Fangjie Guo

Guangzhou University, China

Unravelling the Invisible Spatial Logic: Spatial Production of the Clothing Wholesale Service Area in the Liuhua District in Guangzhou, China

Abstract

This article focuses on an unplanned clothing wholesale district in Guangzhou City, China. Dramatic Chinese Economic Transition and the district's advantageous location next to the Guangzhou Railway Station have led to its commercial success. Smaller clusters of clothing wholesale buildings, clothes processing shops, shop design companies, tag shops, mannequin shops and logistics companies constitute this district. This research aims to understand how these smaller clusters choose their locations in the district without holistic urban planning in advance. By following the Actor-Network-Theory, this research regards spaces as actors among other human and non-human actors and adopts a bottom-up perspective to investigate the spatial structures of the district. Qualitative methods including observation, semi-structured interviews and mapping are used. This research has found that invisible spatial logics behind the physical structures have induced the formation of the district by influencing businesspeoples' location choices and their spatial appropriations. This research goes beyond the visible forms and shapes to investigate the urban dynamics and complexities. It offers new perspectives to understand the spatial structures of urban spaces from the perspectives of space end-users.

Funding

Research for this article was funded by The Guangzhou Elites Scholarship Council [grant number JY201807].

Introduction and justification

The Liuhua Clothing Wholesale District was not planned by the Chinese authorities but was formed through the choices of businesspeople and it turned out to be a well-organised commercial district with multiple functions. All the functions in the district seem connected to each other and form networks to instruct the district's organization and everyday operations. Thus, this article aims to visualize hidden networks among various functions in order to understand the spatial logic of an unplanned commercial district. The visualization of hidden spatial logic will contribute to the understanding of the self-organized urban district and provide new insight to consider the commercial district design from spatial end-users' perspective.

Urban researchers attempt to understand the logic of spatial use by actively mapping how the hidden relations shape urban space (Smaniotto Costa et al. 2020; Buhr 2017; Özkul 2015). These studies inspire research to consider cities not as clusters of physical structures but as clusters of human activities (Boano and Martén 2017; Neal 2012). Cities contain various kinds of human actors and non-human actors which are visible such as trees, cars and people, and also invisible actors such as sound, light, memories and social relations. The actors and relations form networks which might be invisible but induce visible phenomena. 'Network' as a concept has long been adopted to understand spatial practices, urban development, self-organisation and social-spatial dynamics (Cano-Ciborro and Medina, n.d.; Lee and Lee 2018; Rau and Schönherr 2014; Neal 2012). Responding to the call for understanding cities through the lens of networks, this research aims to explore the relations between hidden social networks with the spatial use of a clothing wholesale district in the south-China city of Guangzhou. As this research regards the reality as a state of affairs which is constructed by human and non-human actors (Latour 2005), it is assumed that behind the visible phenomena there are actor-network accounts that relate component elements and help us to understand the visible phenomena. The purpose of this research is to unravel the hidden logic that has produced the clothing wholesale service area in the Liuhua District.

Liuhua Clothing Wholesale District in Guangzhou was formed in the 1990s after the implementation of Reform and Opening Up policies which brought about fundamental changes to various aspects of the country. However, the Chinese Economic Transition is considered experimental (Schoon and Altrock 2014) because of the absence of an existing legal tradition and the difficulties of the state power to suddenly and effectively function in all the fields which result in informal phenomena to occur. Urban development is one such field; after the start of Chinese Economic Transition, incomplete urban governance induced spontaneous and informal urban developments which were tolerated at the beginning of the changing time. The Liuhua Clothing Wholesale District emerged during this period thanks to its advantageous location near the Guangzhou Railway

Station and the Canton Fair Exhibition Hall which attracted large numbers of businesspeople. As a result, many clothing wholesale traders have chosen to cluster in this area. It is convenient for customers from other cities to purchase clothes around the railway station and return home by train immediately after purchase. In addition, the nearby Canton Fair Exhibition Hall has attracted foreign customers further increasing the business opportunities. What makes the Liuhua District particularly interesting is that it was not holistically planned as a wholesale district by the authorities but was chosen and developed by wholesale traders themselves. As a result, the agencies of these wholesale traders who are the end-users of the space played an important role in shaping the district and keeping the wholesale district functioning every day.

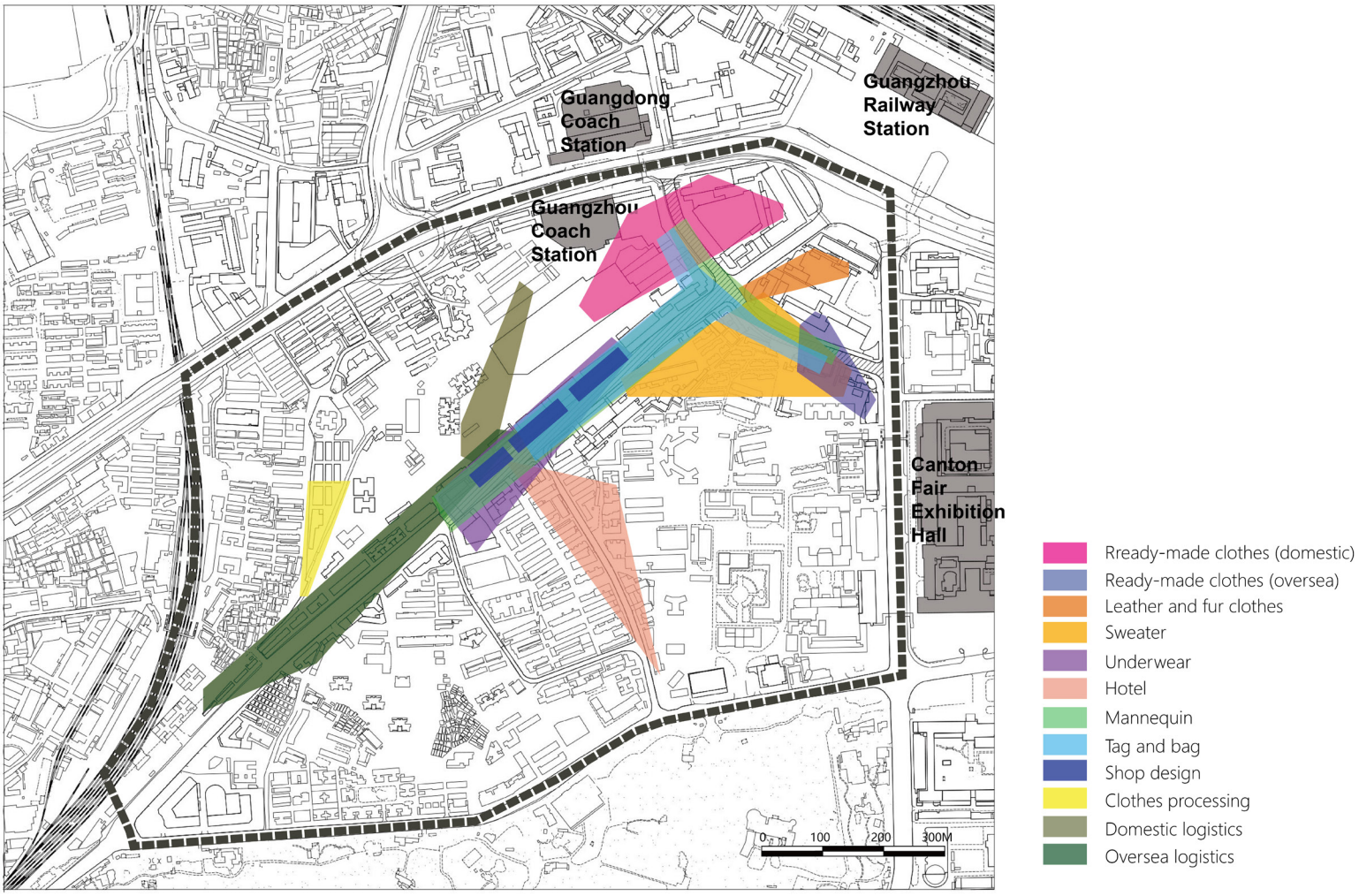

Figure 1: The Liuhua District and business clusters (Source: drawn by author)

Wholesale service refers to commercial activities that offer support, particularly for wholesale. In the Liuhua District (Figure 1), the wholesale service units include mannequin shops, tag and bag shops, shop design companies, clothes processing shops, domestic logistics companies, and overseas logistics companies. These service shops and companies are important components of clothes wholesale, as they provide various kinds of physical and social support for the wholesale process.

This article aims to understand this question: how did the clothing wholesale service commercial units choose their locations? The next section explains the research methods and theorisation to explain the chosen problem-solving process including data collection and analysis. The empirical result section is developed around four types of clothing wholesale service businesses to present the function of hidden spatial logic in spatial production. The article represents the role of actor networks in influencing the spatial use of the clothing wholesale service area. The discussion and conclusion section reviews the research findings and summarises the contributions and implications.

Material and methods

The qualitative data were collected in 2020 from November to January and in 2021 from July to August during the Covid-19 pandemic. Ethnographic methods including observation, semi-structured interviews and mapping are adopted. Observation was used to gain initial impressions into people's activities and spatial appropriation in the Liuhua District, establish assumptions about the hidden reasons behind the phenomena and identify potential interviewees. Semi-structured interviews were used to understand people's usage of space, such as how people choose locations and how they appropriate space, and the underlying reasons behind their behaviours. This research recruited forty-three participants who worked in the clothing wholesale industry in the Liuhua District and were willing to talk about their everyday spatial practices and business experience. All the interviews were recorded with consent from interviewees and coded with the software Nvivo.

Mapping was adopted to visualise the hidden relations behind the observed phenomena to understand how space was produced. Two types of maps are employed in this research. The first type of mapping aimed to record reality in terms of what could be seen to represent the phenomena in the clothing wholesale district. The second type was used to represent the hidden networks behind the phenomena in the Liuhua District, and go beyond the physical to offer explanations (Corner 1999). These maps are formed by actors represented as dots and relations represented as lines. By linking the actors together through their relations, these maps topologically present a reality of these actors.

According to Lefebvre (1991), space is a social product. Therefore, space is not a

static field, but is produced through social relationships. Although physical structures of space can be observed, social relationships seem difficult to observe directly. To investigate the mechanism of spatial production, Actor-Network-Theory (ANT) offers a tool to visualize the social relations that produce space. ANT suggests that material objects and people are formed through relations to other entities (Law 2009; Vicsek, Király, and Kónya 2016; Ritzer 2010), and ANT regards actors not as stable elements but as relational and dynamic elements (Hillier 2021). Furthermore, ANT is anti-foundational (Vicsek, Király, and Kónya 2016; Ritzer 2010): there is no foundational structure underlying everything. Therefore, ANT opposes the idea that there are origins that can explain everything and be discovered by analysts. ANT ontology is a flat ontology which has been formulated by G. Deleuze and Guattari (1987); they believe that an assemblage does not have a base nor structure, but all the elements are flattened onto the same plane. Entities are not defined by their essences, but by what they can do (Deleuze 2005; Hillier 2021). Additionally, the flat ontology ignores the prior differences between human and non-human actors because it regards actors not as stable elements but as relational and dynamic elements (Hillier 2021). Consequently, ANT addresses relations rather than actors themselves; all the actors are defined through relations so they can all be included in the same discussion, regardless of whether they are human or non-human actors.

Traditionally, ANT has been used to examine social relations of actors; spaces are regarded as the results of the social relations (Sharif 2021; Kim 2019). The shortcoming of the traditional application is that spaces are regarded as passive outcomes and spaces are not actually put in the centre of discussion on spatial production. This research takes spaces as active actors among other human and non-human actors to see the dynamic interactions of spaces with other actors and to analyse urban space appropriation. This is in line with the argument that space is a social product (Lefebvre 1991; Hansmann 2021).

Results

(a) Mannequin shop and tag shop

Mannequin shops and tag shops are usually located nearer to clothing wholesale shops in comparison to other types of wholesale services. They cluster at the intersection of the roads and are located at the entrances of the underground shopping street (Figure 2). Both the road intersections and entrances of the underground shopping street are places that are easy to catch customers' attention, which indicates that the business of mannequin shops (Figure 3) and tag shops (Figure 4) heavily depend on customers in need of mannequins and tags.

Mannequin shops and tag shops tend to have two types of customers: clothes wholesale shop owners and clothes wholesale customers (Figure 5). However, as purchasing mannequins and tags is

usually not the most important purpose of customers who come to the Liuhua District, the number of customers attracted merely by mannequin shops and tag shops is limited. As a result, these two shop types are located around clothes wholesale shops in order to increase their chance to approach more customers. According to sellers in mannequin shops, they usually locate their shops near clothes wholesale buildings where they can attract customers who spontaneously come into the shops. To draw customers' attention to their products, they arrange the mannequins outside the shop's entrance and dedicate one room inside the shop as a small exhibition hall. In comparison, tag shops also make considerable efforts to attract customers, such as presenting their products outside the door. However, they sometimes tend to adopt a more active approach where the sellers go to clothes wholesale buildings to advertise their products and network with clothes wholesale shop owners. Therefore, if mannequin shops and tag shops are located too far from clothes wholesale shops, it becomes difficult for them to attract customers.

Considering their heavy reliance on clothes wholesale shops, the proximity to clothes wholesale shops is the first thing that mannequin shops and tag shops take into account when choosing their locations. The network diagram below (Figure 5) shows the relationships: mannequin shops and tag shops need customers including clothes wholesale shop owners and customers who are brought by clothes wholesale shops.

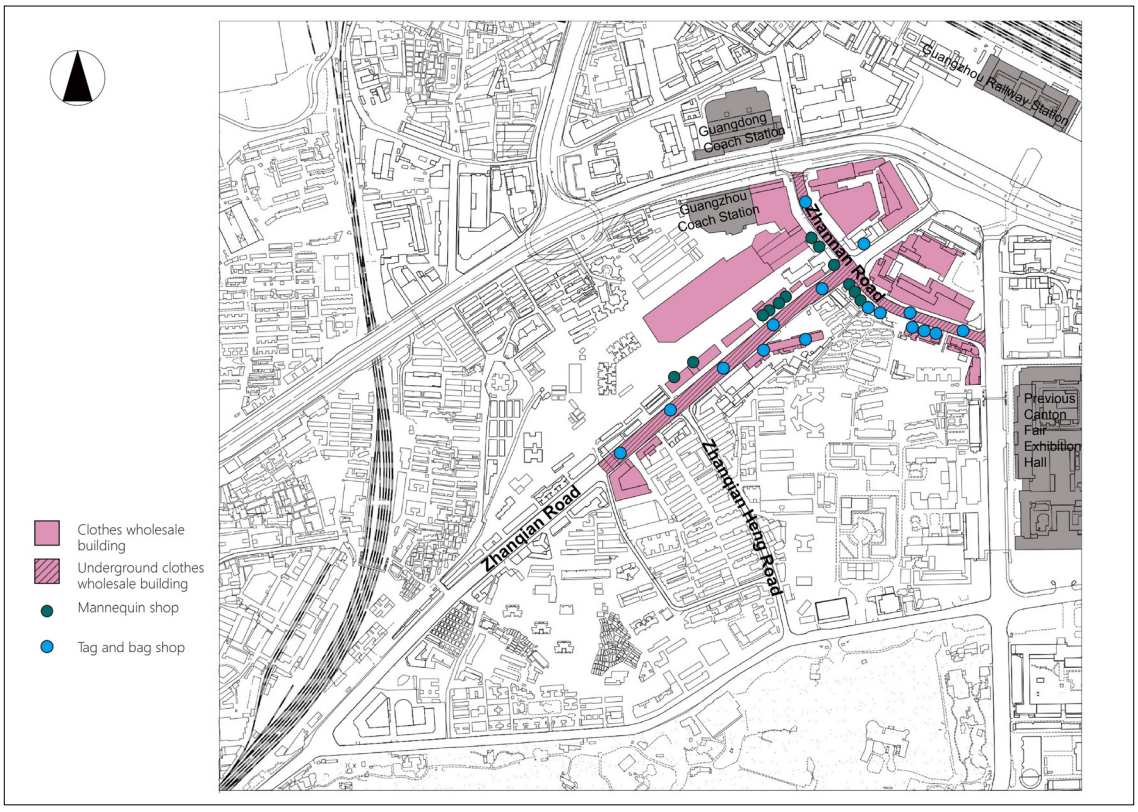

Figure 2: Locations of mannequin shops and tag and bag shops (Source: drawn by author)

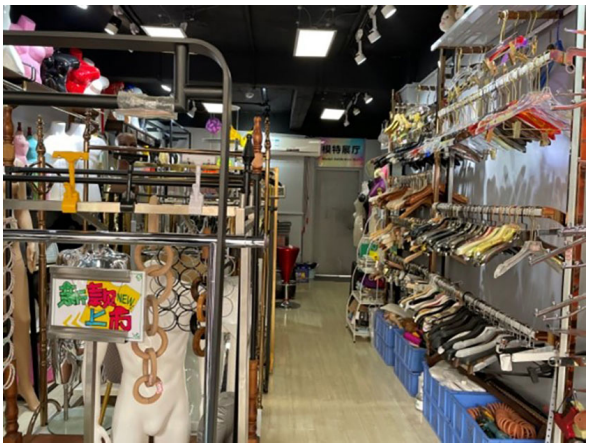

Figure 3: Mannequin shop (Source: photo taken by author)

Figure 4: Tag and bag shop (Source: photo taken by author)

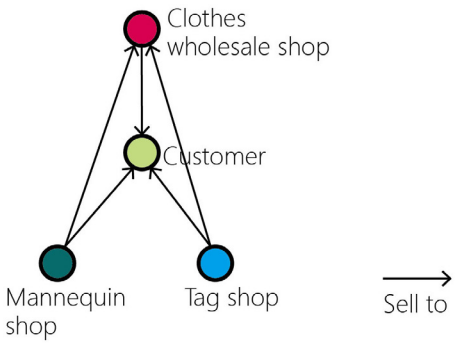

Figure 5: The actor network of mannequin shops and tag shops (Source: drawn by author)

(b) Shop design company

Shop design companies are typically located along the roadsides (Figure 6). They offer design service to clothes wholesale shops. However, not all wholesale shops would consider hiring a designer, as the most important thing to them is having sufficient space to accommodate more products. Some shop owners may choose to decorate their shops themselves in order to reduce the cost and invest in more products instead. As a result, there are only a few shop design companies in Liuhua District. Despite this, shop design is an important aspect for shop owners, as it determines the shop's style. This not only presents the shop owner's appreciation of beauty, more importantly, the shop's style determines if it can attract the correct group of customers who will buy the products inside. Thus, considering the importance of shop design, shop owners tend to choose shop designers introduced by their friends. Trust is more important than the location of the shop design companies to shop owners. According to a shop owner:

> The shop design company of my shop was introduced by a friend. His company was not located in the Liuhua District at that time. After the design of my shop, he moved his company into the district. Many shop owners didn't design their shops, but when they found my shop had become more attractive with the design, they employed the same design company. In this way, the shop design company receives more and more orders." (Shop owner A, personal interview with the author in Guangzhou, January 3, 2021)

Thus, trust from shop owners is the most important factor for the business of shop design companies. Without the interpersonal connections, even nearby shop design companies can be ignored by shop owners. One shop design company moved from the main road to a small path where the rent was lower at a much less noticeable location. A designer in the company explained that the location change was because they found it unnecessary to locate the company on the main road as the wholesale shop owners usually found them through introductions by friends rather than noticing their company on the road. Also, they tried to reduce their costs by paying lower rent by changing the location during the Covid-19 pandemic. Thereby in the actor network, the shop owner is a necessary path from a shop design company to a clothes wholesale shop (Figure 7). With trust from the shop owners, even a shop design company outside the Liuhua District, rather than the ones inside the district, can be chosen. It can be observed that shop design companies are not located as close to wholesale shops as mannequin shops and tag shops.

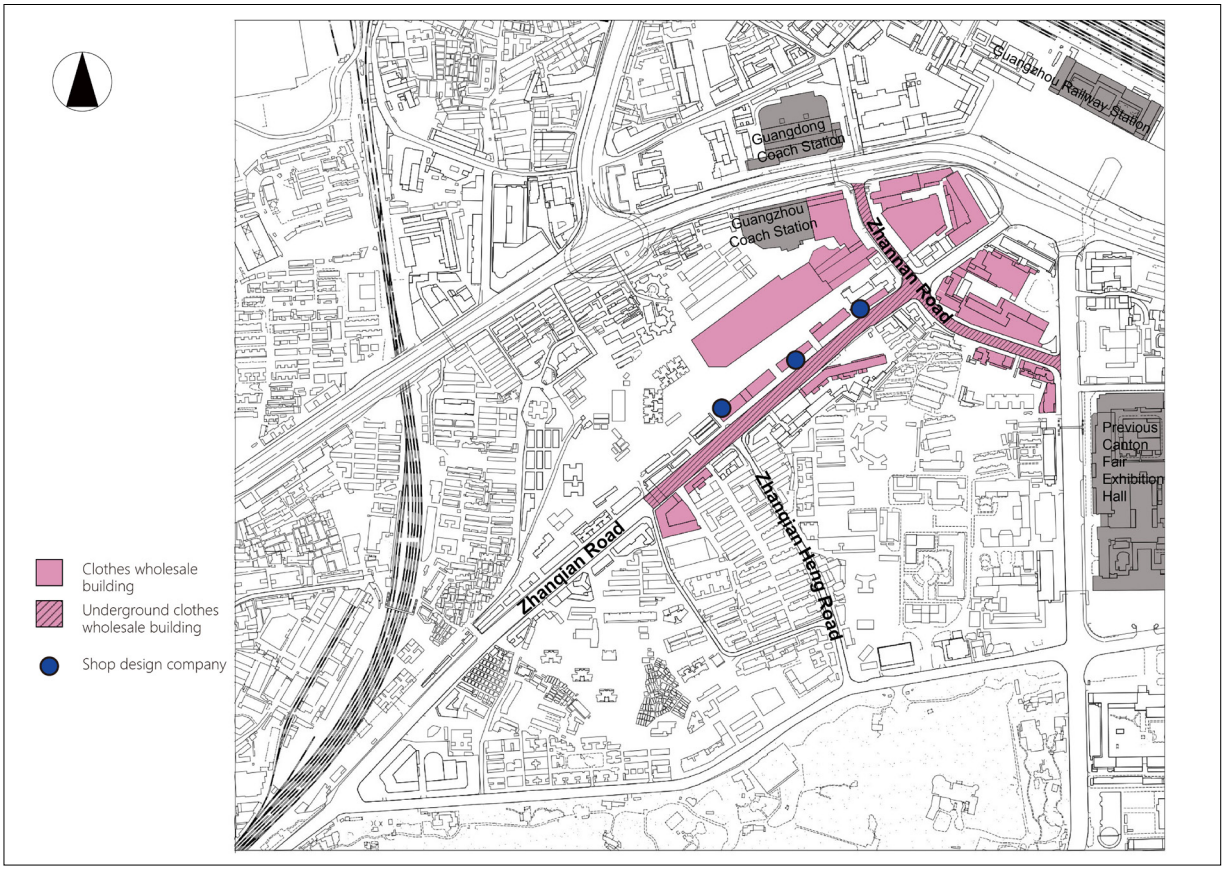

Figure 6: Locations of shop design companies (Source: drawn by author)

Figure 7: The actor network of shop design companies (Source: drawn by author)

(c) Clothes processing shop

Clothes processing shops are located relatively far from the wholesale buildings (Figure 8 and 9), providing services such as altering clothes and installing tags, zips and buttons. According to a processing shop owner, their customers are usually businesspeople from Russia and Korea who require the installation and alteration of tags. As clothes processing services cannot make a high profit, such shops cannot afford the high-rent space near the wholesale buildings. Moreover, the locations of processing shops are flexible. As the customers are usually acquaintances, the shops don't need to be near the wholesale buildings to attract customers. The processing shops do not need storage space because they usually store the products in the working places and the clothes that need to be processed are usually delivered by delivery workers hired by wholesale shop owners (Figure 10), so the processing shops do not need to be around the wholesale shops. Thus, with these conditions of flexibility and low profit, processing shops tend to choose places far from the wholesale buildings with low rent. Therefore, the location choices of processing shops are based on considerations including rent, attraction to customers, and connection to customers.

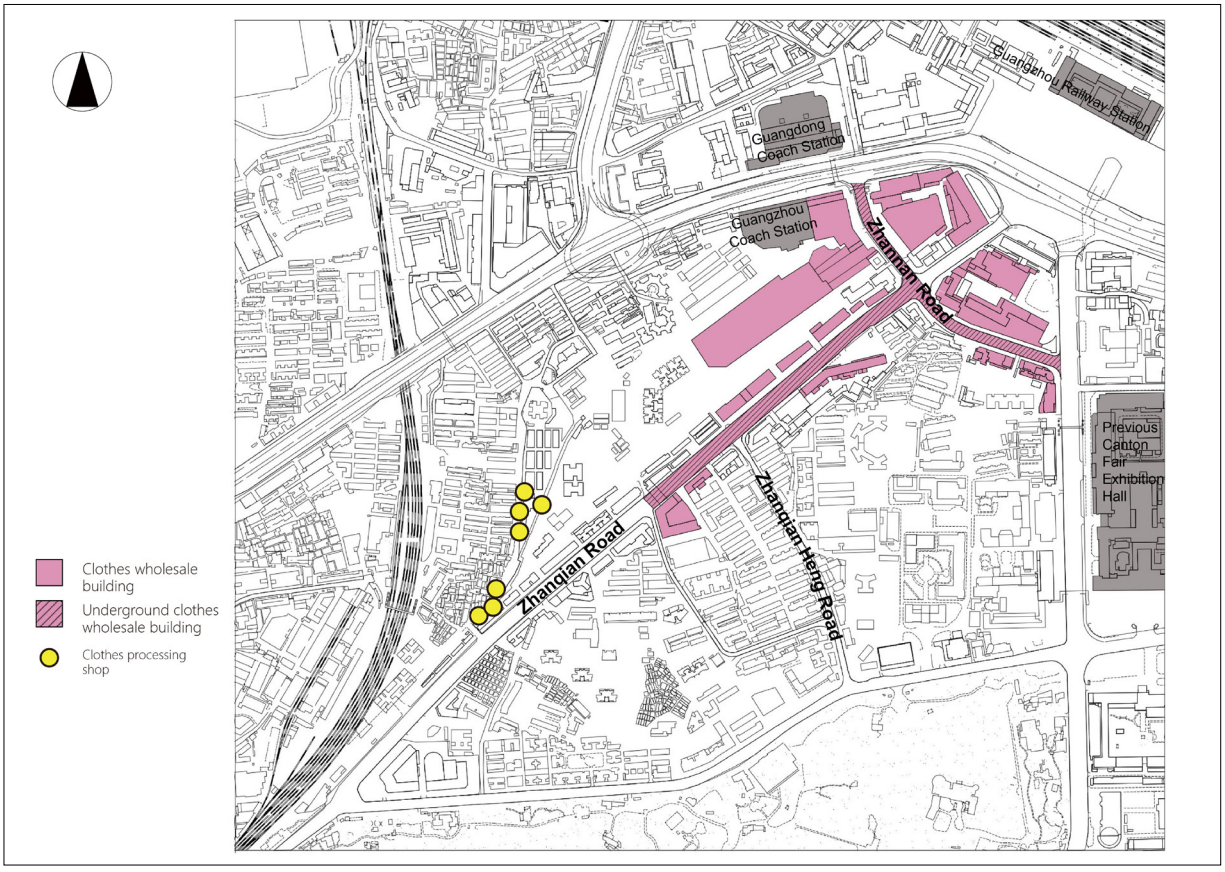

Figure 8: Locations of clothes processing shops (Source: drawn by author)

Figure 9: Clothes processing shops in the Liuhua District (Source: photo taken by author)

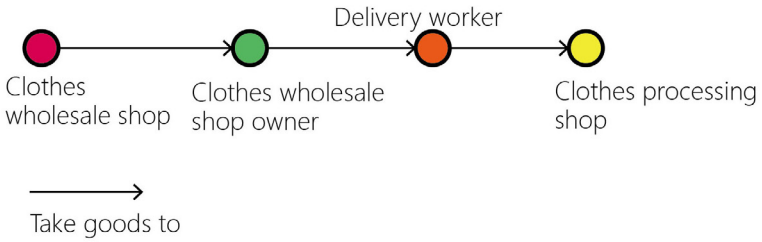

Figure 10: The actor network of clothes processing shops (Source: drawn by author)

(d) Logistics company

Similarly, logistics companies are located relatively far from clothes wholesale buildings (Figure 11). However, this long distance does not influence the business of logistics companies (Figure 12 and 13) because these companies hire delivery workers to move goods to and from every single clothes wholesale shop in the district. They are located far from clothes wholesale buildings because of the low rent and large space for parking trucks. Also, the business of logistics companies is not based on attraction, which leads to a great deal of freedom in the choice of location.

Delivery workers are essential to keep the district connected to a broader national and global network and provide the important materials for the operation of the clothes wholesale system. Wholesale shops and logistics companies are

connected by the product flows which are enabled by delivery workers known as 'people as infrastructure' (Simone 2004). This is a concept developed from Simone's (2004) observation in Johannesburg: the connected informal activities of steers, hawkers, drivers and baggage loaders around a transport depot functioned as infrastructure to provide services for customers and support the depot area's daily operation. In the Liuhua district, the support of delivery workers lifts the spatial restriction between the logistics companies and the wholesale shops. By drawing networks of the operation of logistics companies, it can be seen that delivery workers are central in the 'goods transportation network' (Figure 14) as they have the most connections to other actors. It seems delivery workers are more important than can sometimes be imagined, since without them, the flow of goods would immediately stop and, consequently, the clothes wholesale system would cease operation.

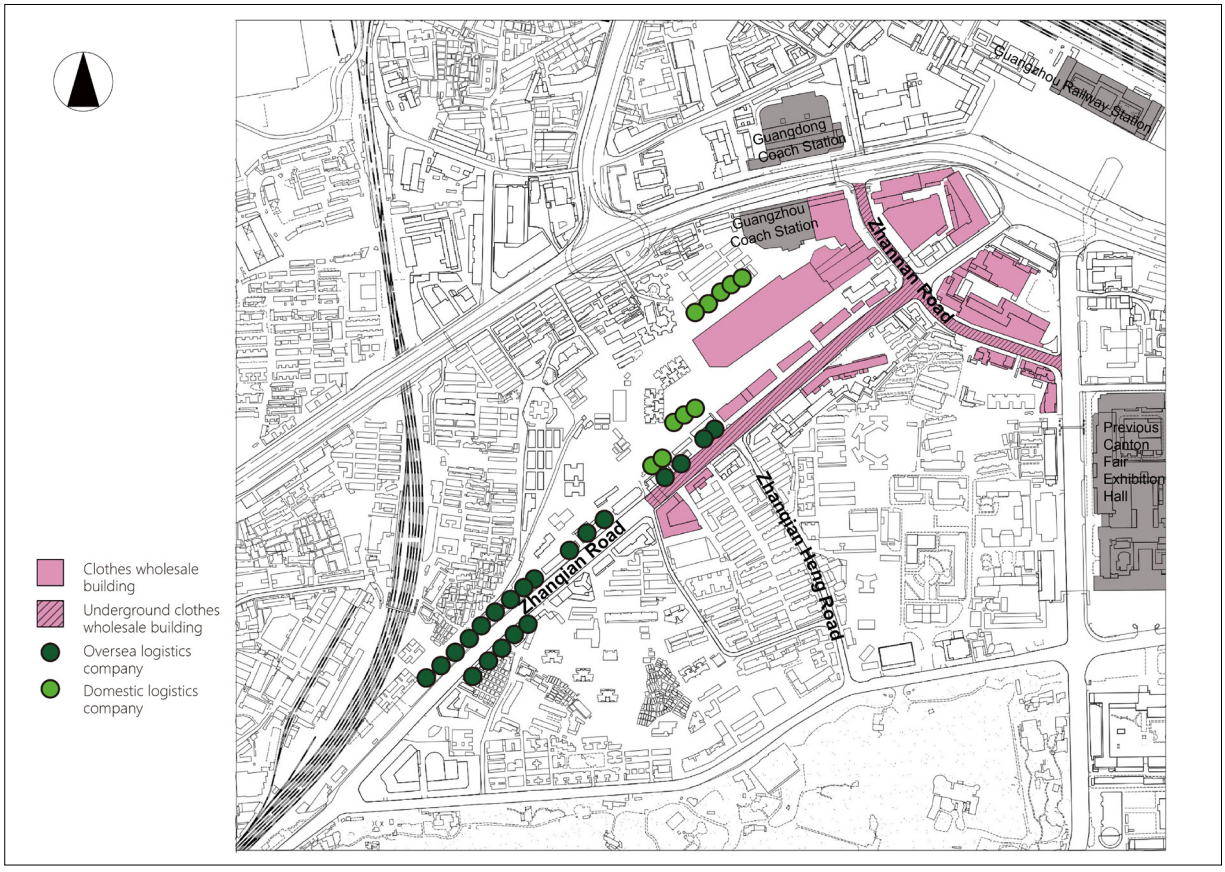

Figure 11: Locations of logistics companies (Source: drawn by author)

Figure 12: Domestic logistics companies (Source: photo taken by author)

Figure 13: Overseas logistics companies (Source: photo taken by author)

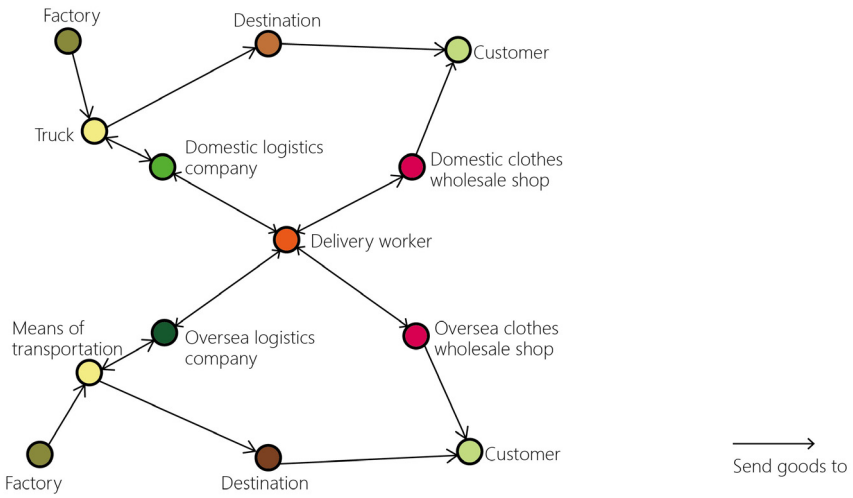

Figure 14: The actor network of logistics companies (Source: drawn by author)

Both domestic and overseas logistics companies cluster, though in different places (Figure 11). Overseas logistics companies tend to cluster along the road with workers packing goods and trucks loading and unloading goods on the pavement (Figure 13). Conversely, domestic logistics companies tend to cluster along internal roads behind residential buildings that are accessed through narrow passages. (Figure 12). Compared to overseas logistics clusters, domestic logistics clusters are less obvious. According to an interview with a delivery worker (Delivery worker A, personal interview with the author in Guangzhou, January 22, 2021), the overseas logistics companies are located in obvious places to make it easier for non-Chinese nationals who might not speak Chinese to find them as it requires more efforts to access less obvious places. Spaces are actors and the capacity of spaces to attract customers is not only determined by their locations but can be increased through adding information to the spaces, such as advertisements.

Another reason for the location of the logistics companies is the previous existence of a logistics company Bo Ling Dun. It was the first logistics company previously located in the same place as the current logistics company cluster. Many logistics company staff still remember it. Although the Bo Ling Dun company no longer exists in the district anymore, its influence continues through the current logistics company clusters in operation every day. Mowla (2004) points out that memory functions in creating the sense of a place. In the case of Bo Ling Dun, memory not only influences the sense of a place, but also plays an important role in shaping the space and function as the vertical linkage from the past to the present. The memory of Bo Ling Dun provides a 'mode' that indicates that the place was chosen for doing logistics business. The memory and traces left by Bo Ling Dun are involved in the characterisation of the space and produce a space similar to the original company.

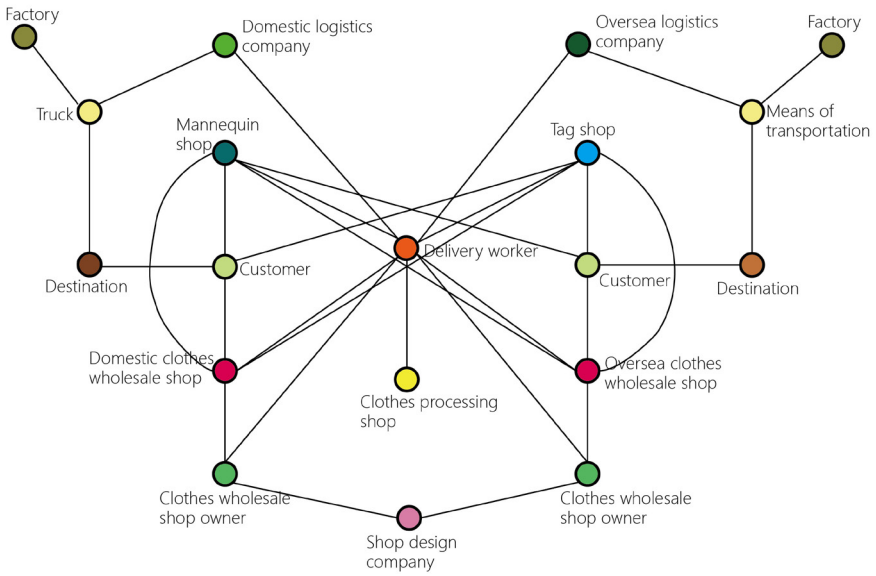

Figure 15: The actor network of various types of businesses in the Liuhua District (Source: drawn by author)

By analysing the relationship among various types of businesses in the Liuhua District (Figure 15), the hidden logic of the organization of the unplanned wholesale district can be understood. Although some actors seem unrelated to each other from direct observation, the invisible social relations among them might impact the location choices and performance of the actors from a distance (Murdoch 1998). According to Figure 15, the actor delivery worker presents many connections. It indicates the important role of delivery workers in the network: they provide essential connections among businesses and hence function as a central actor in the daily operation of the Liuhua District. Based on the network typology provided by ANT, Murdoch (1998) suggests that spaces are socio-material relations embedded in orders, which summarizes the characteristics of spaces in the Liuhua District: every type of business unit is connected and supported by multiple relations. The Liuhua District is not an isolated entity but is related to actors outside the district, such as goods transport destinations and factories in other cities.

Discussion and conclusion

Focusing on the location choices of clothing wholesale service units in the Liuhua District in Guangzhou, this research has used ethnographic methods to explore how the invisible social networks of four types of clothing wholesale service units influenced their location choices. Through imagining urban space as networks, this research has found that wholesale traders choose locations that enable the everyday function of the clothing wholesale service units. This research offers a concrete example to explain how the hidden spatial logic constructs space. In addition, it provides new insights to understand how self-organised areas are shaped through individual end-users' considerations.

In the context of dramatic Chinese urban transformations, insufficient urban planning left gaps in space regulation and design (Yeh 2004). This phenomenon offers an opportunity to observe and understand the needs and spatial use of end-users who are wholesale traders. For wholesale clothing service units, the most important consideration for location choice is to satisfy their everyday function. This research has found that the ways wholesale service units access customers and the daily practices of the businesses are crucial for shops when choosing locations.

According to Neal (2012), the network concept used to understand urban phenomena can be more advantageous than traditional ways to see cities through attributes, such as cities' areas, populations and people's opinions. His reason is that the network approach avoids the prior classification of the data used to examine urban phenomena and actors can be connected through networks. The findings are in accordance with his argument. Through Actor Network-Theory (Latour 2005), this research did not categorise the ethnographic data according to traditional methods, but included all the relations of human and non-human actors into networks to understand the hidden logic of the spatial organization. The flexibility brought by Actor Network-Theory enables the possibility for us to visualise unexpected relations that have influenced the urban space. For example, it might be assumed that the location choices of wholesale traders are mainly based on the rent of shops. However, with the flexibility to include any relevant actors into networks, this research has found that business patterns and personal relations actually play an important role in shaping the wholesale area.

The strength of ANT is to provide explanations from within and to understand phenomena from the bottom-up (Cvetinovic, Nedovic-Budic, and Bolay 2017). This research provides an example to understand an urban assemblage through its inner structures. The unplanned but well-organized commercial district presents the real everyday needs of space end-users: businesspeople attempt to find the places that can enable their businesses but with the lowest cost. According to Harvey (1996), space in nature is a structure of relations; space is defined through 'the mutual relatedness and connectedness of its parts'. The research findings are in line

with Harvey's argument, but what this research adds on to the argument is that space is not only defined by its internal relations, but also defined by external relations. This research inspires us to see space and spatial design from a relational perspective: a good spatial design is one that can fit the necessary relations.

Empirically, these research findings also contribute to the practices of urban and architectural design. The networks can be drawn based on qualitative and quantitative data to understand the potential spatial organisation before the actual design of space. In this case, spaces are not treated merely as physical structures for aesthetics but are actors with prior detailed social-relation design.

Although adopting the network concept in urban space research is a critical first step to unravel how social relations affects urban spatial use, additional work such as comparison between places of the same type needs to be done. Other social relations might be found to be important to other types of urban spaces. This research opens up more discussions to go beyond the visible and explore how spaces are shaped through dynamic, subtle and invisible relations of human and non-human actors.

References

Boano, Camillo, and Ricardo Martén. 2017. 'Think Urban and Learn from the City: Exploring Urban Dimensions of Humanitarianism.Summary Report'. *Urban Crises Learning Partnership (UCLP),* 1–20.

Buhr, Franz. 2017. 'Using the City: Migrant Spatial Integration as Urban Practice'. *Journal of Ethnic and Migration Studies* 44 (2): 307–20.

Cano-Ciborro, Víctor, and Ana Medina. n.d. 'Invisible Networks: Counter-Cartographies of Dissident Spatial Practices in La Jota Street, Quito'. *Cities* 140 (2023): 1–15. https://doi.org/10.1016/j.cities.2023.104435.

Corner, James. 1999. 'The Agency of Mapping: Speculation, Critique and Invention'. In *Mappings*, edited by Denis E Cosgrove, 213–52. London: Reaktion Books.

Cvetinovic, Marija, Zorica Nedovic-Budic, and Jean Claude Bolay. 2017. 'Decoding Urban Development Dynamics through Actor-Network Methodological Approach'. *Geoforum 82*:141–57. https://doi.org/10.1016/j.geoforum.2017.03.010.

Deleuze, Gilles. 2005. *Expressionism in Philosophy: Spinoza*. New York: Zone Books.

Hansmann, Sabine. 2021. *Monospace and Multiverse: Exploring Space with Actor-Network-Theory.* Bielefeld: transcript Verlag.

Harvey, Daived. 1996. 'Justice, Nature and the Geography of Difference'. Oxford: Blackwell.

Hillier, Jean. 2021. 'The "Flatness" of Deleuze and Guattari: Planning the City as a Tree or as a Rhizome?' *disP - The Planning Review* 57 (2): 16–29. https://doi.org/10.1080/02513625.2021.1981008.

Kim, Jihyun. 2019. 'Designing Multiple Urban Space: An Actor-Network Theory Analysis on Multiplicity and Stability of Public Space'. *Journal of Urban Design* 24 (2): 249–68. https://doi.org/10.1080/13574809.2018.1468214.

Latour, Bruno. 2005. *Reassembling the Social-an Introduction to Actor-Network-Theory*. Oxford: Oxford University Press. https://doi.org/10.1177/1350507607073032.

Law, John. 2009. 'Actor Network Theory and Material Semiotics'. In *The New Blackwell Companion to Social Theory,* edited by Bryan s. Turner, 141–58. UK: Wiley Blackwell. https://doi.org/10.1002/9781444304992.ch7.

Lee, Jisun, and Hyunsoo Lee. 2018. 'The Visible and Invisible Network of a Self-Organizing Town - Agent-Based Simulation for Investigating Urban Development Process'. In *23rd International Conference on Computer-Aided Architectural Design Research in Asia: Learning, Prototyping and Adapting, CAADRIA 2018*, 411–20. Beijing, China: The Association for Computer-Aided Architectural Design Research in Asia (CAADRIA). https://doi.org/10.52842/conf.caadria.2018.2.411.

Lefebvre, Henri. 1991. *The Production of Space*. Oxford, UK; Cambridge, USA: Blackwell.

Mowla, Qazi. 2004. 'Memory Association in Place Making: Understanding an Urban Space'. *Memory* 9:52–54.

Murdoch, Jonathan. 1998. 'The Spaces of Actor-Network Theory'. *Geoforum 29* (4): 357–74. https://doi.org/10.1016/S0016-7185(98)00011-6.

Neal, Zachary P. 2012. The Connected City: How Networks Are Shaping the Modern Metropolis. New York and London: Routledge. https://doi.org/10.4324/9780203101728.

Özkul, Didem. 2015. 'Location as a Sense of Place: Everyday Life, Mobile, and Spatial Practices in Urban Spaces'. In *Mobility and Locative Media: Mobile Communication in Hybrid Spaces,* edited by A. de Souza e Silva and M. Sheller, 101–16. New York, NY: Routledge.

Rau, Susanne, and Ekkehard Schönherr, eds. 2014. *Mapping Spatial Relations, Their Perceptions and Dynamics: The City Today and in the Past.* Lecture Notes in Geoinformation and Cartography. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-00993-3.

Ritzer, George. 2010. *Sociological Theory.* New York: The McGraw-Hill Companies. https://doi.org/10.2307/j.ctt1t892z5.19.

Schoon, Sonia, and Uwe Altrock. 2014. 'Conceded Informality. Scopes of Informal Urban Restructuring in the Pearl River Delta'. *Habitat International* 43:214–20. https://doi.org/10.1016/j.habitatint.2014.03.007.

Sharif, Ahlam Ammar. 2021. 'Activity Networks and the Temporality of Urban Space : The Case of a Cul-de-Sac Square'. *Archnet-IJAR: International Journal of Architectural Research* 15 (3): 487–504. https://doi.org/10.1108/ARCH-12-2020-0292.

Simone, Abdou Maliq. 2004. 'People as Infrastructure: Intersecting Fragments in Johannesburg'. *Public Culture* 16 (3): 407–29. https://doi.org/10.1215/08992363-16-3-407.

Smaniotto Costa, Carlos, Joana Solipa Batista, Inês Almeida, and Marluci Menezes. 2020. 'Exploring Teenagers' Spatial Practices and Needs in Light of New Communication Technologies'. *Cities* 98:1–7. https://doi.org/10.1016/j.cities.2019.102574.

Vicsek, Lilla, Gábor Király, and Hanna Kónya. 2016. 'Networks in the Social Sciences: Comparing Actor-Network Theory and Social Network Analysis'. *Corvinus Journal of Sociology and Social Policy* 7 (2): 77–102. https://doi.org/10.14267/CJSSP.2016.02.04.

Yeh, Anthony Gar On. 2004. 'Dual Land Market and Internal Spatial Structure of Chinese Cities'. In *Restructuring the Chinese City: Changing Society, Economy and Space*, edited by Laurence JC Ma and Fulong Wu, 52–70. Routledge.