elements of Linyi into the design of bus stops in Linyi, so that they can show certain historical and cultural charm of Linyi. The design of Linyi bus stops will be made to show the historical and cultural charm of Linyi.

**Keywords:** bus station; Linyi; micro update; strategy

## 1. Introduction

As a widely used urban transportation infrastructure, bus stop is also a microscopic business card of a city's impression. Social progress and the improvement of people's living standards have put forward higher requirements on the comprehensive functions, visual images and physical and mental feelings of people waiting for buses. The existing bus stops in Linyi are poorly equipped and the waiting experience is not good, and there are still many improvements to be made.

In this paper, we abandoned the crude mode of large demolition and construction of bus stops that affect traffic and usage in most cities, and conducted a study on the strategy of bus stop renovation through the principle of "micro-intervention", so as to explore and accumulate some preliminary information for the construction of all-age friendly and humanized bus stops in Linyi in the future, and to contribute to the construction of Linyi's history and culture, infrastructure construction, and urban quality improvement. The study aims to create a ripple effect through the "micro-involvement" principle, which will help Linyi's historical and cultural development, infrastructure development and urban quality improvement (Figure 1)[1].

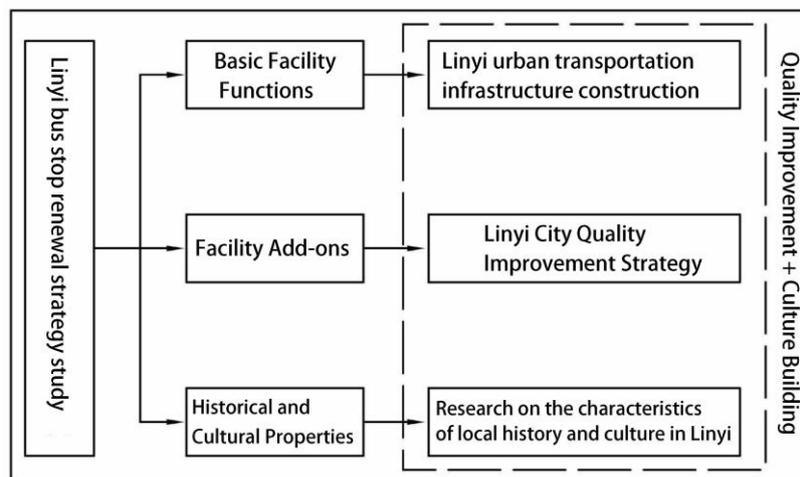


Figure 1: Framework of bus stop renewal value in Linyi City(Drawn by author)

## 2. Current Situation and Problems

Linyi, known as “Langya” in ancient times, is a central city in the southeast of Lu, a modern industrial and trade city and trade and logistics center with waterfront characteristics, one of the top ten ecologically livable model cities in China, one of the top ten most valuable cities for investment in China, a United Nations green industrial platform, and a national civilized city, among other titles, as approved by the State Council [2]. According to the Baidu encyclopedia query, Linyi Bus, refers to the public transportation system in the urban area of Linyi City, which refers to the public transportation system serving Linyi City (excluding Yishui County, Mengyin County, and Pingyi County). As of February 2021, there are 1979 buses in Linyi public transportation, and the annual passenger volume of Linyi public transportation is about 100 million; as of February 2022, there are 112 buses in Linyi (excluding intercity buses) [3]. Faced with such a large base of bus passenger volume and other factors, the construction of bus stops in Linyi appears to be relatively lagging and unevenly developed (Figure 2), and the main problems are divided into the following four areas.

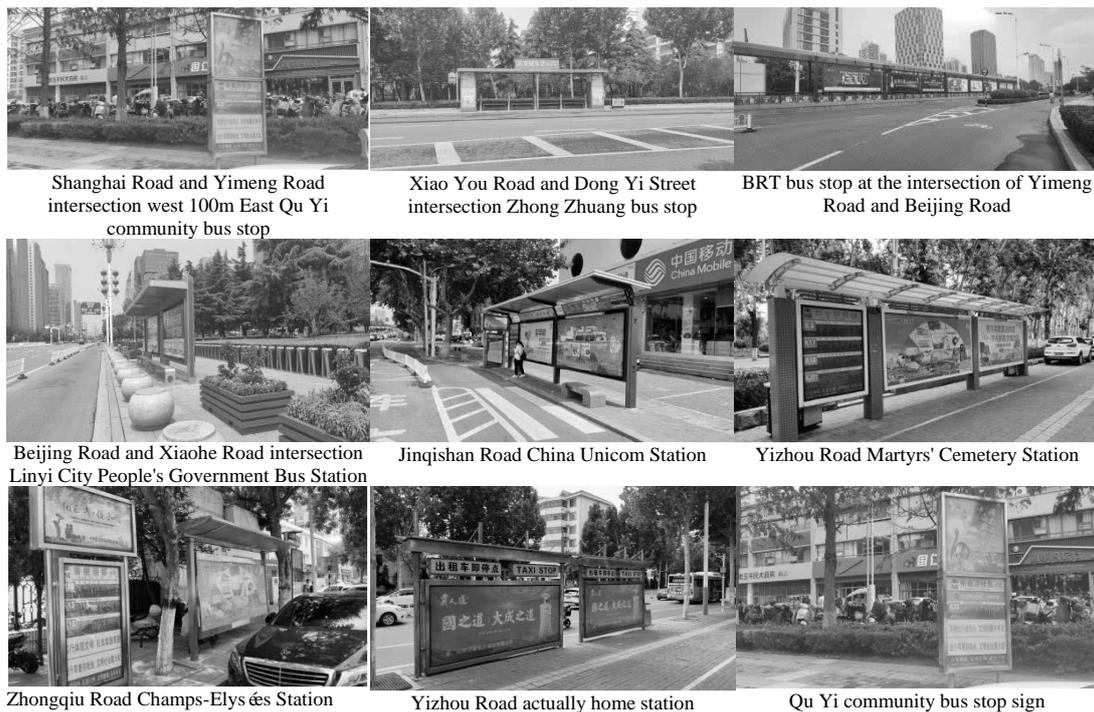


Figure 2: Research photos of bus stops in some sections of Linyi (Taken by author)

There is no micro-intervention in the renovation and renewal of local bus platforms in Linyi, and the material selection and construction methods to match the specific needs and problems of the platform sections have not yet been determined, and the vision of the study is to choose recyclable, environmentally friendly and inexpensive materials, but not yet compatible with durability.

The construction of the bus platform also faces the problem of interference with the waiting crowd, and how to minimize the interference with the use of waiting passengers in the process of micro-intervention and renewal is one of the current problems.

The use of space at bus stops is often not abundant, but the use of demand is diversified, how to meet the sitting, standing people waiting for the sun, rain, watching, stopping, temporary storage of goods and even cell phone charging and other derived needs, as well as the application of multiple scenes of space flexibility is the core of the transformation and upgrading of bus stops and key issues [4].

Through field research, the author found that the local bus stops in Linyi are homogeneous in a "one-size-fits-all" way, and do not show the local characteristics of regional history and cultural elements that are symbiotic with the bus stops, which does not match the title of Linyi as a UN green industrial platform and a national civilized city [5].

### 3. Initial exploration of Micro-interventional Remodeling strategies

#### 3.1. Study on the coupling of knowledge and action of bus stop micro-interventions by combining teaching and research resources of local universities in Linyi

Architectural design majors in colleges and universities have a variety of social practice courses, such as "City Tour", and basic theory courses, such as "Building Construction", which focus on materials and construction processes, all of which are useful for micro-interventions in bus station renovation (Figure 3). The architectural design program of Linyi University has accumulated many years of teaching, and the professional curriculum is relatively complete. Combining the teaching and research resources of local universities in Linyi, we can compare and analyze the resources from all sides of the excellent station platform construction experience both online and offline at home and abroad, promote interactive communication and data sharing with Linyi City Bus Company Group, and carry out station platform design as a professional competition or conduct joint teaching and other forms of research [6].

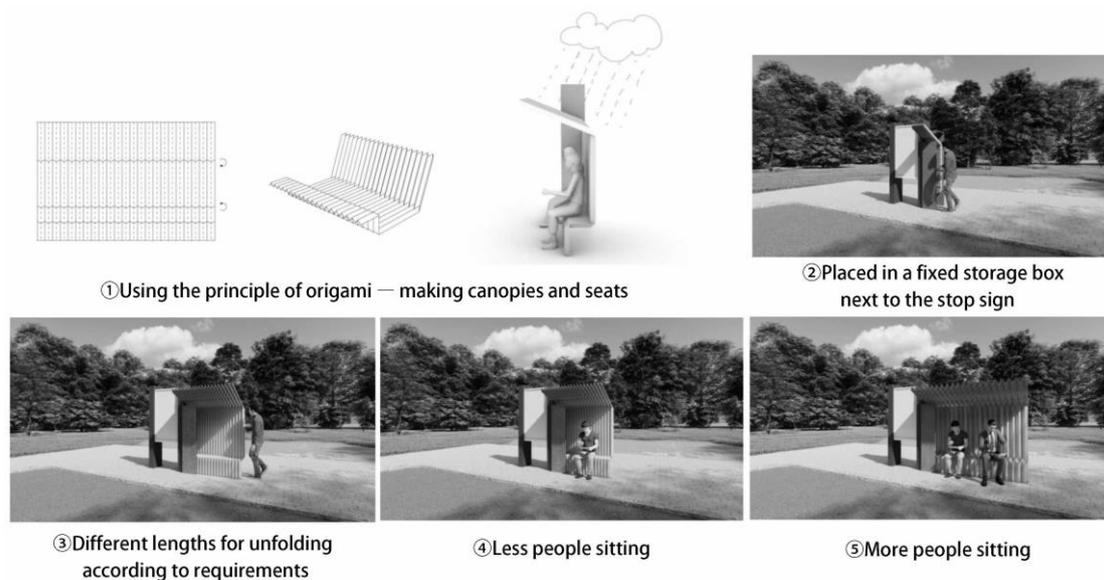


Figure 3: SU scheme model of the bus stop that will be designed and constructed to intervene (Drawn by author)

#### 3.2. Minimally invasive interventions are more feasible and can be piloted to see what happens later.

In this project, a few stations in the main urban area of Linyi are used as a pilot study to enhance the regional characteristics and to establish a typical station as a model and promote the application. Based on the feasibility of the station renewal strategy, we will conduct on-site research, pay attention to the coordination between in-progress and in-use, and adapt to local conditions and materials, so that the stations can be renovated and renewed in a gradual manner like minimally invasive surgery, with precise diagnosis in the early stage and subtle adjustments in the follow-up.

#### 3.3. "Micro-intervention+" mode explores the many possibilities of renewal

The bus stop renovation and renewal itself can be broken down into several sections, or the demand for the use of the stops can be categorized to form a "micro-intervention +" model, through which a variety of possibilities can be developed for preliminary exploration, laying a solid foundation for later construction practice. For example, a number of bicycle storage points (Figure 4) can be considered at some of the bus stops to create a platform for combined low-carbon travel, taking into account the last-mile problem of commuting to and from work [7].

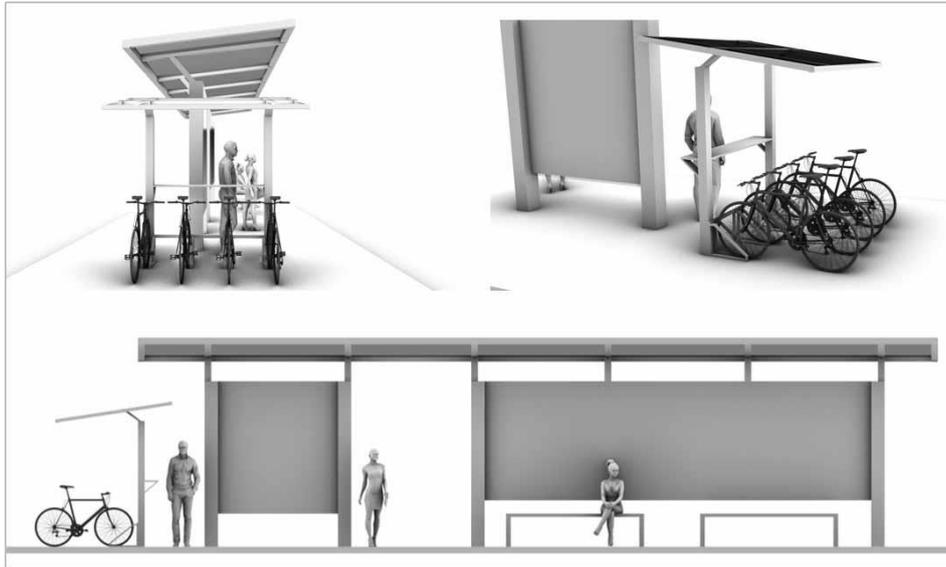


Figure 4: Bus stop bicycle storage SU model (Drawn by author)

#### 4. Conclusions and Prospect

The influence of a city is often reflected in its historical deposits and cultural heritage and other soft power level, in this regard, China's first architectural "Nobel Prize" winner Wang Shu's Ningbo Museum and other projects compatible with a sense of history and fashion can be used as the development direction of the city's future transformation and renewal, on the contrary, relying on money to tree image, wasting the taxpayers' money, and will go to the widely criticized facade project. It is the taxpayers' money that will lead to the widely criticized facade project.

Bus stops to find manufacturers to customize the model, standardization and batch production, the process of updating bus stops is more of a new for old, one is a full replacement of the "new" cost is higher, the second is part of the "service" can still be abandoned The "old" is wasted. In the original "old" on top of the new, rather than a blanket replacement of the new, and the national advocacy of conservation and environmental protection is also in line, in addition, the specific site conditions and needs of each station is different, standardization is sometimes difficult and personalized, specialization is difficult to play, and universities linked to the model of industry-university research is worth trying, one can pilot to To see what happens later, the second is relatively easy to operate, the third is the process is relatively safe, in addition, the station style and cultural attributes also have the opportunity to deep excavation, not only based on the image of the city on behalf of the characteristics, there is a specific image of the region and even a station features, residential areas in the scope of the bus station also has community attributes, but also community representatives, as opposed to the main road station is often a city representative. Detailed vision to the bus company, municipal departments and other institutions are not realistic and impossible, and the university related professional part of the extension to form a special topic is quite worth trying, so that students have the opportunity to put into real practice, the construction site to build a house is unlikely, the volume of the bus station is small, you can combine design classes and construction and other professional courses and theory classes to design and build, this practice This experience will also give students a sense of accomplishment and a real sense of the power of design, adding a rare motivation for future professional learning.

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